Welcome to Software Development Foundations Program

from **Az-SENCS**

What is Az-SENCS?

Software Development Foundations program, is composed of 2 courses:

1. **Java Programming For Beginners.** (Hamza Algohary)
2. **Data Structures and Algorithms.** (Khaled Ekramy)

Welcome to the Java Course.

The syllabus is available at:
https://github.com/hamza-Algohary/java-syllabus-for-educators

Essential tools you need to install:

1. Compiler
2. Text Editor

Usually these things are packed in a big program called an **IDE**

You can also use an online compiler.

Day 1

Today we're going to write **6 programs** and have **2 discussions**

Program 1: Introduce Yourself.

Programs get executed sequentially.

Program 2: Print a menu.

Escape sequences are sequences of charachters with special meaning:

- `\n` (new line)
- `\t` (tab)

To print `"` or `\` you have to put a back-slash before it like so `\"` and `\\`

Program 3: Storing data.

A **variable** is a place in memory. It stores data.

Variables have types.

Some types:

- `int` (integer)
- `double` (floating point number)
- `boolean` (can only be true or false)
- `char` (single charachter)
- `String` (text)

Variable Naming rules:

- May only contain letters, numbers, `_`, `$`.
- Can't start with a number.

Variable names are case sensistive.

Variable name can't be a reserved word.

Variables can change.

To make a variable unchangeable use `final`.

Program 4: Calculate area of a rectangle.

Arithmetic Operators

Java supports arithmetic operators `+` `-` `*` `/` `%`

Program 5: Determine whether a number is even or odd.

`%` is called modulus, it gets remainder of division.

modulus only works with integers.

Program 6: Divide two integers.

Dividing two integers yields an integer. If you want a fraction, cast it to `double` or `float`.

Assignment Operators

Instead of writing `x = x + 5` you may write `x += 5`

Assignment Operators

There also these operators `+=` `-=` `*=` `/=`

`x++` means `x = x + 1`

`x--` means `x = x - 1`

A **comment** is text neglected by the compiler

Different data types have differnet sizes

Integral Types:

- `int` 4 bytes
- `long` 8 bytes
- `short` 2 bytes
- `byte` 1 byte

Fractional Types:

- `float` 4 bytes
- `double` 8 bytes

Everything is a number

Binary is a number system.

Charachters are representable as numbers.

True can be one and False can be zero.

You can also represent colors as numbers.