ASSIGNMENT 1:LAB EXERCISE

1. Write a simple "Hello World" program in two different programming languages of your choice. Compare the structure and syntax.

ANS: #include<stdio.h>

Int main()

{

printf(“Hello World”);

return 0;

}

1. : Research and create a diagram of how data is transmitted from a client to a server over the internet.

ANS:

CLIENT

ENCRYPTION

INTERNET

DECRYPTION

SERVER

3. Design a simple HTTP client-server communication in any language

4.Research different types of internet connections (e.g., broadband , fiber , satellite) and list their pros and cons

ANS: FIBER OPTIC

PROS: It has low latency, extremely fast speed ,high bandwidth capacity etc

CONS: Very fragile to damage , limited availability , high installation cost

BROADBAND CONNECTION

PROS: Widely available , relatively affordable , decently fast speed.

CONS: Speed may vary upon peak usage period , shared bandwidth with other users in the area

SATELLITE CONNECTION

PROS: Convenient for mobility , accessible in remote areas where other connections are unavailable

5. Simulate HTTP and FTP requests using command line tools (e.g., curl).

6. Identify and explain three common application security vulnerabilities. Suggest possible solutions.

ANS: SQL INJECTION

SOLUTION: Thoroughly validate user input by sanitizing data and using parameterized queries to prevent injection attacks.

M BROKEN ACCESS CONTROL

SOLUTION: Implement robust access control mechanisms, clearly define user roles and permissions, and regularly review access levels.

SECURITY MISINFORMATION

SOLUTION: Always use secure default configurations, disable unused services, and regularly review and update application settings.

7. Identify and classify 5 applications you use daily as either system software or application software.

ANS: SYSTEM SOFTWARE

1.Windows

2.Mac

APPLICATION SOFTWARE

1.Spotify

2.Google chrome

3.Gmail

8. Design a basic three-tier software architecture diagram for a web application

ANS:

PRESENTATION

APPLICATION

INTERNET

9. Create a case study on the functionality of the presentation, business logic, and data access layers of a given software system.

10. Explore different types of software environments (development, testing, production). Set up a basic environment in a virtual machine

11. : Write and upload your first source code file to Github.

12. Create a Github repository and document how to commit and push code changes.

13. Create a student account on Github and collaborate on a small project with a classmate.

14. Create a list of software you use regularly and classify them into the following categories: system, application, and utility software.

ANS: SYSTEM SOFTWARE

1.Printers

2.Scanners

3.Windows

4.Mac

APPLICATION SOFTWARE

1.Office

2.Excel

3.Safari

4.Chrome

Utility Software

1.Antivirus

2.Disk management system

3.Compression tools

4.Disk management tool

15. Follow a GIT tutorial to practice cloning, branching, and merging repositories.

16 . Write a report on the various types of application software and how they improve productivity.

17 . Create a flowchart representing the Software Development Life Cycle (SDLC).

ANS:

DESIGN

ANALYSIS

PLANNING

DEVELOPMENT

TESTING

IMPLEMENTATION

MAINTAINANCE

18. Write a requirement specification for a simple library management system.

* ANS: Ability to add and remove books from the library.
* Ability to search for books in the library by title or author.
* Ability to check out and return books.
* Ability to display a list of all books in the library.

19. Perform a functional analysis for an online shopping system

20. Design a basic system architecture for a food delivery app

21. Develop test cases for a simple calculator program

22. Document a real-world case where a software application required critical maintenance.

23. Create a DFD for a hospital management system

24. Build a simple desktop calculator application using a GUI library

25. Draw a flowchart representing the logic of a basic online registration system.