

## MODULE 1: INTRODUCTION TO PROGRAMMING

# Variables and Data Types



# Yesterday

- What is a shell?
- What is Git?
- What is a Repository?



# What is Java?



- Object-Oriented
- Syntax derived from C/C++
- Can run on multiple platforms (portable)
- Source code is compiled into Bytecode

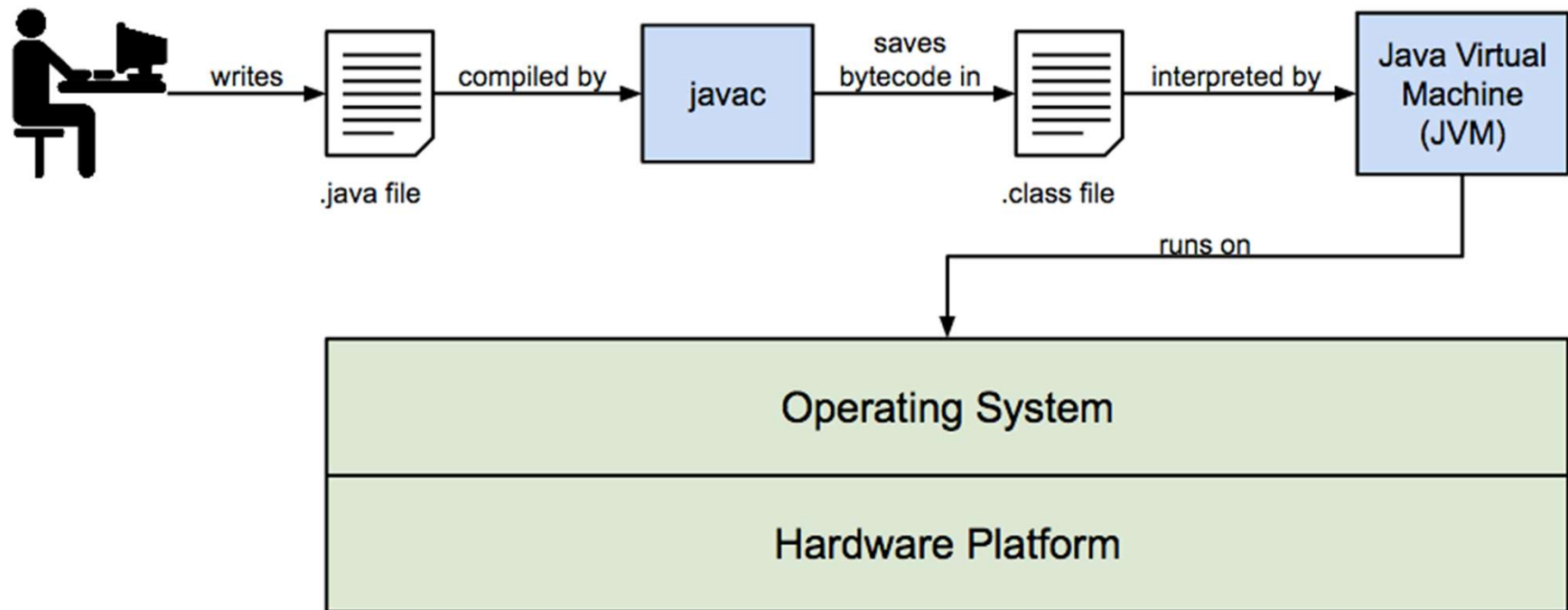
# Origins of Java



- Developed by Sun Microsystems  
(now controlled by Oracle)
- First released in 1995
- Intended for consumer electronics
- Popularity skyrocketed with Web



# Java Architecture

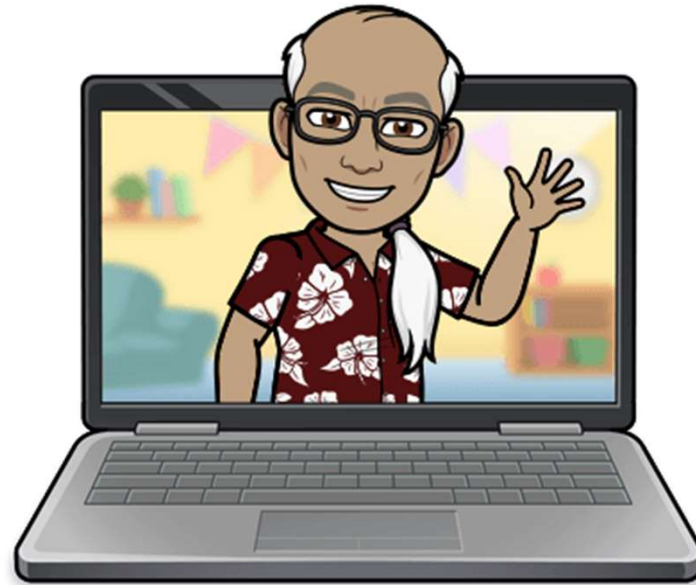


# Writing Java

- IntelliJ is an IDE (Integrated Developer Environment)
- IDEs are handy for:
  - organizing code into projects
  - providing immediate feedback on syntax errors
  - code assistance through **code completion**
  - **support suspending a program to step through and debug code**



# LET'S CODE!



# What is program or application?

- Two aspects: Data and Behavior
  - **Data** that will hold information that our program will store
  - **Behavior** will manipulate that data and transform it into something valuable





# Variables

- **Variable** is a storage container paired with a symbolic name or identifier.
- Variables have **value** and **type**

# Variable Declaration and Initialization

- `int numberOfStudents;`

- `datatype variableName;`

} Declaration



# Variable Declaration and Initialization

- `int numberOfStudents;`

- `datatype variableName;`

Declaration

- `numberOfStudents = 0;`

- `variableName = value;`

Initialization

# Sample Data Types (Primitives)

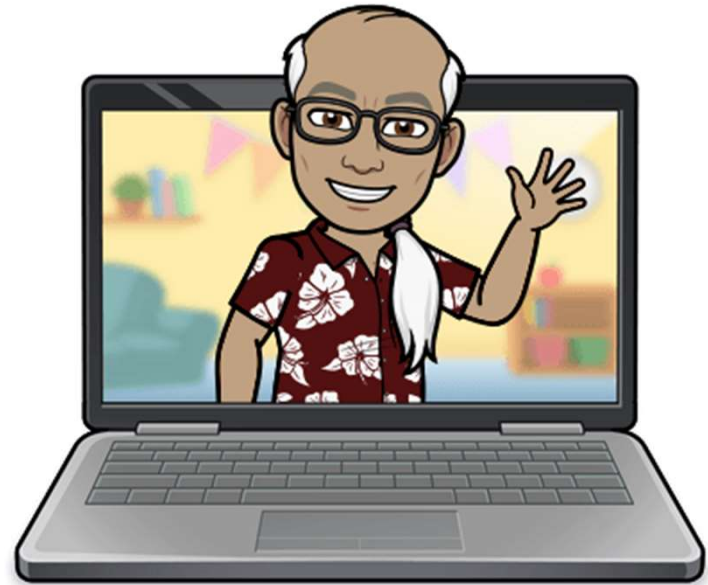
Data Type	Size	Description
byte	1 byte	Stores whole numbers from -128 to 127
short	2 bytes	Stores whole numbers from -32,768 to 32,767
int	4 bytes	Stores whole numbers from -2,147,483,648 to 2,147,483,647
long	8 bytes	Stores whole numbers from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	4 bytes	Stores fractional numbers. Sufficient for storing 6 to 7 decimal digits
double	8 bytes	Stores fractional numbers. Sufficient for storing 15 decimal digits
boolean	1 bit	Stores true or false values
char	2 bytes	Stores a single character/letter or ASCII values



# Strings (Reference)

- **String** represents a sequence of zero or more Unicode characters.
- Escape characters: `\n` and `\t`

# LET'S CODE!

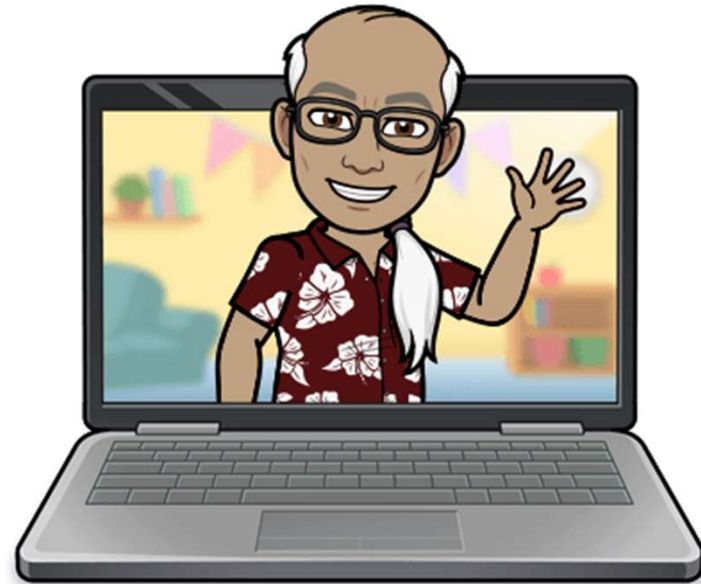


# Expressions

An **expression** is statement of code which can be evaluated to produce a result.

Category	Operators
multiplicative	<code>*</code> or <code>/</code> or <code>%</code>
additive	<code>+</code> or <code>-</code>
assignment	<code>=</code>

# LET'S CODE!





# Type Conversion

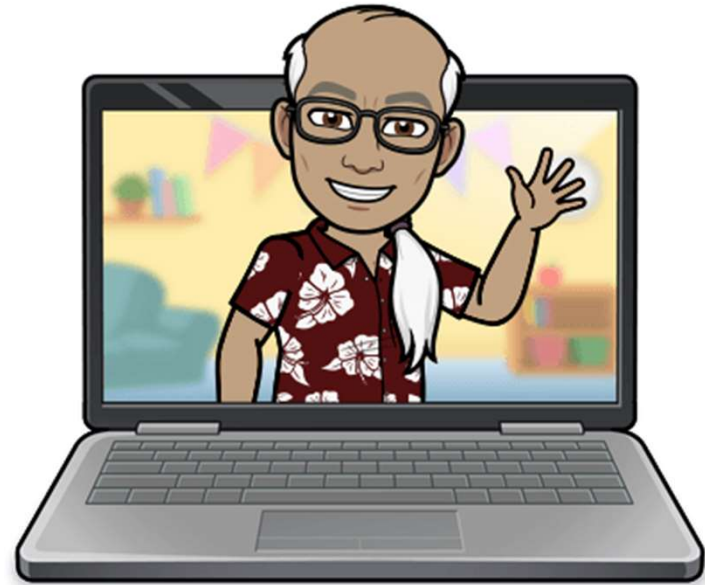
```
int firstNumber = 15;  
double secondNumber = 150;  
secondNumber = firstNumber;
```

```
firstNumber = secondNumber;
```



Data Type	Description
byte	Stores whole numbers from -128 to 127
short	Stores whole numbers from -32,768 to 32,767
int	Stores whole numbers from -2,147,483,648 to 2,147,483,647
long	Stores whole numbers from -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	Stores fractional numbers. Sufficient for storing 6 to 7 decimal digits
double	Stores fractional numbers. Sufficient for storing 15 decimal digits
boolean	Stores true or false values
char	Stores a single character/letter or ASCII values

# LET'S CODE!



WHAT QUESTIONS DO  
YOU HAVE?



# For Module 1



# Reading for tonight: **Logical Branching**

