HTML

HTML (HyperText Markup Language) structures web pages.

Key elements:

- Headings: <h1> to <h6>

- Paragraphs: <p>

- Lists: <ul>, <ol>,

- Links: <a href="...">

- Tables: <table>, <tr>, <td>

Example:

<h1>Welcome</h1>

CSS

CSS (Cascading Style Sheets) is used to style web pages.

Important properties:

- color, background-color, font-family

- margin, padding, border

- display: flex, grid

- transitions and animations

Example:

body { background-color: lightblue; }

JavaScript

JavaScript is a scripting language for interactivity.

Key features:

- DOM manipulation

- Event handling

- Variables, functions, loops

- ES6 features: let, const, arrow functions

Example:

document.getElementById("demo").innerHTML = "Hello!";

Python

Python is a high-level, interpreted programming language.

Features:

- Easy syntax
- Supports OOP, functional, procedural
- Libraries: NumPy, Pandas, Matplotlib

Example:

```
print("Hello Python!")
```

OOPs

Object-Oriented Programming concepts:

- Class and Object
- Inheritance
- Polymorphism
- Encapsulation
- Abstraction

Example:

```
class Car:
    def __init__(self, name):
        self.name = name
```

SQL

Structured Query Language (SQL) is used for databases.

Key commands:

- SELECT, INSERT, UPDATE, DELETE
- CREATE TABLE, DROP TABLE
- JOINs: INNER, LEFT, RIGHT, FULL

Example:

```
SELECT * FROM Students;
```

Data Structures

Common data structures:

- Arrays, Lists, Tuples
- Stack, Queue
- Linked List, Tree, Graph

Example:

stack = []

Algorithms

Basic algorithms:

- Sorting: Bubble, Merge, Quick
- Searching: Linear, Binary
- Recursion

Example: def factorial(n): return 1 if n==0 else n*factorial(n-1)

Networking

Networking basics:

- OSI and TCP/IP models
- IP Addressing, Subnetting
- Protocols: HTTP, FTP, SMTP

Example: Ping 8.8.8.8

Operating Systems

Key concepts:

- Processes and Threads
- Scheduling: FCFS, SJF, Round Robin
- Memory Management

Example: ps -aux

Machine Learning

Basics of ML:

- Supervised, Unsupervised, Reinforcement

- Algorithms: Linear Regression, Decision Tree

- Libraries: scikit-learn, TensorFlow

Example: model.fit(X_train, y_train)