**Theory Exercise**

* **Explain in your own words what a program is and how it functions**

Program is set of instruction

* **What are the key steps involved in the programming process?**

Requirements, Planning, Designing, Coding, testing, Maintaining.

* **Main Difference Between High Level and Low-Level programming Languages.**

High-level languages require the use of a compiler or an interpreter for their translation into the machine code. Low-level language requires an assembler for directly translating the instructions of the machine language.

* **World Wide Web & How Internet Works?**

Is a collection of websites or web pages stored in web servers.

* **Describe the roles of the client and server in web communication.**

The client requests information from the server, and the server responds with the requested data.

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

A framework for organizing communication protocols used in the internet and similar networks, functioning in a layered approach to facilitate data transmission

Application Layer

Transport Layer

Internet Layer

Network Access Layer

* **Explain Client Server Communication**

A method of communication between a client and a server over a network.

* **How does broadband differ from fiber-optic internet?**

Broadband is a general term for high-speed internet access, while fiber-optic internet is a specific type of broadband that uses light signals transmitted through thin glass or plastic fibers for faster and more reliable connections.

* **What are the differences between HTTP and HTTPS protocols?**

HTTPS is just HTTP with encryption. The primary distinction between these two names is that HTTPS is more secure than HTTP since it uses.

* **What is the role of encryption in securing applications?**

Transforming data into an unreadable format (ciphertext), protecting sensitive information from unauthorized access, even if the data is intercepted or stored on compromised systems.

* **What is the difference between system software and application software?**

System software manages a computer's hardware and resources, while application software helps users perform tasks.

* **Software Applications and Its Types**

It Is A Type Of Software Application That Helps In The Automation Of The Task Based On The Users Input.

Types of Applications of Software

* Application Software
* System Software
* Driver Software
* Programming Software
* **What Is The Difference Between System Software And Application Software?**

System Software Manages A Computer's Hardware And Resources, While Application Software Helps Users Perform Tasks.

* **What Is The Significance Of Modularity In Software Architecture?**

Improves The Quality Of Software And Speeds Up Development.

* **Why Are Layers Important In Software Architecture?**

Layers Are Important In Software Architecture Because They Make Software Easier To Develop, Maintain, And Test.

* **Explain The Importance Of A Development Environment In Software Production.?**

A Software Development Environment **Facilitates The Development Process**. These Environments Provide Developers With A Workspace That Features Programming Software And Other Resources And Processes Required To Develop Source Code For An Application.

* **What Is The Difference Between Source Code And Machine Code?**

**Machine Code** And **Source Code** Are Integral Components Of Programming That Serve Distinct Purposes In The Software Development Process. While Machine Code Is a Low-Level Language That Is Directly Executable by a Computer’s CPU, Source Code Is a Higher-Level, and Human-Readable Form of Code Created by Programmers.

* **Why Is Version Control Important In Software Development?**

Version Control Is The Unsung Hero Of Software Development, Providing A Backbone For Tracking And Managing Changes In Code.

* **What Are The Benefits Of Using GitHub For Students?**

GitHub Is Like A Playground For Students In The Software Development World.

* **What Are the Differences between Open-Source and Proprietary Software?**

Open-Source Software Provides Free Access To Its Source Code For Modification And Distribution, While Proprietary Software Restricts Access And Modifications, Typically Requiring A Paid License.

* **How Does GIT Improve Collaboration In A Software Development Team?**

Git Improves Collaboration In A Software Development Team By Enabling Version Control, Allowing Multiple Developers To Work On The Same Codebase Simultaneously Without Conflicts.

* **What Is The Role Of Application Software In Businesses?**

Application Software Streamlines Business Operations, Enhances Productivity, And Supports Decision-Making By Automating Tasks And Providing Essential Tools For Various Functions.

* **What Are The Main Stages Of The Software Development Process?**

The Main Stages Of The Software Development Process Are Planning, Analysis, Design, Implementation, Testing, And Maintenance.

* **Why Is The Requirement Analysis Phase Critical In Software Development?**

The Requirement Analysis Phase Is Critical in Software Development Because It Ensures That the Project Meets Client’s Requirement.

* **What Is The Role Of Software Analysis In The Development Process?**

The Role Of Software Analysis In The Development Process Is To Identify And Define User Requirements.

* **What Are The Key Elements Of System Design?**

UI/UX.

* **Why Is Software Testing Important?**

It Ensures The Quality, Reliability, And Performance Of The Software By Identifying And Fixing Defects Before Release.

* **What Types Of Software Maintenance Are There?**

The Types Of Software Maintenance Are Corrective, Adaptive, Perfective, And Preventive.

* **What Are The Key Differences Between Web And Desktop Applications?**

Web Applications Are Require An Internet Connection While Desktop Application Can Operate Offline.

* **What Are The Advantages Of Using Web Applications Over Desktop Applications?**

To Save Memory Spaces.

* **What Role Does UI/UX Design Play In Application Development?**

UI/UX Design User Friendly Software.

* **What Are The Differences Between Native And Hybrid Mobile Apps?**

Native Mobile Apps Are Built Specifically For A Single Platform While Hybrid Use In Multiple Platform.

* **What Is The Significance Of Dfds In System Analysis?**

In System Analysis As They Visually Represent The Flow Of Data Within A System, Aiding In Understanding Processes.

* **What Are the Pros and Cons of Desktop Applications Compared To Web Applications?**

Desktop Applications Offer Better Performance and Offline Functionality, While Web Applications Provide Easier Access, Updates.

* **How Do Flowcharts Help In Programming And System Design?**

For Better Understanding of Flow.