Module 1 - Assignment

Q.1 Explain in your own words what a program is and how it functions.

ANS. A program is instructions for a computer to execute specific tasks. It contains code written in a programming language which may be interpreted, compiled or assembled into machine readable form and then executed.

Q.2 What are the key steps involved in the programming process?

ANS. The programming process involves 6 main steps: 1) Identifying the problem and requirements, 2) Designing a solution using techniques like top-down design and modularization, 3) Writing the program by choosing a language and following its syntax, 4) Testing for errors, 5) Documenting the program, and 6) Maintaining the program with user guides and code comments. Key parts of the design stage include breaking the problem into subproblems and designing algorithms using methods like pseudocode or flowcharts.

Q.3 What are the main differences between high-level and low-level programming languages?

ANS. High-level languages prioritize ease of use and abstraction, enabling rapid development and code readability, while low-level languages provide precise control over hardware and memory, making them crucial for tasks demanding maximum performance and direct hardware control.

Q.4 Describe the roles of the client and server in web communication.

ANS. A client is a program that runs on the local machine requesting service from the server. A client program is a finite program means that the service started by theuserandterminateswhen the service is completed. A server is a program that runs on the remote machine providing services to the clients. When the client requests for a service, then the server opens the door for the incoming requests, but it never initiates the service.

Q.5 Explain the function of the TCP/IP model and its layers.

ANS. The TCP/IP model is a framework that is used to model the communication in a network. It is mainly a collection of network protocols and organization of these protocols in different layers for modeling the network.

- It has four layers, Application, Transport, Network/Internet and Network Access.
- While the OSI model has seven layers, the 4 layer TCP/IP model is simpler and commonly used in today's Internet and networking systems.

Q.6 Explain Client Server Communication.

ANS.Clients and servers exchange messages in a request–response messaging pattern. The client sends a request, and the server returns a response. This exchange of messages is an example of inter-process communication.

Q.7 How does broadband differ from fiber-optic internet?

ANS. Broadband is a general term for high-speed internet. In contrast, fiber optic internet is a specific type of broadband that uses thin glass or plastic fibers to transmit data, offering faster speeds and lower latency.

Q.8 What are the differences between HTTP and HTTPS protocols?

ANS.HTTPS is just HTTP with encryption. The primary distinction between these two names is that HTTPS is more secure than HTTP since it uses TLS (SSL) encryption for all HTTP requests and responses, even the standard ones.

Q.9 What is the role of encryption in securing applications?

ANS.Encryption is used to protect data from being stolen, changed, or compromised and works by scrambling data into a secret code that can only be unlocked with a unique digital key.

Q.10 What is the difference between system software and application software?

ANS.System software provides a platform for other software to run, while application software performs specific tasks for the user, so both are necessary in for your computer to work properly.

Q.11 What is the significance of modularity in software architecture?

ANS.Yes, modularity can indeed extend the lifespan of a software product. By organizing code into modular components, you create a flexible structure that can adapt to changing requirements. This makes it easier to update or replace parts of the system, ensuring that your software remains relevant and functional over time.

Q.12 Why are layers important in software architecture?

ANS.Layered architecture is a fundamental software design pattern that provides a clear separation of concerns and promotes modularity and flexibility in software systems. It allows for the development of robust, scalable, and maintainable applications that can adapt to changing business requirements.

Q.13 Explain the importance of a development environment in software production.

ANS.One of the most important uses of a development environment is that it allows developers to ensure various functions of the application/program work as intended before it is released to users. It allows developers to make any change to the program/code in a controlled setting without impacting users.

Q.14 What is the difference between source code and machine code?

ANS.Source code is not directly understandable by machine. Object code is machine understandable and executable. It is written in a high-level language like C, C++, Java, Python, etc., or assembly language. It is written in machine language through compiler or assembler or other translator

Q.15 Why is version control important in software development?

ANS.Version control software facilitates coordination, sharing, and collaboration across the entire software development team. It enables teams to work in distributed and asynchronous environments, manage changes and versions of code and artifacts, and resolve merge conflicts and related anomalies.

Q.16 What are the benefits of using Github for students?

ANS.The GitHub Student Developer Pack is a comprehensive set of tools and services provided by GitHub , specifically designed for students. It includes access to premium tools and resources from GitHub and its partners, helping students learn, build projects, and grow their skills in software development.

Q.17 What are the differences between open-source and proprietary software?

ANS.Open source refers to technology and software that is available for anyone to use or edit. Proprietary is copyrighted technology that must be used with a license.

Q.18 How does GIT improve collaboration in a software development team?

ANS.Git is a distributed version control system that empowers developers to work together effectively. The tool enables collaborative development by allowing developers to work on the same codebase simultaneously, track changes, and merge their contributions.

Q.19 What is the role of application software in businesses?

ANS.Application software helps businesses organize their data successfully, which is essential for corporate success. Businesses may store, arrange, and evaluate their data using tools like databases, spreadsheets, and analytics software. This enables them to make well-informed decisions and develop strategic plans.

Q.20 What are the main stages of the software development process?

ANS.Phase 1: Planning. ...Phase 2: Requirements Analysis. ...Phase 3: Design. ...Phase 4: Coding. ...Phase 5: Testing. ...Phase 6: Deployment. ...Phase 7: Maintenance. …

Q.21 Why is the requirement analysis phase critical in software development?

ans.Requirement analysis is a crucial stage in software development where the needs and expectations of stakeholders are identified and documented. This phase ensures that the development team clearly understands what the software should achieve and the specific conditions it must meet

Q.22 What is the role of software analysis in the development process?

ANS.It helps ensure that the software system meets the requirements of the stakeholders. By understanding the requirements and analyzing them thoroughly, software analysts and designers can create a system that meets the needs of the users. It helps identify and mitigate risks.

Q.23 Why is software testing important?

ANS.In conclusion, software testing is essential for maintaining a high standard of quality, reliability, and security in any application. Through testing, developers can detect

issues early, improve functionality, and ensure that the software meets both user expectations and industry standards.

Q.24 What are the key differences between web and desktop applications?

ANS.Web and desktop applications have different strengths and weaknesses. Web apps are accessible from anywhere with an internet connection, while desktop apps must be installed on each user's device. Desktop apps perform better, work offline, and keep data more secure.

Q.25 What are the advantages of using web applications over desktop applications?

ANS.Web apps are accessible from anywhere with an internet connection, while desktop apps must be installed on each user's device. Desktop apps perform better, work offline, and keep data more secure. Yet, web apps allow real-time collaboration and avoid version update issues.

Q.26 What role does UI/UX design play in application development?

ANS.Good UI design makes products visually appealing, while good UX design ensures they are easy to use and meet user needs. Investing in quality UI/UX design can lead to higher user satisfaction, increased engagement, and overall success for your digital products.

Q.27 : What are the differences between native and hybrid mobile apps?

ANS.In a native app, your developers have to rewrite and redesign all the app functionality in the native development language. A hybrid app lets you write the app functionality in a single codebase. You can then wrap your code in a lightweight native app shell or container.

Q.28 What is the significance of DFDs in system analysis?

ANS.The main purpose of DFDs is to support system analysis and improve business processes. These diagrams simplify complex systems by showing the data flow between components, making system analysis and decision-making easier.

Q.29 What are the pros and cons of desktop applications compared to web applications?

ANS.Web applications offer unparalleled convenience and accessibility, making them ideal for applications that demand real-time collaboration and global accessibility. On the other hand, desktop apps are more suitable for tasks that require robust performance, offline access, and enhanced security.

Q.30 How do flowcharts help in programming and system design?

ANS.As a visual representation of data flow, flowcharts are useful in writing a program or algorithm and explaining it to others or collaborating with them on it. You can use an algorithm flowchart to spell out the logic behind a program before ever starting to code the automated process.