CPA FOUNDATION LEVEL

CS FOUNDATION LEVEL

INFORMATION COMMUNICATION TECHNOLOGY

WEDNESDAY: 24 April 2024. Afternoon Paper. Time Allowed: 3 hours

QUESTION ONE

(a) **Two Limitations of Mobile computing (2 marks)**

1. **Limited Battery Life**: Mobile devices typically have a limited battery life, requiring frequent charging.
2. **Security Vulnerabilities**: Mobile devices are more prone to security breaches such as hacking and data theft due to their portability and connectivity.

(b) **Factors to Consider in the Selection and Acquisition of a Computer Operating System (6 marks)**

1. **Compatibility**: Ensure the OS is compatible with the hardware and software in use.
2. **Security**: The OS must have built-in security features, such as encryption and user authentication, to protect data.
3. **Cost**: Consider the initial purchase and maintenance costs of the OS.
4. **Ease of Use**: The OS should have an intuitive interface that is easy to navigate for users.
5. **Support and Updates**: Look for an OS that has reliable customer support and regular updates.
6. **Scalability**: The OS should be able to scale as the organization's needs grow, especially for enterprise-level applications.

(c) **Four Types of Data Security Controls (8 marks)**

1. **Preventive Controls**: These controls prevent data breaches or unauthorized access (e.g., firewalls, encryption).
2. **Detective Controls**: These controls identify and alert administrators of security breaches (e.g., intrusion detection systems).
3. **Corrective Controls**: These controls help restore systems and data after an incident (e.g., data backup, incident response plans).
4. **Administrative Controls**: These are policies and procedures to manage and secure data (e.g., user access controls, audits).

(d) **Reasons for the Popularity of QR Codes (4 marks)**

1. **Ease of Use**: QR codes are easy to scan with smartphones, providing quick access to information.
2. **Versatility**: QR codes can store URLs, text, images, and other data types, making them versatile for different purposes.
3. **Contactless**: They allow users to interact with content without physical contact, important for hygiene in current times.
4. **Cost-Effective**: QR codes are inexpensive to generate and use for marketing, payments, and other purposes.

QUESTION TWO

(a) **Essential Features of a Communication Application (8 marks)**

1. **Real-time Communication**: Allows users to send and receive messages instantly.
2. **Multi-Platform Support**: The application should work across various devices like smartphones, tablets, and computers.
3. **User Authentication**: Ensures that only authorized users can access the application and communicate.
4. **File Sharing**: Allows users to send and receive files such as images, videos, and documents.

(b) **Six Moral Dimensions Associated with Information Systems (6 marks)**

1. **Privacy**: The need to protect users' personal and sensitive information.
2. **Accuracy**: Ensuring data is correct, complete, and up-to-date.
3. **Access**: The right to access information, including issues of digital divide and inequality.
4. **Security**: Protection against unauthorized access and breaches.
5. **Accountability**: The responsibility of individuals and organizations to use information systems ethically.
6. **Intellectual Property**: Protecting the rights of creators and ensuring fair use of digital content.

(c) **Three Ethical Challenges with Cloud Computing (6 marks)**

1. **Data Privacy**: Cloud providers may have access to sensitive customer data, raising concerns about privacy.
2. **Data Ownership**: Clarifying who owns the data when stored on third-party servers.
3. **Security Risks**: Cloud platforms may be vulnerable to cyberattacks, putting data at risk.

QUESTION THREE

(a) **Three Control Measures to Reduce Computer Crime (6 marks)**

1. **Encryption**: Protect sensitive data through encryption to prevent unauthorized access.
2. **User Access Control**: Implement strict user access controls, ensuring only authorized personnel can access certain information.
3. **Regular Audits**: Conduct regular security audits to identify and fix vulnerabilities before they are exploited.

(b) **Three Circumstances for Using the Pilot Approach During System Changeover (6 marks)**

1. **Risk Mitigation**: Pilot testing ensures that the new system works in a limited environment before full deployment.
2. **User Training**: It provides an opportunity to train users on the new system without affecting the entire organization.
3. **Limited Resources**: When the organization has limited resources, testing with a smaller group ensures efficient resource usage.

(c) **Spreadsheet Application Functions**
(i) **SUMIF (2 marks)**
The `SUMIF` function sums the values in a range that meet a specific condition.
Example: `=SUMIF(A1:A10, ">50", B1:B10)` adds values in column B where corresponding values in column A are greater than 50.

(ii) **PMT (2 marks)**
The `PMT` function calculates the payment for a loan based on constant payments and a constant interest rate.
Example: `=PMT(5%/12, 60, 10000)` calculates the monthly payment for a $10,000 loan at 5% annual interest over 5 years.

(d) **Advantages of In-house Developed Software (4 marks)**

1. **Customization**: The software is tailor-made to suit the specific needs of the organization.
2. **Full Control**: The organization has complete control over the software's features and updates.
3. **Better Integration**: Easier to integrate with existing systems within the organization.
4. **Security**: The organization can implement its own security measures, reducing reliance on third parties.

QUESTION FOUR

(a) **Reasons to Use a Watermark in a Document (4 marks)**

1. **Copyright Protection**: To indicate ownership or protect the document from unauthorized use or distribution.
2. **Document Authentication**: Used to indicate that the document is official or authentic.

(b) **Circumstances for Using Batch Operating System (4 marks)**

1. **High Volume of Similar Jobs**: Batch OS is ideal for processing large volumes of similar jobs (e.g., payroll processing).
2. **Offline Processing**: Suitable when jobs do not require real-time interaction with the user.
3. **Low Resource Requirements**: Ideal for environments where real-time processing is not required, such as certain data analysis jobs.
4. **Cost Efficiency**: In environments with limited resources, batch processing can save costs by running jobs in batches.

(c) **Types of Feasibility Studies (6 marks)**

1. **Technical Feasibility**: Examines whether the current technology can support the proposed system.
2. **Economic Feasibility**: Assesses the cost of the system compared to the benefits it will bring.
3. **Operational Feasibility**: Determines if the proposed system can be effectively operated within the existing organizational structure.

(d) **Challenges of E-commerce in Developing Countries (6 marks)**

1. **Limited Internet Access**: Many areas lack reliable internet access, hindering e-commerce growth.
2. **Payment Infrastructure**: Lack of secure and convenient payment options limits e-commerce adoption.
3. **Logistical Challenges**: Difficulty in delivering goods efficiently due to poor infrastructure.
4. **Regulatory Issues**: Inadequate laws and regulations to protect consumers and businesses in the digital space.
5. **Cybersecurity Threats**: Increased risk of fraud and cyberattacks in an under-regulated environment.
6. **Cultural Barriers**: Resistance to adopting online shopping due to cultural preferences for traditional shopping methods.

QUESTION FIVE

(a) **Core Processes for Software Development (6 marks)**

1. **Planning**: Defining the scope, timeline, and resources required for the project.
2. **Design**: Creating the system architecture and planning the software's structure.

3. **Implementation**: Writing the actual code and developing the software.
4. **Testing**: Evaluating the software to ensure it works as expected and identifying bugs.
5. **Deployment**: Installing the software and making it available for use.
6. **Maintenance**: Updating and improving the software after deployment.

(b) **Reasons Why Operating Systems Must Evolve Over Time (4 marks)**

1. **Security Updates**: To protect against newly discovered vulnerabilities.
2. **Support for New Hardware**: To ensure compatibility with emerging hardware technologies.

(c) **Methods to Prevent Social Engineering Attacks (6 marks)**

1. **Employee Training**: Educate employees to recognize and resist social engineering tactics.
2. **Multi-Factor Authentication (MFA)**: Use multiple layers of authentication to protect sensitive data.
3. **Phishing Simulations**: Regularly simulate phishing attacks to test employees' awareness and responses.

(d) **Advantages and Disadvantages of Digital Wallets (4 marks)**
Advantages:

1. **Convenience**: Allows quick and easy payments.
2. **Security**: Offers secure payment methods using encryption.
   Disadvantages:
3. **Security Risks**: Risk of fraud or hacking if the wallet provider is compromised.
4. **Limited Acceptance**: Not all merchants accept digital wallets as a payment method.

QUESTION SIX

(a) **Reasons for Multi-Booting (2 marks)**

1. **Multiple Operating Systems**: Users may want to run more than one operating system on a single machine for different purposes.
2. **Testing and Development**: Developers may need different OS versions for testing their software.

(b) **Activities During the Implementation Phase (6 marks)**

1. **System Installation**: Setting up hardware and software for the new system.
2. **User Training**: Training users on how to use the new system.
3. **Data Migration**: Transferring data from the old system to the new one.

(c) **Reasons Businesses Prefer Accounting Software (6 marks)**

1. **Accuracy**: Accounting software reduces human error in financial calculations.
2. **Efficiency**: Speeds up financial processes such as invoicing and payroll.
3. **Compliance**: Ensures compliance with tax laws and financial reporting standards.

(d) **Differences Between Word Processing and Desktop Publishing Software (6 marks)**

1. **Purpose**: Word processing is used for text documents, while desktop publishing is used for creating complex layouts and graphics.
2. **Tools**: Desktop publishing offers advanced layout and design tools, while word processing focuses on text editing.
3. **Output Quality**: Desktop publishing software produces high-quality printed materials, while word processors are used for everyday office documents.

QUESTION SEVEN

(a) **Security Threats in Mobile Applications (4 marks)**

1. **Malware**: Harmful software that can steal personal information.
2. **Data Interception**: Sensitive data transmitted over unencrypted networks can be intercepted.
3. **Insecure APIs**: Vulnerable APIs can be exploited to gain unauthorized access to data.
4. **Phishing**: Fake mobile apps that trick users into entering sensitive information.

(ii) **Mitigating Security Threats in Mobile Applications (4 marks)**

1. **Malware**: Install and update antivirus software regularly.
2. **Data Interception**: Use encryption to protect data in transit.
3. **Insecure APIs**: Use secure API protocols like HTTPS and implement proper authentication.
4. **Phishing**: Verify app sources and encourage users to download apps from official stores only.

(b) **Social Issues in Information Systems (8 marks)**

1. **Privacy**: Concerns over the collection and use of personal information.
2. **Job Displacement**: Automation and AI leading to job losses.
3. **Digital Divide**: Inequality in access to technology, especially in developing countries.
4. **Data Security**: Ensuring data is protected from unauthorized access and breaches.

(c) **Events that Might Spark an Iterative Process in Software Development (4 marks)**

1. **User Feedback**: Continuous feedback during development leads to improvements.

2. **System Testing**: Testing results may highlight the need for refinements.
3. **Changing Requirements**: As business needs evolve, the system requirements change.
4. **Bug Fixing**: Identifying and fixing bugs may require a new iteration of the software.