# Programming Languages Overview

Nishat Tasnim

December 2023

# 1 High-level Languages

- **Python**

  - **Overview:**
    * High-level, interpreted programming language.
    * Emphasizes readability and ease of use.
    * Widely adopted for various applications, e.g., *web development* (Django, Flask), *data science* (Pandas, NumPy), *machine learning* (TensorFlow, PyTorch), and *automation*.

  - **Syntax:**
    * Uses a clean and readable indentation-based syntax.
    * Facilitates a clear and expressive code structure.

  - **Programming Paradigms:**
    * Supports both procedural and object-oriented programming paradigms.
    * Allows functional programming concepts, enhancing code modularity and reusability.

  - **Libraries and Frameworks:**
    * Boasts a rich ecosystem with extensive standard libraries (*e.g.,* datetime, os, math).
    * Prominent frameworks include *Django* and *Flask* for web development, *TensorFlow* and *PyTorch* for machine learning.

  - **Community and Resources:**
    * Features a large and active community of developers and enthusiasts.
    * Abundance of online resources, forums (*e.g.,* Stack Overflow), and comprehensive documentation available for learners and professionals.

- **Java**

  i. Platform-independent

ii. Object-oriented

iii. Strongly-typed

iv. Robust and secure

v. Multi-threaded

- **JavaScript**

  vi. Client-side scripting

  vii. Asynchronous programming

  viii. Event-driven, Lightweight and interpreted

  ix. Widely used in web development

  x. Supports modern frameworks (e.g., React, Angular, Vue)

- C++

- C#

- Ruby

- Swift

- Kotlin

- PHP

- TypeScript

# 2 Web Development

1. **HTML/CSS (Markup and Style Sheet languages)**

   (a) **HTML (HyperText Markup Language):**
      i. Standard language for creating and designing web pages.
      ii. Uses a tag-based structure to define elements and content on a webpage.
      iii. Essential for structuring content such as headings, paragraphs, lists, links, images, and more.

   (b) **CSS (Cascading Style Sheets):**
      - Style sheet language used for describing the presentation of a document written in HTML or XML.
      - Enables the separation of content and presentation, allowing for consistent styling across multiple pages.
      - Controls layout, colors, fonts, and other design aspects of a web page.

2. JavaScript

3. TypeScript

4. PHP

5. Ruby

# 3 Systems Programming

- C++

- Rust

- Go (Golang)

- C

# 4 Data Science and Statistics

- **Python** (a) NumPy (b) Pandas (c) Matplotlib (d) Scikit-learn (e) TensorFlow (f) PyTorch (g) Seaborn (h) Statsmodels

- R

- MATLAB

# 5 Mobile App Development

- Swift

- Kotlin

- Java (Android)

- Objective-C (iOS)

# 6 Scripting and Automation

- Shell Scripting (Bash/PowerShell)

- Python

  a. Versatile
  b. Automation
  c. Scripting
  d. Readability

- Perl

# 7   Database Query Language

- SQL (Structured Query Language)

    A. Data Retrieval
    B. Data Manipulation
    C. Data Definition
    D. Data Control

# 8   Functional Programming

- Haskell

- Scala

# 9   Other Languages

- Dart

- Lua

- Groovy

- Visual Basic

- Assembly Language