SKILLS

Lecture

Java Variables and Data Types

List of Concepts Involved:

- Statically typed vs Dynamically typed Programming Language
- Variables and data types
- Naming Convention
- Identifiers
- Introduction of Operators in Java
- Incrementation and Decrementation

Topics covered Yesterday's Session:

- Fundamentals of Java

Statically typed vs Dynamically typed

Statically typed: Programming languages are referred to as "Static typed" if the memory of the variable is provided at the time of compilation.

For instance, C, C++, and Java

Dynamically typed: Programming languages are said to as "dynamically typed" if the memory for the variable is provided at the time of execution.

Like Python, PHP, and JavaScript

Variables

- A variable is the name of a memory-allocated reserved area. It may be thought of as the name of a memory location, in other words.
- While the Java programme is running, the value is held in a container.
- To identify the storage location, each variable needs to have a special name.
- A data type is assigned to a variable (we will learn about it after this topic).

Syntax for Declaring a Variable:

```
Type variable_name = value;
```

The name of a variable is variable_name. The variable can be initialised by supplying an equal sign and a value (initialization i.e. assigning an initial value, is optional). However, a Java uninitialized local variable is never given a default value by the compiler.

Naming Conventions for variables in Java

- Variable names should not begin with a number.For example
  int 2 var;   // 2 var is an invalid variable.

- White Spaces are not permitted in variable names. For example,
  int cricket score; // invalid variables.
  There is a gap/whitespace between cricket and score.

- A java keyword (reserved word) cannot be used as a variable name. For example, int float; is an invalid expression as float is a predefined keyword(we will learn about them) in java.

Naming Conventions for variables in Java

As per the latest coding practices, for variable names with more than one word the first word has all lowercase letters and the first letter of subsequent words are capitalised. For example, cricketScore, codePracticeProgram etc. This type of format is called camelcase.

- While creating variables, it's preferable to give them meaningful names like- ‘age’, ‘earning’, ‘value’ etc. for instance, makes much more sense than variable names like a, e, and v.
- We use all lowercase letters when creating a one-word variable name. It's preferable(and in practice) to use physics rather than PHYSICS or pHYSICS.

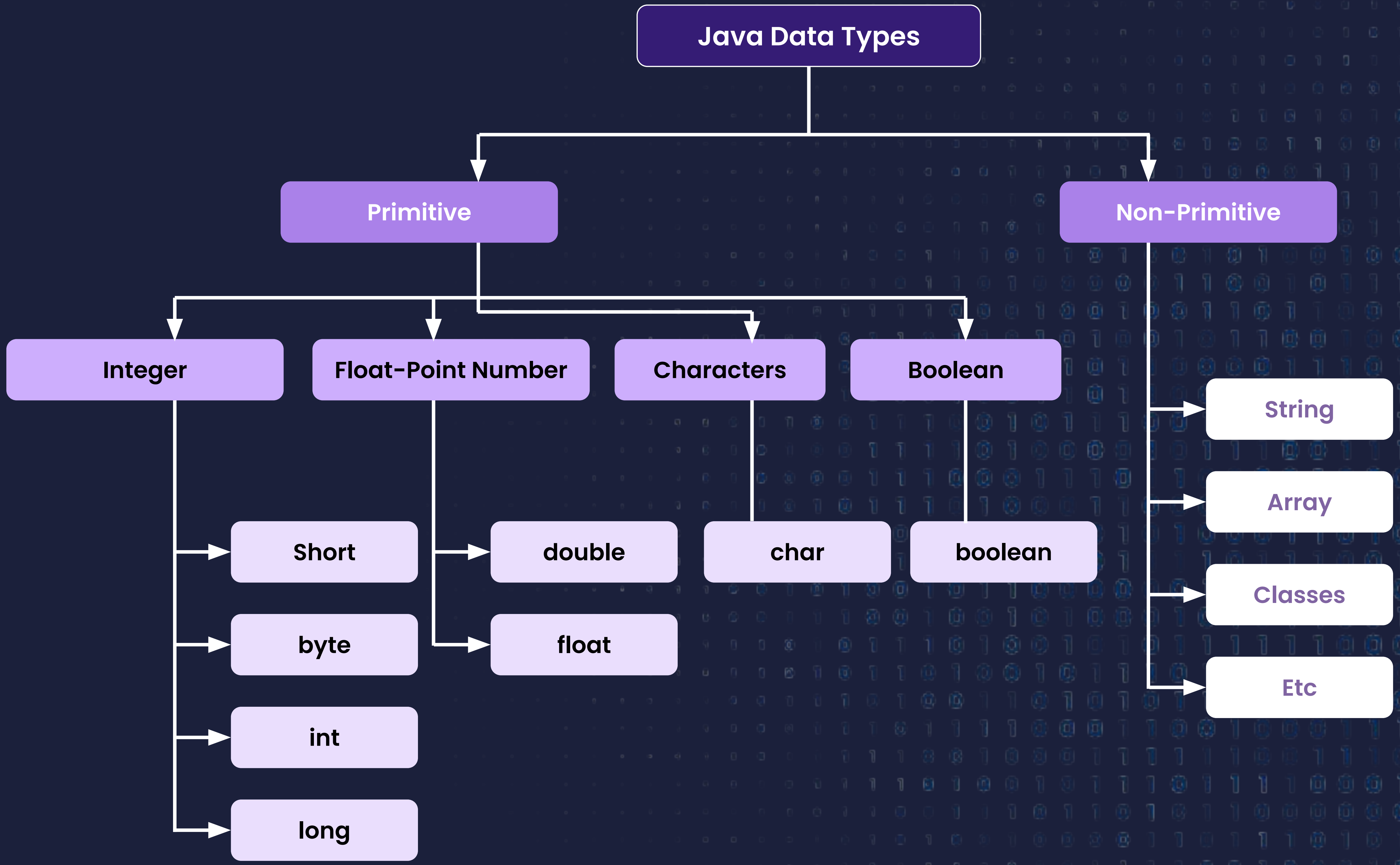
Data Types:

There are two types of data types in Java:

1. **Primitive data types:** The primitive data types include boolean, char, byte, short, int, long, float and double.

2. **Non-primitive data types:** The non-primitive data types include classes, Strings, Interfaces, and Arrays.

Data Types:


Java Data Types
Primitive
Non-Primitive
Integer
Float-Point Number
Characters
Boolean
Short
byte
int
long
double
float
char
boolean
String
Array
Classes
Etc

Primitive data types

A primitive type is predefined by the language and is named by a reserved keyword.

1. boolean
2. byte
3. short
4. int
5. long
6. double
7. float
8. char

Once we have mastered the primitives and are well informed in the Java programming principles, we will discuss the slightly more complex non-primitive data types.

Identifiers

An identifier is a name given to a package, class, interface, method, or variable. All identifiers must have different names.

In Java, there are a few points to remember while dealing with identifiers :

- Rule 1 - All identifiers should begin with a letter (A to Z or a to z), $ and _ and must be unique.
- Rule 2 - After the first character/letter, identifiers can have any combination of characters.
- Rule 3 - A keyword cannot be used as an identifier.
- Rule 4 - The identifiers are case-sensitive.
- Rule 5 – Whitespaces are not permitted.

Examples of legal identifiers: rank, $name, _rate, __2_mark.

Examples of illegal identifiers: 102pqr, -name.

Operators in Java

Operators in Java can be classified into 6 types:

1. Arithmetic Operators
2. Relational Operators
3. Logical Operators
4. Assignment Operators
5. Unary Operators
6. Bitwise Operators

Java Arithmetic operators:

Arithmetic operators are used in mathematical expressions in the same way that they are used in algebra. The following lists the arithmetic operators:

1. Addition(+)
2. Subtraction(-)
3. Multiplication(*)
4. Division(/)
5. Modulus(%)

Incrementation and Decrementation

- ++ Increment
- -- Decrement

Next Lecture

- More on Operators and loops

PW SKILLS

THANK YOU