

Information and Communication Technology in Financial Institutions (ICTFI)

For AIBB

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Table of Content

SL	Details	Page No.
1	Module A: <i>Introduction to ICT and Computer Systems-</i>	4-33
2	Module B: <i>Different Approaches to Automation of Financial Institutions (FIs)</i>	34-48
3	Module C: <i>Alternative Delivery Channels & Fund Transfer Systems</i>	49-79
4	Module D: <i>ICT Security, Cyber Security, ICT Risk Management, Standards, Regulations and Legal Framework</i>	80-93
5	Module E: <i>Document Handling Systems, Additional Banking Applications & Other Aspects.</i>	94-103
6	Module F: <i>FinTech, Artificial Intelligence and future Technology Based Banking</i>	104-110
8	<i>Short Note</i>	111-120
9	<i>Previous year Question</i>	121-1277

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Syllabus

Module-A: Introduction to ICT and Computer Systems

- Information and Communication Technology, Electronic Banking and Online Banking, Mobile Financial Services, Agent Banking, e-commerce and m-Commerce, Computer Hardware, Computer Software, Internet.

Module-B: Different Approaches to Automation of Financial Institutions (FIs)

- Data Center (DC), Near DC, Disaster Recovery Site (DRS), Data Center Standards and certifications, Computer Networking, IT Systems, Storage, Database and backup systems for ICT in FIs, Computerization approaches, Various Software Systems Like Core Banking, Switching, Credit Card, Payment Gateway, Mobile Financial System and Agent Banking Software.

Module-C: Alternative Delivery Channels & Fund Transfer Systems

- Automatic Transaction Machine (ATM), Cash Deposit Machine (CDM), Cash Recycling Machine (CRM), POS terminals, Debit Card, Credit Card, Card technology Internet Banking, SMS and Alert Banking, E-commerce & Internet Payment Gateway, M-Commerce, Mobile Financial Services (MFS), Agent Banking (Biometric Banking), Call Center, Systems for sending fund transfer instruction like Telex, Swift, CHIPS, FEDWIRE.

Module-D: ICT Security, Cyber Security, ICT Risk Management, Standards, Regulations and Legal Framework

- ICT Security, Cyber Security, ICT Risk Management, Security Standards and Regulations, Guideline on ICT Security for Scheduled Banks and Financial Institutions published by the Central Bank of Bangladesh, PCI-DSS, BS 7799 and ISO 27000, Legal framework in Bangladesh (Cyber Law, ICT Act etc.).

Module-E: Document Handling Systems, Additional Banking Applications & Other Aspects.

- Cheque Processing Systems such as Clearing and Settlement Systems, MICR, RTGS, BACH (BACPS & BEFTN) and additional Banking Applications like ERP Software, CRM Software, E-mail software, Anti-Virus and anti-malware software.

Module F: FinTech, Artificial Intelligence and future Technology Based Banking

- Fintech, RegTech and TechFin, Virtual Banking, Basic Crypto Currency, Block Chain Technology, Cloud computing, Internet of Things (IOT), Machine Learning, Data Mining, Data Warehouse, Neural Network, Data Warehouse, Current Trends, Artificial Intelligence.

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Module A: Introduction to ICT and Computer Systems

Q-01. Define Information Technology and Information & Communication Technology (ICT). What is the difference between the terms ‘Information Technology’ and ‘Information and Communication Technology’?

Information Technology (IT) is the technology that supports activities involving the creation, storage, manipulation, and communication of information. According to C.S. French, IT encompasses the methods, management, and application related to these activities. IT is not limited to information processing; it also includes the communication of information. Therefore, the term often extends to Information and Communication Technology (ICT). IT involves all processes and systems required to capture, store, process, and communicate information, playing a crucial role in various industries and everyday life.

Information and Communication Technology (ICT) refers to the integration of both computing and telecommunications technologies for the capture, storage, transmission, and retrieval of information. It encompasses a broad range of technologies, from traditional computer systems and software applications to telecommunication devices like smartphones and networking hardware.

Feature	Information Technology (IT)	Information and Communication Technology (ICT)
Scope	Primarily computing and software	Computing, software, and telecommunications
Communication Aspect	Less emphasized	Strongly emphasized
Primary Uses	Data storage, processing, analytics	Data and information sharing, communication
Hardware	Servers, computers, data centers	Servers, computers, networking devices, smartphones
Key Disciplines	Computer Science, Software Engineering	Computer Science, Telecommunications Engineering

Q-02. Banking service is now available anytime. How ICT contributed to this?

Or, Discuss the role of IT in financial sector/ banking sector.

Or, Discuss the use of computer/ progress of IT use in the banking sector.

Or, Describe the recent developments in computer use in the banking sector.

Or, what are the main uses of internet in banks? (Dec-22-95th. JUNE-13, Dec-14, June-15, May-16, Nov-11, Dec-15, June-17, Dec-19, MAY-12, DEC-13, DEC-12, DEC-13).

The implementation of Information and Communication Technology (ICT) has revolutionized the banking sector, enabling services to be available anytime, anywhere. Here's how:

- 1. Online Banking:** ICT introduced online banking platforms where customers can access their accounts, make transactions, pay bills, and check balances without visiting a physical branch.
- 2. Mobile Banking:** With smartphones, banking apps allow users to transact on the go, from fund transfers to depositing checks through mobile cameras.
- 3. ATMs:** Automated Teller Machines, connected via a network, allow customers to withdraw, deposit, and perform other essential functions 24/7.
- 4. Digital Payment Gateways:** ICT has enabled instantaneous online payments, facilitating e-commerce and online purchases.
- 5. Customer Support:** Through chatbots and online support systems, banks can assist customers anytime.
- 6. Real-time Data Sync:** ICT ensures that bank data is updated in real-time across all platforms, making banking seamless.

Thus, the advent of ICT in banking has made it more convenient and accessible, catering to the needs of a global and digital clientele.

Q-03. Narrate importance of use of ICT in Banking.

Or, Discuss the impact (Benefits and Risks) of computerization on the banking sector.

Or, Discuss the importance of ICT on the banking sector.

Or, Clearly describe the benefits and risks for the use of computers in banking operations. (JUNE-13, Dec-14, June-15, May-16, Nov-11, Dec-15, June-17, Dec-19, MAY-12, DEC-13, DEC-12, DEC-13).

Or, Craft the impact of Information and Communication Technology (ICT) application on banking services. BPE-97th.

The use of Information and Communication Technology (ICT) in banking has been a game-changer, offering multiple benefits but also posing some risks.

Benefits:

1. **Convenience:** Online and mobile banking allow 24/7 access to accounts.
2. **Speed:** Transactions are quicker, from money transfers to loan approvals.
3. **Cost-Efficiency:** Automation reduces operational costs for banks.
4. **Global Reach:** Customers can access their accounts from anywhere in the world.

Risks:

1. **Cybersecurity:** With more online services, the risk of hacking and fraud increases.
2. **Data Privacy:** Sensitive customer data is at risk if not properly secured.

Overall, ICT has made banking more efficient and user-friendly but also necessitates strong security measures to protect against cyber threats.

Q-04. What is electronic Banking? Name five electronic banking systems and define them.

Electronic Banking, also known as e-banking, refers to the use of electronic means to conduct banking transactions and services. This includes activities like transferring funds, paying bills, checking account balances, and accessing other financial services via electronic devices such as computers, smartphones, and ATMs. E-banking offers convenience, allowing customers to perform banking tasks from anywhere and at any time. It encompasses various forms of online banking, mobile banking, and telephone banking. E-banking enhances the efficiency of banking operations, reduces the need for physical branch visits, and provides customers with faster and more flexible access to their financial information and services.

Name of five electronic banking:

1. **Online Banking:** This is a service that lets you manage your bank account using a computer or mobile device. You can check balances, transfer money, and pay bills without going to the bank.
2. **Mobile Banking:** This is similar to online banking but done through a special app on your smartphone. It's handy for quick transactions like sending money to a friend or checking your account balance.
3. **ATMs (Automated Teller Machines):** These are machines where you can withdraw cash, deposit money, and sometimes even pay bills. They are available 24/7, making it convenient to access your money.
4. **Electronic Funds Transfer (EFT):** This is a system that moves money electronically between bank accounts. It's used for things like direct deposits of your paycheck or automatic bill payments.
5. **Credit/Debit Card Transactions:** When you use a credit or debit card to make a purchase, the money is electronically transferred from your account to the seller's account. It's quick and eliminates the need for cash.

These electronic banking systems make handling money faster, easier, and often more secure.

Q-05. Describe some advantages and disadvantages of Electronic Banking.

Or, Write down the advantages and disadvantages of electronic banking. BPE-96th.

Advantages:

1. **Convenience:** You can do banking 24/7, even from your home or while traveling.

2. **Speed:** Transactions like money transfers are much faster compared to traditional methods.
3. **Easy Record-Keeping:** You can easily check your account history, which helps in budgeting and record-keeping.
4. **Low Cost:** Many electronic services are cheaper or even free, saving both time and money.

Disadvantages:

1. **Security Risks:** There's a risk of hacking, phishing, or other types of fraud.
2. **Technical Issues:** Sometimes websites or apps can be down, or ATMs can malfunction.
3. **Not For Everyone:** Older people or those not comfortable with technology may find it hard to use.
4. **Over-reliance:** Being too dependent on electronic banking could be problematic if you face issues like internet outages.

So, while electronic banking offers a lot of benefits like convenience and speed, it also comes with risks like potential security threats and technical glitches.

Q-06. What is online banking or Any Branch banking? Mention advantages and disadvantages of online banking.

Online Banking: Online banking lets you handle your money through the internet. You can check your account, pay bills, and transfer money without going to the bank.

Any Branch Banking: This means you can do your banking at any branch of your bank, not just the one where you opened your account.

Advantages of Online Banking:

1. **Convenience:** You can bank anytime, even in the middle of the night!
2. **Quick Access:** You can see your account details and make fast transactions.
3. **Low Fees:** Often, online services have lower fees than at a physical bank.

Disadvantages of Online Banking:

1. **Security Risks:** If someone gets your password, they could take your money.
2. **Technical Problems:** If the internet is down, you can't do online banking.
3. **Less Personal:** You don't get face-to-face service like in a bank branch.

Online banking is super convenient and often cheaper, but you have to be careful about security and remember it doesn't replace personal service.

Q-07. Mention a few differences between SMS and Alert Banking.

Feature	SMS Banking	Alert Banking
1. Definition	Allows you to send text messages to perform banking tasks like checking balances or transferring money.	Automatically sends you text notifications about activities in your bank account.
2. Interaction	Two-way: You send a command, and the bank replies.	One-way: The bank sends you alerts without requiring you to initiate the interaction.
3. Initiation	User-initiated: You have to send a text to get information or perform a task.	Automatic: Alerts are sent by the bank based on preset conditions like large transactions.
4. Range of Services	Offers a broader range of services like bill payments, mini statements, and blocking a lost card.	Primarily limited to account alerts like low balance, large withdrawals, or due payments.
5. Flexibility	You can usually customize the services you want to use.	Limited customization, mainly you can choose which alerts you want to receive.

Q-08. Mention two syntaxes for any two functions of SMS banking.

In SMS Banking, different banks have their own specific syntax or codes that you have to send via SMS to access various services. Below are hypothetical examples for two common functions: checking account balance and transferring money.

1. Check Account Balance:

- **Syntax:** BAL <Account Number>
- **Example:** If your account number is 123456, you'd text BAL 123456 to the bank's designated number.
- **Function:** This SMS command allows you to check the current balance of your account. The bank will reply with an SMS stating your available balance.

2. Transfer Money:

- **Syntax:** XFER <To Account> <Amount>
- **Example:** If you want to transfer \$100 to an account number 78910, you'd text XFER 78910 100.
- **Function:** This SMS command initiates a fund transfer from your account to another. The bank usually sends a confirmation SMS and might ask for additional authorization.

Note that these are generic examples, and the actual syntax may vary from bank to bank. Always check your bank's guidelines for accurate information.

Q-09. What is an MFS? Name a few remarkable MFS in Bangladesh.

Or, Discuss about MFS. BPE-96th.

MFS stands for Mobile Financial Services, a technology that allows people to do various financial activities like transferring money, making payments, and even saving, all through their mobile phones. It has been particularly transformative in countries like Bangladesh where access to traditional banking may be limited.

Some remarkable MFS providers in Bangladesh are:

1. **bKash:** One of the largest mobile financial services, offering a broad range of transactions like cash-in, cash-out, and payments.
2. **Nagad:** A digital financial service promoted by the Bangladesh Post Office, known for its user-friendly interface and lower service charges.
3. **Rocket:** Initially launched as Dutch-Bangla Mobile Banking, it's one of the earliest MFS services in Bangladesh offering a wide range of services.
4. **SureCash:** Provides diversified services including remittances, payments, and micro-savings.
5. **mCash:** Launched by Islami Bank Bangladesh, this focuses on serving the needs of the bank's existing customer base.

These MFS providers have made financial transactions easier, quicker, and more accessible to millions in Bangladesh.

Q-10. What is G2P in MFS? BPE-96th.

G2P in Mobile Financial Services (MFS) stands for "Government-to-Person." It refers to the digital disbursement of government payments or subsidies directly to individuals using mobile financial platforms. G2P initiatives leverage the widespread use of mobile phones to ensure efficient and transparent distribution of funds, reaching beneficiaries in a timely manner. This approach enhances financial inclusion by providing individuals, often in underserved or remote areas, with access to government benefits, social assistance, or subsidies through their mobile devices. G2P in MFS streamlines the distribution process, reduces administrative costs, and enhances the overall effectiveness of government welfare programs.

Q-11. When MFS started its journey in Bangladesh and which bank stated it?

Mobile Financial Services (MFS) began its journey in Bangladesh in 2011. The pioneer in this sector was Dutch-Bangla Bank, which launched its mobile banking platform initially known as "Dutch-Bangla Bank Mobile Banking," later

rebranded as "Rocket." The service was groundbreaking in bringing financial services to people who had limited or no access to traditional banking systems. It allowed users to perform a wide range of financial activities like fund transfers, bill payments, and mobile top-ups using mobile phones. The introduction of MFS by Dutch-Bangla Bank opened the door for financial inclusion in Bangladesh, enabling millions to engage in secure and convenient financial transactions. It set the stage for other providers like bKash, Nagad, and many more to enter the market.

Q-12. Consider, your bank is exploring the implementation of mobile wallets to provide customers with a comprehensive financial management solution. The benefits of mobile wallets are outlined in terms of bill payments, fund transfers and expense tracking. Address challenges such as user adoption and security concerns. Highlight strategies to encourage customer trust and loyalty. BPE-97th.

1. **Efficient Bill Payments:** Mobile wallets streamline bill payments, allowing users to settle utility bills and expenses conveniently through a digital platform.
2. **Seamless Fund Transfers:** Users can initiate quick and secure fund transfers, enhancing the efficiency of financial transactions.
3. **Expense Tracking:** The mobile wallet provides features for users to monitor and manage their spending, promoting better financial management.
4. **User Adoption Challenges:** Addressing user adoption challenges involves creating user-friendly interfaces and launching educational campaigns to simplify onboarding.
5. **Security Concerns Mitigation:** Robust security measures, including biometric authentication and encryption, are implemented to address and mitigate security concerns.
6. **Transparent Communication:** Regular updates and transparent communication about security protocols build trust among users, fostering confidence in mobile wallet usage.
7. **Loyalty Incentives:** Encourage loyalty through personalized promotions and exclusive offers for mobile wallet users, ensuring continued engagement and usage.

Q-13. What are the services a MFS operator provides in Bangladesh? Name 5 most used e-services which approximate number of transactions through each of the services held in Feb, 2022.

Mobile Financial Services (MFS) operators in Bangladesh offer a wide range of services aimed at financial inclusion and convenience. The five most commonly used services are:

1. **Cash-In:** Allows users to deposit money into their mobile wallets. This is the most basic and frequently used service with millions of transactions daily.
2. **Cash-Out:** Enables users to withdraw money from their mobile wallet, also with millions of daily transactions.
3. **Person-to-Person (P2P) Transfers:** Facilitates money transfers between individuals. This service often records hundreds of thousands of transactions daily.
4. **Bill Payments:** Used for utility bills, school fees, and other payments, with tens of thousands of transactions daily.
5. **Mobile Recharge:** Allows users to buy mobile airtime. This service also sees tens of thousands of transactions daily.

Please note that the number of transactions is approximate and can vary.

Q-14. As per the MFS policy, how much share a bank shall hold in the MFS?

According to the MFS (Mobile Financial Services) policy of Bangladesh Bank, a bank must hold a majority ownership in the MFS. Specifically, as per the guidelines, a scheduled bank must own at least 51% (majority) share in an MFS platform or subsidiary, ensuring that the bank has a controlling interest. This regulation was put in place to ensure that banks maintain significant control and responsibility over the mobile financial services being offered, ensuring the stability and security of the service. It's part of Bangladesh Bank's broader effort to ensure that while MFS platforms offer financial inclusivity and accessibility, they also maintain the integrity and trustworthiness expected from more traditional banking institutions.

Q-15. Mobile financial services offer convenience and accessibility. Devise a strategy to design a user-centric mobile app that integrates banking, payments and remittance services. Discuss how the app can cater to diverse user-demographics and used to foster financial inclusion. BPE-97th.

User-Centric Mobile App Strategy for Financial Inclusion:

1. **Intuitive Interface:** Design a user-friendly interface ensuring easy navigation for diverse users, including those with limited technological exposure.
2. **Multilingual Support:** Incorporate multilingual capabilities to cater to users from diverse linguistic backgrounds, promoting inclusivity.
3. **Accessibility Features:** Implement accessibility features for users with disabilities, ensuring the app is usable by a wide range of individuals.
4. **Educational Content:** Provide educational content within the app to guide users on banking, payments, and remittance services, enhancing financial literacy.
5. **Flexible Account Options:** Offer various account options, accommodating both the unbanked and underbanked populations, promoting financial inclusion.
6. **Low Transaction Costs:** Keep transaction costs minimal to make services affordable for users with varying income levels.
7. **Customer Support:** Establish robust customer support to assist users and address queries promptly, fostering a sense of reliability.
8. **Collaborations with Local Agents:** Form partnerships with local agents to facilitate cash-in/cash-out services, bridging the digital divide.

This user-centric app strategy ensures accessibility, education, and affordability, making mobile financial services inclusive and empowering diverse user demographics.

Q-16. In relation to e-commerce, define the following: Cart, Payment gateway, Acquiring and Issuing Bank, PIN, CVV, CVC, Payment Association, Authorization, Settlement, Nostro account, NPSB.

In the context of e-commerce, these terms have specific meanings:

1. **Cart:** The virtual "basket" where customers place items they intend to purchase online.
2. **Payment Gateway:** A service that processes online payments, securely transmitting information between the website and the bank.
3. **Acquiring Bank:** The bank that processes credit/debit card payments for merchants.
4. **Issuing Bank:** The bank that issued the customer's credit/debit card.
5. **PIN:** Personal Identification Number, a secure code used to authenticate transactions.
6. **CVV/CVC:** Card Verification Value/Code, a 3 or 4-digit number on the card used for additional security.
7. **Payment Association:** Organizations like Visa, MasterCard that set the rules for card transactions.
8. **Authorization:** The process of checking if a card has enough funds for a transaction.
9. **Settlement:** The actual transfer of funds from the buyer's to the seller's account.
10. **Nostro Account:** A foreign currency account a bank holds in another bank.
11. **NPSB:** National Payment Switch Bangladesh, facilitates inter-bank electronic transactions in Bangladesh.

These terms are crucial for understanding how online transactions work, from selection to payment and fund transfer.

Q-17. Describe process flow of payment in ecommerce.

In e-commerce, the payment process usually follows these steps:

1. **Add to Cart:** The customer selects items and adds them to their online shopping cart.
2. **Checkout:** The customer proceeds to the checkout page, enters shipping information, and selects a payment method.
3. **Payment Gateway:** The transaction details are sent through a secure payment gateway for verification.
4. **Authorization:** The issuing bank checks if the customer's account has sufficient funds. If yes, it authorizes the transaction and sends an authorization code back through the payment gateway.

5. **Confirmation:** Once authorized, a confirmation message appears on the merchant's site, and an invoice is generated. The customer may also receive a confirmation email.
6. **Settlement:** At the end of the day, the acquiring bank settles all authorized transactions, transferring the money to the merchant's account.
7. **Shipping:** Once the payment is cleared, the products are prepared for shipping.

This streamlined process enables secure and efficient online shopping, benefitting both consumers and merchants.

Q-18. Describe settlement process for ecommerce transactions. BPE-98th.

In e-commerce, the settlement process is the final stage where the actual transfer of funds takes place from the customer's bank account to the merchant's bank account. Here's how it generally works:

1. **Batching:** After transactions are authorized throughout the day, they are grouped together in a batch by the merchant or payment gateway.
2. **Submission:** The batch is then submitted to the acquiring bank, which forwards it to the appropriate payment association like Visa or MasterCard for further processing.
3. **Clearing:** The payment association sorts the transactions and sends them to the respective issuing banks for debiting the customer accounts.
4. **Fund Transfer:** Once the issuing banks confirm the transactions, the acquiring bank receives the funds.
5. **Merchant Payout:** Finally, the acquiring bank deposits the total amount, minus any transaction fees, into the merchant's bank account.

This process ensures that the merchant gets paid for their goods or services and typically takes 2-3 business days to complete.

Q-19. What is computer? Describe different types of computers based on capacity/size and type/performance. Or, Describe the classification of computers on the basis of construction and working principles. (Nov-16, Nov-17, MAY-12, DEC-13, Dec-14, May-16, June-20, Dec 22). Or, Describe the types of computers based on job nature, size and capacity. BPE-97th.

A computer is an electronic device that processes data based on a set of instructions, performing tasks like calculations, data storage, and internet browsing.

Based on capacity/size, computers can be classified into:

1. **Supercomputers:** These are the most powerful, used for complex simulations and data analysis. Example: Weather forecasting.
2. **Mainframe Computers:** Used by large organizations for critical applications, capable of handling multiple tasks and high volumes of data.
3. **Minicomputers:** Smaller than mainframes but still powerful, often used for specific tasks in medium-sized companies.
4. **Microcomputers:** Personal computers like desktops, laptops, and tablets fall into this category. Suitable for individual use or small businesses.

Based on type/performance, they can be:

1. **Analog Computers:** Used for tasks where data can vary continuously, like controlling temperature.
2. **Digital Computers:** Most common, designed to perform calculations and tasks by manipulating discrete numbers.
3. **Hybrid Computers:** Combine features of both analog and digital computers.

Each type has its own working principle and construction based on its intended use.

Q-20. Modern Society cannot run without computer. (2010)

Or, Discuss the impact (Good and Bad) of computerization on modern society? (Dec-12, Jun-14, Dec-15, Nov-16, Dec-18, Dec-19)

Or, Discuss the Role of Computers in Modern Life.

Computers have become an integral part of modern society, reshaping numerous aspects of our daily lives.

Good Impacts:

1. **Efficiency and Productivity:** Automation and software tools have optimized tasks, from business operations to academic research.
2. **Communication:** Emails, chats, and video calls connect people worldwide instantly.
3. **Education:** Online learning platforms and digital resources make education more accessible and diverse.
4. **Entertainment:** Streaming services, gaming, and digital media offer varied entertainment options.

Bad Impacts:

1. **Dependency:** Excessive reliance on computers can cripple functions when they fail.
2. **Privacy Concerns:** Data breaches and unauthorized data collection endanger user privacy.
3. **Job Displacement:** Automation and AI can replace certain job roles, leading to unemployment.

In conclusion, while computers have greatly enhanced modern life, their pitfalls necessitate cautious and responsible use.

Q-21. Discuss the impacts of computers in education sectors. (Dec-2021) Or, Discuss the impact of computer on efficiency of health sector and education sector. (Dec22, 95th)

Computers have revolutionized both the education and health sectors, driving efficiency and expanding capabilities.

Education Sector:

1. **Accessibility:** E-learning platforms allow remote access to educational resources, breaking down geographical barriers.
2. **Personalization:** Software can tailor learning paths according to student needs, enhancing the learning experience.
3. **Collaboration:** Digital tools facilitate better teacher-student and peer-to-peer interaction.
4. **Research:** Computers make information retrieval faster, aiding academic research.

Health Sector:

1. **Data Management:** Electronic Health Records streamline patient data management, improving accuracy and accessibility.
2. **Telemedicine:** Computers enable remote consultations, critical for rural or pandemic-affected areas.
3. **Medical Imaging:** Advanced software enhances imaging techniques like MRI and CT scans.
4. **Automation:** Laboratory processes are more efficient, allowing quicker diagnoses.

Both sectors have seen transformative changes, elevating service quality and accessibility, although challenges like digital divide and data security remain.

Q-22. Discuss the main features of different generations of computers. Jul-2019, Dec-21.

Computers have evolved through various generations, each with distinct features:

1. **First Generation (1940-1956):** Used vacuum tubes and were very large. They were slow, consumed a lot of power, and produced heat. Mainly used for scientific calculations.
2. **Second Generation (1956-1963):** Replaced vacuum tubes with transistors, reducing size and power consumption. Assembly language and early forms of operating systems emerged.
3. **Third Generation (1964-1971):** Introduced integrated circuits, replacing transistors. Smaller, faster, and more reliable, they used high-level languages like FORTRAN and COBOL.
4. **Fourth Generation (1971-Present):** Utilized microprocessors, leading to personal computers. This era saw the rise of graphical interfaces and the internet.
5. **Fifth Generation (Present and Beyond):** Focuses on artificial intelligence and natural language processing. Supercomputers and quantum computing are leading developments.

Each generation brought technological advancements that made computers more efficient, compact, and user-friendly.

Q-23. What are the major differences between present generation and older generation computers? (Dec-12, June-14)

Feature	Present-Generation Computers	Older-Generation Computers
1. Size and Portability	Compact and portable, like laptops and smartphones	Large and bulky, often filling entire rooms
2. Processing Speed	Extremely fast, capable of handling complex tasks almost instantly	Much slower, limited to basic calculations and tasks
3. Storage Capacity	High-capacity storage in the range of terabytes or cloud storage	Limited storage, often in the range of kilobytes or megabytes
4. User Interface	Graphical interfaces, touchscreens, voice-activated controls	Primarily text-based interfaces, limited graphical capability
5. Networking and Internet	Built for high-speed internet, Wi-Fi, and cloud computing	Limited or no networking capabilities, no internet access

Q-24. Different types of computers are Analog, Digital and Hybrid. Describe each of them.

Analog, digital, and hybrid computers serve different purposes and work on distinct principles:

- 1. Analog Computers:** These are designed to handle continuously varying data. Unlike digital computers, which manipulate discrete numbers, analog computers perform calculations using physical quantities like voltage, pressure, or temperature. Commonly used in engineering and scientific applications such as weather forecasting and control systems.
- 2. Digital Computers:** The most common type, digital computers operate on discrete data, manipulating it into useful information. They use binary language (0s and 1s) and are highly versatile, capable of performing calculations, word processing, internet browsing, and more. Personal computers, laptops, and mainframes are examples.
- 3. Hybrid Computers:** These combine features of both analog and digital computers. Hybrid computers can process both continuous and discrete data. Often used in specialized applications like healthcare for monitoring heart rates (analog data) while also performing digital computations for diagnostics.

Each type has its own advantages and disadvantages, but digital computers are most prevalent due to their versatility and efficiency.

Q-25. Based on size & capacity, computer can be divided into Super, Mainframe, Mini and Microcomputers. What are the differences among them?

Computers can be categorized into four types based on size and capacity: Supercomputers, Mainframe Computers, Minicomputers, and Microcomputers. Here's how they differ:

- 1. Supercomputers:** These are the most powerful and largest computers, designed to perform complex calculations extremely fast. Ideal for tasks like climate simulation, nuclear simulations, and advanced research. They can occupy entire rooms and consume vast amounts of power.
- 2. Mainframe Computers:** Smaller than supercomputers but still large and powerful. Mainframes are used by organizations for bulk data processing and managing large databases. They can support multiple operating systems and are built for reliability and efficiency.
- 3. Minicomputers:** These are smaller and less powerful than mainframes but offer sufficient computing capabilities for small to medium-sized organizations. Often used for specific departmental or industrial tasks, like data acquisition and process control.

4. **Microcomputers:** These are the smallest and most common, typically designed for individual use. This category includes personal computers, laptops, and tablets. They are versatile, capable of various tasks from word processing to internet browsing.

Each category is designed for specific needs, varying in size, power consumption, processing speed, and cost.

Q-26. Briefly discuss the capabilities and limitations of a computer. (Dec-14, May-16, NOV-17)

Capabilities of a Computer:

1. **Speed:** Computers can process large amounts of data extremely quickly, often in fractions of a second.
2. **Accuracy:** Computers are highly accurate and can perform complex calculations without errors, provided the data and instructions are correct.
3. **Storage:** Modern computers have vast storage capacities, capable of holding terabytes of data.
4. **Versatility:** Computers can perform a wide range of tasks, from word processing and web browsing to complex scientific simulations.
5. **Automation:** Computers can execute pre-programmed tasks without human intervention, enhancing productivity.

Limitations of a Computer:

1. **Dependence on Power:** Computers need a continuous power supply, making them vulnerable to outages.
2. **Cost:** High-quality computers and software can be expensive.
3. **Complexity:** Some tasks require specialized knowledge to execute, creating a learning curve.
4. **Virus and Security Risks:** Computers are susceptible to malware, data breaches, and other cyber threats.
5. **Lack of Creativity:** While computers can process data, they cannot think creatively or make judgments.

Understanding these capabilities and limitations is essential for maximizing the benefits of computer usage.

Q-27. Why micro computers are also called as PC?

Microcomputers are often referred to as Personal Computers (PCs) because they are designed for individual use, unlike larger computers like mainframes and supercomputers, which are intended for organizational or specialized applications. The term "PC" encapsulates the essence of a microcomputer's purpose: a compact, affordable, and versatile machine that can be personalized to the user's specific needs.

In the early days of computing, the notion of having a computer in one's home was groundbreaking, and the term "Personal Computer" highlighted this individual accessibility. Microcomputers or PCs made computing accessible to the general public, fulfilling a range of functions from word processing, internet browsing, gaming, to basic data analysis. Their relatively lower cost and user-friendly interface make them ideal for personal or small business use. Therefore, the terms "microcomputer" and "PC" are often used interchangeably.

Q-28. What are the main features of laptop computer? (Dec-21)

Laptops are known for their portability and versatility. Here are their main features:

1. **Portability:** Compact design and built-in battery make it easy to carry and use anywhere.
2. **Performance:** Modern laptops offer processing speeds and storage comparable to desktop computers, suitable for a range of tasks from browsing to heavy-duty computing.
3. **Integrated Peripherals:** Built-in webcam, speakers, microphone, and touchpad eliminate the need for external devices for basic tasks.
4. **Connectivity:** Equipped with Wi-Fi, Bluetooth, and multiple ports like USB and HDMI for connecting to various devices and networks.
5. **Energy Efficiency:** Designed to consume less power than desktops, extending battery life.
6. **Flexibility:** Many laptops now offer touchscreen capabilities or 2-in-1 functionality, allowing them to function as tablets as well.

Laptops are ideal for those needing a balance of functionality and mobility.

Q-29. Describe the differences between minicomputer and mainframe computer. Dec-21

Feature	Minicomputer	Mainframe Computer
1. Definition	A mid-sized computer designed for small to medium-sized businesses or departments.	A powerful computer used for large-scale data processing and handling multiple tasks simultaneously in large organizations.
2. Size	Smaller than mainframes, but larger than microcomputers.	Large and may require a specialized room.
3. Processing Power	Moderate processing capabilities, suitable for specific tasks or departmental needs.	High processing power, designed for running complex applications and handling large databases.
4. Cost	Less expensive, making them accessible for smaller organizations.	Generally more expensive due to their superior capabilities and features.
5. User Accessibility	Designed to serve multiple users, but fewer compared to mainframes.	Capable of supporting hundreds or even thousands of users simultaneously.

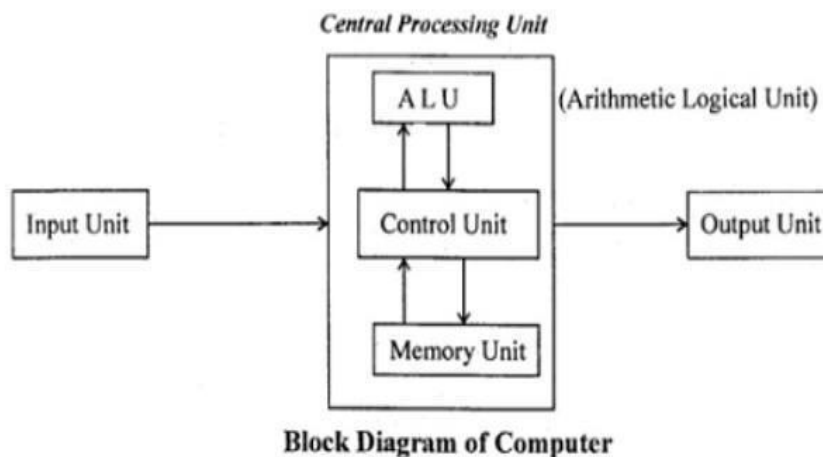
Q-30. Discuss the functions of CPU and main memory. BPE-96th.

The Central Processing Unit (CPU) serves as the brain of a computer, executing instructions and coordinating data processing tasks. It performs functions such as arithmetic calculations, logical comparisons, and managing data flow between various components. The CPU interprets instructions from programs and controls the overall execution of tasks.

Main memory, typically RAM (Random Access Memory), acts as a temporary storage area for data and instructions actively used by the CPU. It enables quick access to information, facilitating faster data retrieval and manipulation. Main memory is crucial for the execution of programs and tasks, providing the CPU with the necessary data and instructions for efficient processing.

Q-31. Draw the block diagram of a Micro-computer and describe its control unit.

Or, Draw the basic architecture of the computer in blocks and describe its input, output and central processing unit?



A microcomputer typically consists of three main components: the Central Processing Unit (CPU), Main Memory, and Input/Output devices.

1. **Central Processing Unit (CPU):** The CPU is the brain of the microcomputer. It performs arithmetic and logical operations, executes instructions, and controls the overall operation of the system. It consists of:
 - **Control Unit:** The control unit manages the execution of instructions. It decodes instructions fetched from memory, coordinates data flow within the CPU, and controls the timing of operations.
 - **Arithmetic Logic Unit (ALU):** The ALU performs mathematical and logical operations on data.
 - **Registers:** These are high-speed storage units used for temporary data storage during processing.
2. **Main Memory:** Main memory (RAM - Random Access Memory) stores data and instructions that the CPU needs to perform its operations. It's volatile, meaning it loses its contents when the computer is powered off.
3. **Input/Output (I/O) Devices:** These devices facilitate communication between the computer and the external world. Examples include keyboards, monitors, mice, printers, and storage devices.

Q-32. What is computer memory? Briefly discuss different types of computer memory?

Or, Describe Primary and Secondary Memory with example. Or, what are the differences between main memory and auxiliary memory?

Or, what is Secondary Memory. (Dec-22-95th, 11, May-12, NOV-11, Dec-15, June-21, JUN-13 DEC-13, June- 15, NOV-17, Dec-18, Dec-19, June-20)

Computer memory serves as the storage area where data and instructions are kept either temporarily or permanently for processing. It can be classified into two main types:

1. **Primary Memory:** Also known as Main Memory or RAM (Random Access Memory), this is where data and instructions are temporarily stored for quick access by the CPU. Being volatile, it loses its content when the computer is turned off. Examples include RAM and ROM (Read-Only Memory).
2. **Secondary Memory:** This is non-volatile storage that retains data even when the computer is off. It's used for long-term storage of data and is slower compared to primary memory. Examples include Hard Disk Drives (HDD), Solid State Drives (SSD), and external storage devices like USB drives.

Differences between Main and Auxiliary (Secondary) Memory:

- Main memory is faster but volatile, while secondary memory is slower but non-volatile.
- Main memory is generally more expensive per unit of storage.
- Main memory directly interacts with the CPU, while secondary memory does not.

Understanding these types of memory helps in appreciating how data storage and access are managed in a computer system.

Q-33. What is Cache memory? (Dec-19) BPE-96th.

Cache memory is a small, fast type of volatile computer memory that provides high-speed data access to the processor and improves the speed and performance of the computer. It acts as a buffer between the CPU and the main memory (RAM). When the CPU needs to access data, it first checks whether the data is in the cache. If the required data is found in the cache (this is called a cache hit), it skips accessing the slower main memory. Cache memory is faster but also more expensive than main RAM, so computers usually have a limited amount of cache. It's designed to temporarily store copies of frequently accessed data, making data retrieval faster and more efficient.

Q-34. What do you understand by storage devices? Name various storage devices. (Dec 14)

Storage devices are hardware components used to save, store, and retrieve data. They allow users to keep data long-term, either for backup, transfer, or archival purposes. Data stored on these devices can be retrieved even after the computer is turned off, as they offer non-volatile storage.

Various storage devices include:

1. **Hard Disk Drives (HDD):** Magnetic storage devices used as the primary storage in computers.
2. **Solid State Drives (SSD):** Faster than HDDs, they use flash memory and have no moving parts.
3. **Optical Drives:** Devices like CD, DVD, and Blu-ray drives.

4. **USB Flash Drives:** Portable devices for data transfer.
5. **Memory Cards:** Used in cameras, phones, and other handheld devices.
6. **External Hard Drives:** HDDs or SSDs in external cases, connected via USB or other ports.

Each storage device varies in capacity, speed, and functionality.

Q-35. What are the differences amongst Dot, Jet and Laser printers? Dec-12, June-20

Dot Matrix, Inkjet, and Laser printers serve the same basic function—printing—but they do so in very different ways:

1. **Dot Matrix Printers:** These are old-school printers that use pins striking against an ink ribbon to form characters. They are noisy, slow, and offer lower quality but are very durable and can print multi-page forms.
2. **Inkjet Printers:** These printers spray tiny droplets of ink onto paper, providing high-quality text and images. They are relatively inexpensive but the cost of ink can add up.
3. **Laser Printers:** These use a laser beam to transfer an image onto a drum, which then transfers toner onto paper. They offer the highest print quality and speed among the three and are more cost-effective for high-volume printing.

Each type has its advantages and disadvantages, largely dictated by what you need to print.

Q-36. What are the main functions of RAM, BIOS and Hard disk? (Jul-19) 47

1. **RAM (Random Access Memory):** RAM serves as the computer's "working" memory, temporarily storing data and instructions for quick access by the CPU while the computer is on. It's volatile, meaning it loses its contents when the system is turned off. It's essential for multitasking and running complex applications.
2. **BIOS (Basic Input/Output System):** BIOS is the firmware that initializes and tests hardware components during boot-up and facilitates communication between the operating system and hardware. It's stored on a chip on the motherboard and is non-volatile, retaining its information even when powered off.
3. **Hard Disk:** The hard disk is a non-volatile storage device used for long-term data storage. It houses the operating system, software applications, and user files. Unlike RAM, the data remains even when the computer is turned off, making it crucial for preserving important information.

Each of these components plays a unique role in the computer's operation.

Q-37. What do you understand by BIOS and discuss about its role in using a computer.

BIOS, which stands for Basic Input /Output System, is the foundational firmware of a computer, embedded on a chip on the motherboard. It initializes and tests the system hardware components during the boot-up process before handing over control to the operating system.

Role in using a computer:

1. **Initialization:** Upon powering on, BIOS starts the POST (Power-On Self-Test) to ensure all hardware components are functional.
2. **Boot Sequence:** It determines which devices (e.g., hard drive, USB, CD-ROM) the computer will try to boot from.
3. **Hardware Configuration:** Using the BIOS setup utility, users can modify hardware settings, such as system clock or boot order.
4. **OS Handoff:** Once hardware checks are complete, BIOS locates the bootable device and hands over control to the operating system.

In essence, BIOS acts as a bridge between the computer's hardware and software, ensuring they work in harmony.

Q-38. Give a comparative discussion on Hard drive and Pen drive. (Dec-18)

Or, Give a comparative discussion on floppy drive, hard drive and pen drive. Dec-22.

1. **Hard Drive:** Typically internal and used for primary storage, hard drives offer larger capacity (up to multiple terabytes) and are generally faster but less portable. They use magnetic storage and contain spinning disks.

2. **Pen Drive:** Also known as a USB flash drive, it's smaller, portable, and used for transferring files. Capacity ranges from a few GBs to 1TB. It uses flash memory and has no moving parts, making it durable.
3. **Floppy Drive:** Outdated but once a standard, these offer limited storage (1.44 MB in 3.5-inch disks) and slow speeds. Like hard drives, they use magnetic storage but are far less reliable and efficient.

Comparisons:

- **Portability:** Pen drives win, hard drives are semi-portable, and floppy drives are mostly obsolete.
- **Capacity:** Hard drives offer the most storage, followed by pen drives and then floppy drives.
- **Speed:** Hard drives are generally faster, with pen drives being variable and floppy drives being the slowest.
- **Durability:** Pen drives are most durable due to no moving parts, followed by hard drives and floppy drives.

Each has its advantages and drawbacks, tailored for specific needs and applications.

Q-39. What is microprocessor? What do you mean by Intel dual core 2.4 GHz? (2011)

A **microprocessor** is an integrated circuit that performs the functions of a CPU on a single chip. It executes instructions, performs calculations, and manages data, essentially serving as the "brain" of a computer or other electronic device.

"Intel Dual Core 2.4 GHz" refers to a specific type of microprocessor made by Intel. Here's what each part means:

- **Intel:** The manufacturer of the chip.
- **Dual Core:** Indicates the processor has two cores, essentially like having two microprocessors in one. This allows for better multitasking and improved performance for certain applications.
- **2.4 GHz:** Stands for gigahertz, which is a unit of frequency. It indicates the speed at which the processor can execute instructions. In this case, 2.4 billion cycles per second.

So, an Intel Dual Core 2.4 GHz processor is a two-core chip from Intel that operates at a speed of 2.4 GHz.

Q-40. What is an operating system? Describe the major functions of operating system.

Or, Describe the major functions of operating system?

Or, Name operating system for microcomputer and mobile. (NOV-17, June, 20, Nov-11, Dec-12, June-15, Dec-22-95th)

An **operating system (OS)** is software that acts as an intermediary between computer hardware and the computer user. It provides a user-friendly environment and controls the computer hardware so that software applications can function.

Major functions of an operating system:

1. **Process Management:** Handles the creation, scheduling, and termination of processes.
2. **Memory Management:** Manages the computer's RAM, including allocation to running programs.
3. **File System Management:** Organizes, stores, retrieves, and manages files on storage devices.
4. **Security:** Protects information against unauthorized access and potential threats.
5. **I/O System Management:** Manages input and output devices like keyboards and printers.
6. **User Interface:** Provides an interface, either command-line or graphical, for users to interact with the computer.

For **microcomputers**, popular OSs include Microsoft Windows, macOS, and Linux. For **mobile devices**, prominent OSs are Android and iOS.

Q-41. Discuss about Desktop operating system and Network operating system with example. (June-15, Dec-18)

A **Desktop Operating System (Desktop OS)** is designed for personal or business use on standalone computers. Its main focus is to offer a user-friendly interface and manage individual system hardware and local resources.

Examples:

- Microsoft Windows (e.g., Windows 10)
- macOS
- Linux distributions like Ubuntu

A **Network Operating System (NOS)** is software that manages and coordinates networked computers, facilitating communication, resource sharing, and data transfers between interconnected devices. It provides tools for setting up servers, administering networks, and managing users and security.

Examples:

- Windows Server (e.g., Windows Server 2019)
- Novell NetWare
- Linux server distributions like Red Hat Enterprise Linux

While both types manage hardware and software resources, the Desktop OS is optimized for single-user environments, whereas a NOS is tailored for multi-user, networked environments.

Q-42. Define software and hardware with example? (Nov-11)

Hardware refers to the physical components of a computer system that you can touch and feel. These components work together to run the computer and execute software commands.

Example:

- CPU (Central Processing Unit), hard drive, keyboard, mouse, monitor, RAM (Random Access Memory).

Software, on the other hand, consists of sets of instructions that tell the hardware what to do. Unlike hardware, you can't physically touch software, but you interact with it during computing tasks.

Example:

- Operating Systems like Windows or macOS, applications like Microsoft Word or Photoshop, and utility programs like antivirus software.

In essence, hardware provides the physical capabilities of a computing system, while software provides the instructions and applications needed to execute tasks and provide functionality. Both are essential for a computer system to operate effectively.

Q-43. What are the computer hardware and devices? Describe the ROM with its characteristics. BPE-97th.

Computer hardware comprises physical components essential for computing. Key devices include the Central Processing Unit (CPU), responsible for processing instructions, and Random Access Memory (RAM) for temporary data storage. Storage devices like Hard Disk Drives (HDD) store data permanently. Input devices like keyboards and mice allow user interaction, while output devices like monitors and printers display and produce results. Motherboards provide a central platform for hardware connections. Graphics Processing Units (GPUs) handle graphical computations. Peripheral devices like USB drives extend functionality. Network components include network cards and routers for communication. Altogether, these hardware elements create a functional computer system.

CPU Functions:

1. **Instruction Execution:** Executes program instructions, performing arithmetic and logic operations.
2. **Data Processing:** Manages data processing tasks, including calculations and comparisons.
3. **Control Unit:** Coordinates and controls the flow of data and instructions within the computer.
4. **Registers:** Temporarily stores data and instructions for quick access during processing.
5. **Clock Management:** Synchronizes and regulates operations through a clock, ensuring systematic execution.

Main Memory Functions:

1. **Data Storage:** Temporarily holds data actively used by the CPU during processing.
2. **Program Execution:** Stores instructions for programs and applications to facilitate their execution.
3. **Rapid Access:** Enables quick retrieval and modification of data during operations.
4. **Temporary Storage:** Acts as a working space for the CPU, providing high-speed access to information.
5. **Volatile Nature:** Loses stored data when the computer is powered off.

Q-44. Describe the recording method in compact disc. (10)

A **Compact Disc (CD)** stores data through a series of tiny indentations, or "pits," and flat areas, known as "lands," on its reflective surface. The process of reading this data involves a laser beam that scans the disc's surface.

When the laser encounters a pit, it is scattered, whereas when it hits a land, it is reflected back to a sensor. The changes between lands (reflective) and pits (non-reflective) represent binary data (1s and 0s). The continuous transition between these pits and lands as the CD spins is translated into electrical signals, which are then processed to reproduce the stored data, be it audio, video, or other information.

Q-45. Explain the mechanism of storing data in hard disk. (Dec-14)

A hard disk stores data magnetically on circular platters coated with a magnetic material. These platters spin rapidly, and a read/write head, positioned very close to the platter surface but not touching it, accesses the data.

Data is written by sending an electrical current through the read/write head, generating a local magnetic field. This field alters the magnetic orientation of a tiny region on the platter to represent a binary '0' or '1'. To read data, the process is reversed: as the read/write head passes over these magnetic regions, it detects changes in magnetic orientation, translating them back into electrical signals, which are then processed as binary data. The precise positioning of the platters and heads allows for data to be organized into tracks and sectors.

Q-46. Describe the factors affecting processing speed of computers. (Dec-21)

The processing speed of computers is influenced by several factors:

1. **Clock Speed:** Measured in Hertz (Hz), it indicates the number of cycles a CPU can execute per second. A higher clock speed often results in faster performance.
2. **Number of Cores:** Multi-core CPUs can process multiple instructions simultaneously, enhancing multitasking capabilities.
3. **Cache Memory:** Larger cache allows more immediate data storage for the CPU, reducing the time it spends fetching data from main RAM.
4. **RAM:** More RAM can handle more data simultaneously, reducing reliance on slower storage options.
5. **Bus Speed:** Determines how quickly data travels between components. A faster bus speed can speed up data transfers.
6. **Architecture:** The design and efficiency of the CPU's internal architecture can greatly influence its speed and efficiency.

Other factors like software optimization, temperature, and quality of components also play roles.

Q-47. What is a mother board?

A **motherboard** is the main circuit board inside a computer that acts as the central hub connecting all other components. It holds the CPU (Central Processing Unit), RAM (Random Access Memory), storage interfaces for hard drives or SSDs, expansion slots for additional hardware like graphics cards, and ports for external devices like keyboards and mice. The motherboard also includes various chips and controllers to manage data transfers between these components. It provides the electrical pathways that enable components to communicate with each other. Essentially, the motherboard is the backbone of a computer, coordinating how all other parts work together.

Q-48. Why an UPS is used with a computer?

An UPS, or Uninterruptible Power Supply, is used with a computer to keep it running when there's a power outage. Imagine you're working on something important and suddenly the electricity goes off. Without an UPS, you'd lose all your unsaved work and the computer could even get damaged. The UPS gives you extra time to save your work and shut down the computer properly. It also helps protect against power surges, which can harm your computer's components. So, using an UPS is like having a safety net for your computer and your data when power issues happen.

Q-49. What stand for CPU? What is its use in computer?

"CPU" stands for "Central Processing Unit." It's often called the "brain" of the computer because it's responsible for carrying out instructions from software.

When you run a program, play a game, or even just move your mouse, the CPU is working to process those actions. Every task, big or small, gets broken down into a series of instructions, and the CPU processes them at lightning-fast speeds. So, if the computer was a person, the CPU would be its thinker, making decisions and getting things done based on the instructions it receives from the software you're using.

Q-50. Narrate characteristics of each of the Main, Cache and Secondary memory.

1. Main Memory (RAM)

- RAM stands for Random Access Memory. It's like the computer's workbench where it keeps all the things it's currently using or working on. When you open an app, it's loaded into RAM so it works faster. But, when you turn off the computer, everything in RAM goes away.

2. Cache Memory

- Cache is even faster than RAM but much smaller. It's like the computer's pocket where it keeps really important stuff it needs all the time, so it doesn't have to go looking for it. Cache helps make the CPU work faster by storing bits of data it uses a lot.

3. Secondary Memory

- This is where your computer stores things when it's not using them, like your photos, music, and programs. Examples are hard drives and SSDs (Solid State Drives). Even when you turn off the computer, the stuff in secondary memory stays there.

Each type of memory serves a unique role to make your computer fast and efficient!

Q-51. What are CISC and RISC processor? Which processor is used in a high-end IBM server?

1. CISC Processor

- CISC stands for Complex Instruction Set Computer. It's a type of processor that can do lots of complicated tasks in just one instruction. This makes it easier to program but can sometimes be slower because each instruction can do a lot.

2. RISC Processor

- RISC stands for Reduced Instruction Set Computer. Unlike CISC, RISC does simpler tasks, but it does them super-fast. Each instruction does only one thing, so it can process them really quickly.

High-End IBM Server

- In high-end IBM servers, you'll often find RISC processors. These processors are usually more efficient and faster for server tasks. They're designed to handle a lot of simple tasks quickly, which is really useful for servers that have to manage a lot of data and connections at the same time.

Q-52. What are differences among Floppy disk, Hard disk, CD and Pen drive?

1. Floppy Disk

- These are old-school storage devices, like a small square. They can hold very little data, around 1.44 MB. Not used much today.

2. Hard Disk

- It's like your computer's big closet where it stores everything. Can hold tons of data, from hundreds of GB to several TB. It's inside your computer.

3. CD

- It's a round disk that you can put in a CD drive. Holds around 700 MB. You can listen to music or install software from it. Mostly being replaced by digital downloads.

4. Pen Drive

- Also known as a USB stick, it's small and portable. You can carry it around and plug it into different computers. Holds from a few GB to TBs.

They're all for storing stuff but differ in size, speed, and how you use them.

Q-53. Differentiate between a dot matrix and a laser printer.

Feature	Dot Matrix Printer	Laser Printer
1. Printing Technology	Uses pins to strike ink ribbon	Uses laser beams and toner
2. Speed	Slower	Faster
3. Print Quality	Lower, good for text	High, good for text and graphics
4. Noise Level	Noisy	Quiet
5. Operating Cost	Generally cheaper upfront, but ink is costly	More expensive upfront, but toner lasts longer

Q-54. What are the functionalities of an operating system?

An operating system (OS) is like the boss of a computer. Here's what it does

1. **Start Up:** It wakes up the computer and checks everything's okay when you turn it on.
2. **Manager:** It keeps an eye on all the computer's parts, making sure they work together.
3. **Organizer:** Helps you find, store, and organize your files, like photos or documents.
4. **Gatekeeper:** Lets you run apps and programs, and decides which ones get to use the computer's memory and how much.
5. **Security Guard:** Keeps bad stuff (like viruses) out and lets you set passwords.
6. **Translator:** Helps software and hardware "talk" to each other.

Basically, without an OS, using a computer would be really, really hard!

Q-55. Discuss about the following: (i) Cheque sorting and balancing system (ii) Document storage and retrieval systems. (Dec.21)

1. Cheque Sorting and Balancing System

- Imagine you work in a bank and get hundreds of cheques every day. You need to sort them by account number, bank branch, or some other rule. A cheque sorting system does this automatically, way faster than a human. Then, it checks ("balances") to make sure all the money adds up right, so there are no mistakes.

2. Document Storage and Retrieval Systems

- Think of a big, digital filing cabinet that holds tons of documents. You can put things in it like reports, contracts, or letters. When you need one later, you just type in what you're looking for, and it finds it for you instantly. It's way easier than digging through stacks of paper.

Both systems make life easier and more organized, especially in places like offices and banks.

Q-56. Describe the functions of various software mentioned below-Operating system, Application software.

Or, Define system software and application software with examples and their application. BPE-96th. BPE-98th.

Or, What is Computer Software? Describe different types of software. (MAY-12, JUNE 13, DEC-13, June-14, Dec-14, Dec-15, Nov 16, Dec-19, June-21, Dec-21, Jul-22)

1. Operating System (System Software)

- Think of this as the "boss" of your computer. It helps all the parts of your computer work together. Examples include Windows, macOS, and Linux. It wakes up the computer, manages files, and lets you run other software.

2. Application Software

- These are programs that let you do specific things on your computer, like writing a document or playing a game. Examples are Microsoft Word for writing and Photoshop for photo editing. You use these to get stuff done or have fun.

Computer software is like the 'brain' that tells the computer what to do. There are two main kinds: System software runs the computer, and application software lets you do things on the computer. Without software, a computer is like a car with no engine. It won't work!

Q-57. What is software? BPE-96th.

Software refers to the set of instructions or programs that tell a computer how to perform specific tasks. It encompasses applications, operating systems, and utility programs. A simple example is a word processing software like Microsoft Word, which allows users to create, edit, and format documents. Operating systems like Windows or macOS are also software, managing computer hardware and providing a user interface. In essence, software enables computers to execute various functions, from running applications to managing hardware resources, making it an integral part of the computing experience.

Q-58. What is API? (Jul-22) BPE-98th.

API stands for Application Programming Interface. Imagine you have two different apps or software and you want them to talk to each other. An API is like a translator that helps them understand what the other is saying. It's a set of rules and tools that lets one piece of software ask another to do something. For example, when you book a flight through a travel app, the app uses an API to get information from the airline's system to show you flight times and prices. So, an API helps different software programs work together to make things easier for you!

Q-59. Briefly discuss about the functionalities of a modern core banking software.

Or, what are the main features of the modern core banking software?

Or, Discuss about the functions of a modern core banking software. (Dec-14, Dec-15, May-16, June-17, NOV-17, Jul-18, Jul-19, June- 20, Dec-21, Jul-22)

Modern core banking software is like the brain of a bank, running on computers. Here's what it can do:

1. **Account Management:** Helps you open, close, and manage your accounts like savings or checking.
2. **Money Transfer:** Lets you move money between accounts or send to other people easily.
3. **Loan Processing:** Helps you apply for loans and tracks all the details.
4. **ATM and Card Services:** Manages everything about your debit or credit card, like pin changes.
5. **Online Banking:** Allows you to check your account and pay bills from your phone or computer.

So, it makes everything at the bank work smoothly, letting you handle your money without a headache!

Q-60. Name 2 core banking software?

Or, Name four core banking software being used in Bangladesh banking sector? (2011, Nov-11, Dec, 13)

1. **Temenos T24:** This is a popular core banking software used by some banks in Bangladesh. It handles things like account management, loans, and online banking.
2. **Infosys Finacle:** Another commonly used software in Bangladesh. It also does stuff like managing your accounts, helping you get loans, and making online banking easy.
3. **Oracle FLEXCUBE:** This one is used for all kinds of banking services, from basic account stuff to more complex financial products.
4. **SAP for Banking:** This software helps banks manage their business, including customer accounts and financial products.

These software help banks in Bangladesh run smoothly, making it easier for people to manage their money.

Q-61. Compare functionalities of Core Banking Software and MFS software. BPE-97th.

Core Banking Software:

1. **Comprehensive Banking Operations:** Manages traditional banking functions like deposits, loans, and transactions.
2. **Account Management:** Handles customer accounts, ensuring accuracy and security.
3. **Integrated Platform:** Centralized system connecting branches for seamless banking operations.
4. **Compliance and Reporting:** Ensures adherence to banking regulations and generates financial reports.

Mobile Financial Services (MFS) Software:

1. **Digital Transactions:** Facilitates mobile-based financial transactions like payments and fund transfers.
2. **Wallet Management:** Manages digital wallets for users to store and transact money.
3. **Financial Inclusion:** Targets unbanked populations, providing access to basic financial services via mobile devices.
4. **Quick and Convenient:** Emphasizes speed and accessibility, enabling users to perform transactions anytime, anywhere.

Q-62. Briefly discuss about the backup strategy of a core banking system? 2010.

A **backup strategy** for a core banking system is like having a "safety net" for all the bank's important data. Imagine if something bad happens, like a computer crash or a power outage. The bank doesn't want to lose all the information about customers' money, loans, and accounts. So, they regularly make extra copies of all this data and store it in a secure place, sometimes even in multiple places. Some backups happen every night, and some even happen in real-time as changes are made. This way, if something goes wrong, the bank can use the backup to get everything back to normal quickly.

Q-63. What do you understand by ERP software?

Or, briefly discuss about the following: ERP software. (Nov-17, Jul-19,22, June-2021)

ERP stands for Enterprise Resource Planning. Think of it like the control center for a business. It's a software that helps a company manage all its different jobs in one place. Whether it's tracking sales, keeping an eye on inventory, managing employees, or handling customer orders, ERP brings it all together. Instead of using different software for different tasks, a company can use ERP to see and manage everything from one dashboard. This makes running a business smoother and helps everyone stay on the same page. So, ERP is like an all-in-one tool for managing a company.

Q-64. Modern banks and FLs are embracing Enterprise Resource Planning (ERP) systems to streamline operations. Propose a strategy for implementing an integrated banking ERP system that covers core banking functions, HR management and inventory control where data synchronization, training and customization challenges are addressed. How this system can improve data accuracy, decision making and operational efficiency. BPE-97th.

Integrated Banking ERP Implementation Strategy:

1. **Phased Implementation:** Introduce modules gradually to manage challenges in data synchronization, training, and customization.
2. **Comprehensive Training Programs:** Conduct extensive training sessions for staff to ensure proficiency in utilizing the ERP system.
3. **Customization Options:** Offer customizable features to accommodate diverse banking needs, aligning with specific requirements.
4. **Data Synchronization Protocols:** Implement robust data synchronization protocols to maintain consistency across modules.
5. **Real-time Monitoring:** Facilitate real-time monitoring of core banking functions, HR activities, and inventory control for enhanced decision-making.
6. **Improved Data Accuracy:** Minimize errors and discrepancies through integrated data management, promoting accuracy in financial reporting.
7. **Enhanced Decision Making:** Provide analytics tools for informed decision-making, leveraging consolidated data from various departments.
8. **Operational Efficiency:** Streamline operations by automating repetitive tasks, reducing manual efforts, and enhancing overall efficiency.

Q-65. Briefly discuss about the following: i) Firmware; ii) Communication software (Jul, 22)

1. **Firmware:** Imagine your smartphone or TV remote. They both have special built-in software that makes them work right out of the box. That's called firmware. It's like the brain of the device, telling it how to function. Unlike other software that you can easily update or delete, firmware stays put and only gets updated sometimes.
2. **Communication Software:** This is the software that lets devices talk to each other. For example, your email app is a type of communication software. It lets you send messages to other people's computers or phones. Skype and Zoom are also communication software; they let you video chat with other people.

Both firmware and communication software make our gadgets smarter and help us connect with the world.

Q-66. What benefits banks may gain by using Data warehouse, Data mining and Business intelligence software? (June-17, Jul-19)

1. **Data Warehouse:** Think of this like a big, organized closet where banks store all kinds of information. It makes it easier to find what they need later.
2. **Data Mining:** This is like having a smart detective who can quickly go through that closet and find useful clues. Banks can figure out what customers like or dislike, and maybe even spot fraud.
3. **Business Intelligence Software:** Imagine a wise advisor that takes those clues and helps make smart decisions. This software helps banks understand trends and make plans for the future.

So, with these tools, banks can better understand their customers, make smarter choices, and keep everything running smoothly.

Q-67. Describe the stages of software development life-cycle. (MAY-12, JUNE-13, June14, Nov-16, Jul-19, Dec-19, June-21, Jul-22)

Making software is like building a house, and it goes through different stages:

1. **Planning:** Before you build, you need a plan. Decide what the software should do and how to make it.
2. **Design:** Now draw a blueprint. Decide how each part will work and how they will connect.
3. **Development:** Time to build! Programmers write the code to make the software work.
4. **Testing:** Before you move in, you check for leaks and cracks. In software, this means finding and fixing bugs.
5. **Deployment:** The software is now ready to be used by people. Install it on computers or make it available for download.
6. **Maintenance:** Just like a house, software needs upkeep. Keep fixing bugs and making improvements.

That's how software goes from an idea to something we can use.

Q-68. How Internet Banking works?

Internet banking is like a bank branch you can visit without leaving home. It works through a website or an app on your phone. First, you need to set up your online account with your bank. They'll give you a username and password to log in securely. Once you're in, you can do lots of things: check your balance, pay bills, transfer money, and more. All you need is an internet connection. It's like having a mini-bank right in your pocket or on your computer. And don't worry, it's usually very secure; banks use special technology to keep your money and info safe.

Q-69. Name five input devices and 3 output devices. Describe printer, keyboard and mouse.

Input Devices:

1. Keyboard
2. Mouse
3. Touchscreen
4. Microphone
5. Scanner

Output Devices:

1. Monitor

2. Printer
3. Speaker

Keyboard: It's like a typewriter for your computer. You press keys to type words, numbers, or symbols. It's how you chat with friends online or write emails.

Mouse: A small gadget you move around to control a pointer on your screen. You click on things to open them or make choices.

Printer: Think of it as a machine that takes what's on your screen and puts it on paper. Whether it's a picture or a document, the printer makes it real.

Input devices let you tell the computer what to do, and output devices show you what the computer has done.

Q-70. Can a customer receive cash from Internet Banking? Why?

No, you can't directly receive cash from Internet Banking. Think of Internet Banking like a remote control for your bank account. You can move money around, pay bills, and check your balance, but it can't physically hand you cash. For that, you have to visit an ATM or go to a bank branch. Internet Banking is just a tool to manage your money online, but it can't do things that require physical actions like giving you cash. So, if you need cash in hand, you'll have to step out and get it the traditional way.

Q-71. What banking activities a customer can perform using Internet Banking?

With Internet Banking, you can do a bunch of banking stuff without going to the branch. You can:

1. **Check Balance:** See how much money you've got in your account.
2. **Pay Bills:** No more standing in lines. Pay your electricity, phone, or other bills online.
3. **Transfer Money:** Send money to friends, family, or even to another one of your accounts.
4. **View Statements:** Look at your past transactions, like what you spent and received.
5. **Order Checks:** Need new checks? Order them without a call or visit to the bank.

So, you get to do a lot of your regular banking tasks right from your couch.

Q-72. What are the differences between a system software and application software?

Feature	System Software	Application Software
1. Definition	Software that controls computer hardware	Software that helps users perform tasks
2. Purpose	Manages system operations	Solves specific problems or tasks
3. Examples	Operating System, Device Drivers	Microsoft Word, Games, Photoshop
4. User Interaction	Generally, runs in the background	Directly interacts with the user
5. Dependency	Independent and the first to be loaded	Depends on system software to run

Q-73. Why a database is used along with a program?

A **database** is used with a program to organize and store data in a way that makes it easy to access, manage, and update. Think of a program like a chef and the database as the pantry. The chef can quickly find ingredients (data) from the pantry (database) to make a meal (perform a task). Whether it's customer details for a business, scores in a game, or patient records in a hospital, a database helps the program function efficiently. It allows for quick searches, keeps the data secure, and can handle a lot of information at once. So, a database makes a program more powerful and useful.

Q-74. Describe the following: a) DBA, b) Backup c) Database Management System

a) DBA (Database Administrator): A DBA is like a librarian for databases. They set up, manage, and keep the database running smoothly. They're in charge of security, performance, and making sure data is always available.

b) Backup: This is a copy of your data stored in a separate location. Think of it like a spare key to your house. If something bad happens to your main database, like data loss or corruption, you can restore the data from the backup.

c) Database Management System (DBMS): This is the software that manages databases. It helps you create, read, update, and delete data. It's like the operating system for your database, providing tools to interact with the data easily.

Q-75. Define the followings: a) Internet, b) IP, c) DNS, d) Hyperlink, e) URL, f) email. BPE-98th

a) Internet: A global network of computers that can communicate with each other. Think of it as a giant web where you can find information, talk to people, or watch videos.

b) IP (Internet Protocol): It's like the street address for your computer on the Internet. It helps to route data to the right place.

c) DNS (Domain Name System): It translates human-friendly website names like "google.com" into IP addresses that computers understand.

d) Hyperlink: A clickable piece of text or image on a webpage that takes you to another page or file. It's like a door to another room on the Internet.

e) URL (Uniform Resource Locator): The full web address you type into your browser to visit a website, like "<https://www.google.com>."

f) Email (Electronic Mail): A way to send and receive messages through the Internet. It's like digital postal mail but much faster.

Q-76. Identify differences between IPv4 and IPv6?

Feature	IPv4	IPv6
Address Length	32-bit	128-bit
Notation	Dotted Decimal	Hexadecimal
Header Length	Variable	Fixed
Security	Optional	Built-in
Address Space	Over 4 billion	Massively Larger

- 1. Address Length:** IPv4 uses 32-bit addresses, while IPv6 uses 128-bit addresses, offering more possible addresses.
- 2. Notation:** IPv4 addresses are written in dotted decimal format (e.g., 192.0.2.1). IPv6 uses hexadecimal (e.g., 2001:db8::1).
- 3. Header Length:** IPv4 headers can be variable in length, while IPv6 headers are fixed at 40 bytes, simplifying processing.
- 4. Security:** Security in IPv4 is optional and usually provided by external software. IPv6 has built-in security features like IPsec.
- 5. Address Space:** IPv4 offers over 4 billion addresses, but they're running out. IPv6 provides a vastly larger address space.

Q-77. What is World Wide Web? What is the basic difference between www and Internet?

The **World Wide Web (WWW)** is a system of interlinked hypertext documents and multimedia content that can be accessed over the Internet using web browsers. It's a way to navigate the vast information available on the Internet.

The basic difference between WWW and the Internet is scope. The Internet is a global network of networks, enabling various forms of communication like email, file transfer, and more. The WWW is just one service on the Internet, specifically designed for browsing web pages. The Internet is the infrastructure, and the WWW is a service that runs on that infrastructure. [

Q-78. What are the benefits of digitization? (Jul-22)

Digitization offers multiple benefits like speed, efficiency, and cost savings. It makes data easily searchable and accessible, helping businesses make quicker decisions. Digitization also reduces the need for physical storage, saving space and cutting costs. It enhances collaboration, as digital files can be shared instantly with team members across different locations. Digitization is eco-friendly, reducing the need for paper and other physical resources. It also improves security, as digital files can be encrypted and protected more easily than physical files. Overall, digitization streamlines operations, making them faster, more efficient, and often more customer-friendly.

Q-79. What is meant by machine language? Distinguish between machine language, assembly language and high-level language. (Nov-16).

Machine language is the lowest level of programming language, represented by binary codes that a computer's hardware can execute directly.

1. **Machine Language:**
 - **What:** Series of binary codes (1s and 0s).
 - **Usage:** Directly understood by computer hardware.
 - **Example:** 101100001011.
2. **Assembly Language:**
 - **What:** Uses symbolic instructions.
 - **Usage:** Easier for humans to read than machine language, but requires an assembler to convert it into machine code.
 - **Example:** MOV, ADD, JMP.
3. **High-Level Language:**
 - **What:** Uses English-like syntax.
 - **Usage:** Easier for programmers to read and write. Requires compilers or interpreters to translate into machine code.
 - **Example:** Python, Java, C++.

Q-80. Describe the features of fourth generation languages. Name any two languages others generation. (June-21 Dec-22-95th)

Fourth-generation languages (4GL) are designed to be closer to human language and simpler to use than traditional programming languages. They focus on specific tasks like database management or report generation. 4GLs often allow users to write programs using fewer lines of code and usually have built-in features to make common tasks easier.

Features:

1. **User-friendly:** Easier to learn and use.
2. **Task-specific:** Built for specialized jobs like querying databases.
3. **Less Coding:** Achieve results with fewer lines of code.
4. **Faster Development:** Quicker to write, test, and deploy programs.

Two languages:

1. SQL (Structured Query Language) - for database management.
2. MATLAB - used in scientific and engineering tasks.

Q-81. Describe the advantages and disadvantages of machine language. Dec-19.

Advantages of Machine Language:

1. **Speed:** It's the fastest because it's understood directly by the computer hardware.
2. **Efficiency:** Uses less memory and executes tasks without extra layers of translation.

Disadvantages of Machine Language:

1. **Hard to Use:** Writing in 1s and 0s is not user-friendly; very hard for humans to read or write.
2. **Error-Prone:** Easy to make mistakes, and debugging is difficult.
3. **Machine-Specific:** Code usually works only on the type of computer it was written for; not portable to other systems.

Q-82. Distinguish between compiler, interpreter and assembler. (Dec-14, Dec-21)

1. **Compiler:**
 - **What:** Translates all code from a high-level language (like C++) into machine code at once.
 - **When:** Before running the program.
 - **Example:** C++, Java.
2. **Interpreter:**
 - **What:** Translates high-level code into machine code line-by-line while the program is running.
 - **When:** During execution.
 - **Example:** Python, JavaScript.
3. **Assembler:**
 - **What:** Translates assembly language into machine code.
 - **When:** Before running the program.
 - **Example:** Assembly code to machine code.

In short, a compiler translates all code before running, an interpreter translates while running, and an assembler turns assembly code into machine code.

Q-83. What is the use case of DBMS in a bank? A bank has employees with information NAME, DESIGNATION, ID, SALARY. Draw a simple database table with example where ID is the primary key. BPE-96th.

A Database Management System (DBMS) in a bank efficiently manages vast amounts of data, ensuring secure, organized, and quick access to information. For instance, in employee management:

Database Table: Employee Information

ID	Name	Designation	Salary
101	John Smith	Manager	Tk. 60,000.00
102	Jane Doe	Analyst	Tk. 40,000.00
103	Mike Brown	Teller	Tk. 30,000.00

In this table, 'ID' serves as the primary key, uniquely identifying each employee. The DBMS allows efficient querying, updating, and retrieval of employee data, facilitating payroll processing, performance evaluation, and overall human resource management in the bank. The structured database ensures data integrity, security, and accessibility for various banking operations.

Q-84. Discuss about database management system and its use.

Or, what is database management system? Discuss about its usage?

Or, Discuss about database management system and its use. (MAY-11, June, 13, Dec 15, Dec-18, May-12, Dec-12, Dec-14, June-17, Nov, 17, Jul-18, June-20, Dec-21, Jul-22)

A **Database Management System (DBMS)** is software that helps you store, organize, and manage data like customer information, product details, or employee records. It lets you easily add, update, or find data, and ensures it's secure and consistent.

Usage:

1. **Business:** Keep track of inventory, sales, and customer info.

2. **Schools:** Store student grades, attendance, and records.
3. **Healthcare:** Manage patient records and appointments.
4. **Websites:** Keep user accounts and preferences.

A DBMS is like a digital filing cabinet where you can easily and safely keep all kinds of information and find it when you need it.

Q-85. What are centralized and distributed database systems? Which one is better for banking operation and why? (Nov-16)

Centralized Database System:

- All data is stored in a single, central location.
- Easier to manage and backup.

Distributed Database System:

- Data is spread across multiple locations or computers.
- Can be more resilient and closer to users.

Better for Banking: Centralized Database

- **Security:** Easier to implement high security in one central place.
- **Consistency:** Important for banking to make sure everyone sees the same data at the same time.
- **Ease of Management:** Easier to manage and maintain data integrity when it's all in one place.

A centralized database is like having all your money in one safe. It's easier to guard and keep track of. For banking, this is usually better because it's super important that all data is secure and consistent.

Q-86. Discuss the benefits of database against flat file. (June-15, Nov-16, Jul-18, Jul- 19, Dec-22)

Database Benefits:

1. **Organization:** Easier to sort and find data.
2. **Multiple Users:** Many people can use it at the same time.
3. **Security:** Better control over who can see or change what.
4. **Flexibility:** Can handle complex queries and reports.

Flat File:

- It's like a simple text file or spreadsheet with no special features.

Why Database is Better: Think of a flat file like a single drawer of a filing cabinet, while a database is the whole cabinet with multiple drawers, locks, and labels. A database can hold more information in a more organized way, is safer, and lets more people use it easily.

Q-87. Differentiate Data and Information. Describe five features of ICT for which it is important and widely used in the financial services industry. BPE-98th.

Aspect	Data	Information
1. Definition	Raw, unprocessed facts and figures without context	Processed, organized, and structured data that is meaningful and useful
2. Nature	Raw and unprocessed	Processed and organized
3. Form	Numbers, symbols, text without context	Contextualized and meaningful
4. Utility	Not directly useful for decision-making	Useful for making decisions
5. Dependence	Basis for creating information	Derived from data
6. Example	"100, 200, 300" (individual numbers)	"Sales increased by 50% last quarter" (analyzed data)

Features of ICT in the Financial Services Industry

1. **Speed and Efficiency:** ICT enables rapid processing of transactions and data, reducing the time required for financial operations.

2. **Accuracy and Reliability:** Automated systems minimize human error, ensuring accurate and reliable financial records and transactions.
3. **Security:** Advanced encryption and cybersecurity measures protect sensitive financial data from unauthorized access and fraud.
4. **Accessibility:** ICT allows customers to access financial services anytime and anywhere through online banking and mobile applications.
5. **Data Management:** Efficient storage, retrieval, and analysis of large volumes of financial data help in decision-making and regulatory compliance.

These features make ICT indispensable for enhancing operational efficiency, customer service, and security in the financial services industry.

Q-88. Define and describe, with examples, commonly used input, output, processing, and memory devices in an office environment. BPE-98th.

Commonly Used Devices in an Office Environment

Input Devices

- **Definition:** Devices used to enter data into a computer.
- **Examples:**
 - **Keyboard:** Used for typing text and commands.
 - **Mouse:** Used for navigating and selecting items on the screen.

Output Devices

- **Definition:** Devices that present data from a computer to the user.
- **Examples:**
 - **Monitor:** Displays visual output like documents and videos.
 - **Printer:** Produces hard copies of digital documents.

Processing Devices

- **Definition:** Components that interpret and execute instructions.
- **Examples:**
 - **CPU (Central Processing Unit):** The main processor that performs calculations and runs programs.
 - **GPU (Graphics Processing Unit):** Handles rendering of images and video.

Memory Devices

- **Definition:** Components that store data temporarily or permanently.
- **Examples:**
 - **RAM (Random Access Memory):** Temporary storage for active processes.
 - **Hard Drive/SSD:** Permanent storage for files and applications.

These devices facilitate efficient data handling and operations in an office setting.

Q-88. Centralized DBMS Software is widely used in the financial services industry but there are some associated risks of usage of this. What could be the alternative effective solution to overcome those risks? BPE-98th.

Centralized DBMS software, while efficient, carries risks such as single points of failure, security vulnerabilities, and scalability issues. To mitigate these risks, financial services can consider the following alternatives:

1. **Distributed Databases:**
 - Data is spread across multiple locations, reducing the risk of a single point of failure.
 - Enhances data availability and resilience.
2. **Cloud-Based Databases:**
 - Offers scalability and flexibility.
 - Providers offer robust security measures and backup solutions.
3. **Blockchain Technology:**
 - Ensures data integrity and security through decentralized ledgers.
 - Suitable for secure, transparent transactions.

4. Hybrid Approaches:

- Combine on-premise and cloud solutions for balanced control and scalability.
- Can tailor security and compliance measures.

These alternatives enhance reliability, security, and scalability, addressing the limitations of centralized DBMS in the financial industry.

Q-89. Is the Internet a blessing or a curse? Justify your answer. BPE-98th.

The Internet is predominantly a blessing, though it has some drawbacks.

Blessings:

1. **Information Access:** Provides vast, instant access to knowledge and educational resources.
2. **Communication:** Connects people globally through social media, email, and video calls.
3. **Economic Opportunities:** Enables e-commerce, remote work, and online banking.
4. **Innovation:** Drives technological advancements and creativity.

Curses:

1. **Privacy Issues:** Risk of data breaches and loss of personal information.
2. **Cybercrime:** Increases in hacking, scams, and online fraud.
3. **Addiction:** Potential for excessive use leading to mental health issues.
4. **Misinformation:** Spread of false information and fake news.

Overall, the Internet's benefits in enhancing connectivity, education, and economic growth outweigh its drawbacks, making it a powerful tool for progress.

Q-90. If any fraudulent activities happen in a banking system, describe the role of the Information System. BPE-98th.

In the event of fraudulent activities in a banking system, the Information System (IS) plays a critical role in several key aspects:

1. **Detection:** IS monitors transactions and account activities for anomalies or patterns indicative of fraud, using algorithms and AI to detect suspicious behavior.
2. **Alerting:** It promptly alerts relevant personnel or automated systems when potential fraud is detected, triggering immediate investigation and mitigation actions.
3. **Forensic Analysis:** IS aids in forensic analysis by providing detailed logs, transaction histories, and digital footprints necessary to reconstruct events and identify the perpetrators.
4. **Prevention:** IS implements security measures such as encryption, access controls, and anomaly detection to prevent unauthorized access and fraudulent activities in the first place.

By leveraging advanced technologies and robust security protocols, the IS serves as a crucial defense against fraudulent activities, safeguarding both the bank and its customers' assets.

Q-91. What are the different types of programming languages and their common uses?

A programming language is a tool used for writing general-purpose or application-specific programs. Large companies develop programming languages and sell them commercially to programmers. Programmers use these languages to create various software applications. Commonly used programming languages include C/C++, Java, Assembly language, COBOL, FORTRAN, BASIC, Visual Basic, .Net, HTML, and FoxPro. These languages can be classified into three types:

- **Low-Level Languages:** Close to machine code, providing high performance and control over hardware.
- **High-Level Languages:** More abstract, easier to use, and closer to human language, such as Java and Python.
- **Object-Oriented Languages:** Focus on objects and data encapsulation, promoting code reusability, like C++ and Java.

These languages cater to different programming needs and preferences.

Q-92. Internet and internet related terminology?

Internet: The Internet is a global network of interconnected computer systems using the TCP/IP protocol to serve billions of users. It consists of various networks from private, public, academic, business, and government sectors, offering vast information resources and services like the World Wide Web (WWW) and email.

WWW: The World Wide Web (WWW) is an information system of interlinked hypertext documents accessible via the Internet. Developed by Sir Tim Berners-Lee, it allows users to view and navigate web pages through hyperlinks using web browsers.

Hypertext: Text with embedded references (hyperlinks) to other text, allowing immediate access by clicking.

Hyperlinks: References in hypertext that users can follow to navigate between documents or specific elements within them.

Web Browser: Software for accessing and displaying information on the WWW, such as Chrome or Firefox.

Web Page: A document on the WWW that can be static or dynamic, retrieved from a local computer or remote server.

Internet vs. WWW: The Internet is the global network infrastructure, while the WWW is a service of interlinked documents accessed via the Internet.

URL: Uniform Resource Locator, a web address specifying where a resource is available and how to retrieve it.

Email: A method of exchanging digital messages across networks, utilizing a store-and-forward model, allowing users to send and receive messages asynchronously.

Q-93. Banking service is now available anywhere. How this become possible after implementation of ICT in Banking?

Information and Communication Technology (ICT) has revolutionized banking services by making them available anywhere. Before ICT, customers had to visit branches physically for transactions. Now, ICT enables customers to access banking services from any location. Key features include:

- **ATMs:** Allow cash withdrawals, balance checks, and deposits from various locations.
- **Internet Banking:** Enables customers to conduct banking transactions online from home or office.
- **Mobile Banking:** Facilitates transactions through mobile phones.
- **Interfacing Systems:** Allows cross-bank transactions, enabling services like international card usage.

These advancements have made banking more convenient and accessible, ensuring 24/7 service availability and improving overall customer experience

Q-94. What are the differences among ATM, CDM and CRM?

Feature	ATM (Automated Teller Machine)	CDM (Cash Deposit Machine)	CRM (Cash Recycling Machine)
1.Primary Function	Withdraws cash	Accepts cash deposits	Both accepts and dispenses cash
2.Services Provided	Cash withdrawal, balance check, mini statement	Cash deposit, balance check	Cash deposit, cash withdrawal, balance check
3.Usage	Mainly used for withdrawing money	Used for depositing money	Used for both depositing and withdrawing money
4.Cash Handling	Only dispenses cash	Only accepts cash	Recycles cash by dispensing deposited money
5.Cash Denominations	Dispenses specific denominations	Accepts specific denominations	Accepts and dispenses specific denominations

Q-95. Name some components of an ATM and mention their functions.

Component	Function
Computer	Manages the ATM operations, stores electronic journal records, and communicates with the bank's switch using TCP/IP.
Display	Shows transaction options and information to users; can be an LCD or touch screen.
Card Reader	Reads data from the magnetic stripe or chip of the customer's card to verify identity.
Key Pad	Allows customers to input their Personal Identification Number (PIN) and select transaction options.
Printers	Includes a consumer printer for transaction receipts and a journal printer for recording transactions internally.

Q-96. How ATMs brings freedom to the customers?

Automated Teller Machines (ATMs) have significantly enhanced customer freedom in banking. With ATMs, customers no longer need to visit bank branches during specific hours to withdraw or deposit money. ATMs are available 24/7, allowing transactions anytime, even during holidays. This eliminates the need to rush to banks before they close. ATMs are installed in various locations, including residential areas, offices, and shopping centers, making banking services easily accessible. Additionally, ATMs provide multiple services such as balance inquiries, mini statements, and utility bill payments, further reducing the need to visit bank branches. This convenience has revolutionized banking, providing customers with unparalleled flexibility and access to financial services.

Q-97. Mention five functions of an ATM.

Function	Description
Cash Withdrawal	Allows customers to withdraw money from their bank accounts.
Fund Transfer	Enables transferring funds between accounts within the same bank or to other banks.
Balance Inquiry	Provides the ability to check the account balance.
Mini Statement Printing	Prints a short statement showing recent transactions.
Utility Bill Payment	Facilitates the payment of utility bills such as electricity and water.

Q-98. What is an ATM booth?

An ATM booth is a dedicated space where one or more Automated Teller Machines (ATMs) are installed by a bank. In some cases, ATM booths also include Cash Deposit Machines (CDMs) that accept cash and cheques. These booths are strategically located in areas such as residential neighborhoods, offices, and shopping centers to provide customers with convenient access to banking services. ATMs in these booths offer services like cash withdrawal, balance inquiries, fund transfers, and mini statement printing. ATM booths are available 24/7, providing flexibility for customers to perform transactions at any time, even on holidays.

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