Core Java Programming - 1

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Day 2: Agenda

- Data Types
- Wrapper Classes
- Narrowing and widening
- Boxing and Unboxing
- Command line arguments
- Comments
- Console class

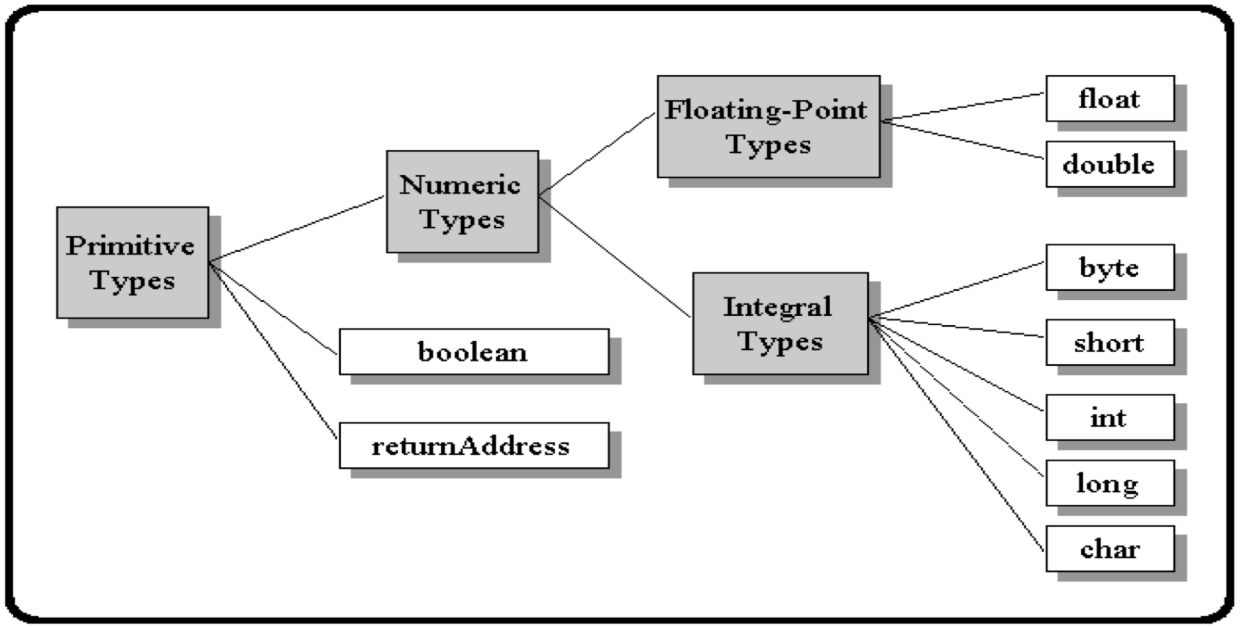
Data Types

- Data type or simply type of a variable decides 4 things:
  1. Memory
  2. Nature
  3. Operation
  4. Range

- Types
  1. Primitive Type (also called as **value type**)
  2. Non Primitive Type (also called as **reference type**)

Primitive Data Types

- The Java programming language is statically-typed, which means that all variables must first be declared before they can be used.
- The eight primitive data types supported by the Java programming language are:



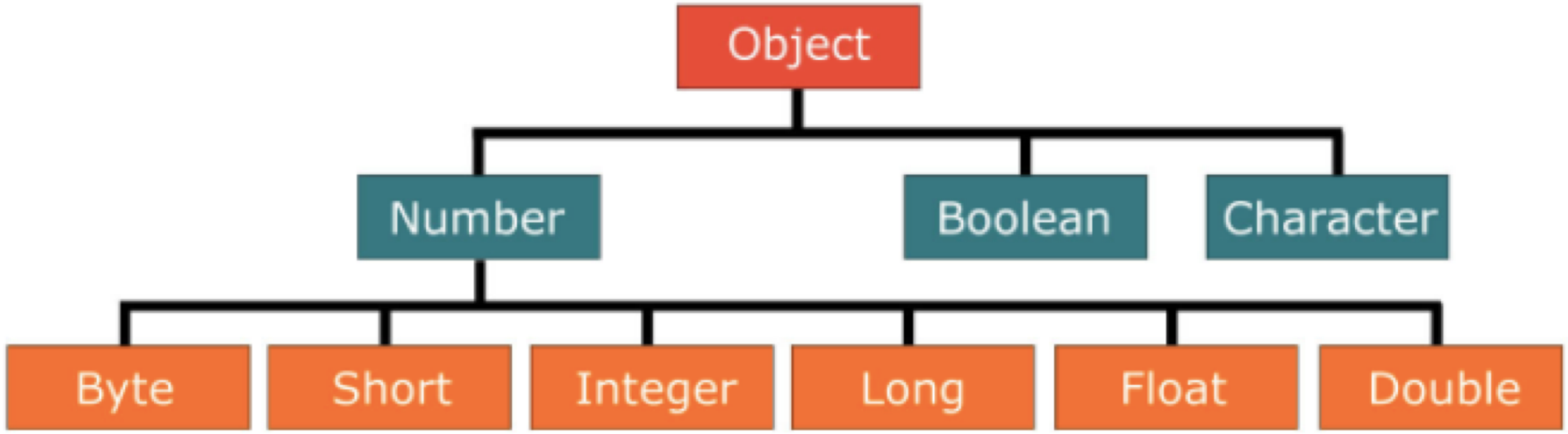
- The Java virtual machine works with one other primitive type that is unavailable to the Java programmer: the returnAddress type.

Primitive Data Types

Sr. No.	Primitive Type	Size	Default Value(For Fields)	Wrapper Class
1	boolean	Not Specified	false	Boolean
2	byte	1 byte	0	Byte
3	char	2 bytes	'\u0000'	Character
4	short	2 bytes	0	Short
5	int	4 bytes	0	Integer
6	long	8 bytes	0L	Long
7	float	4 bytes	0.0f	Float
8	double	8 bytes	0.0d	Double

Wrapper Classes

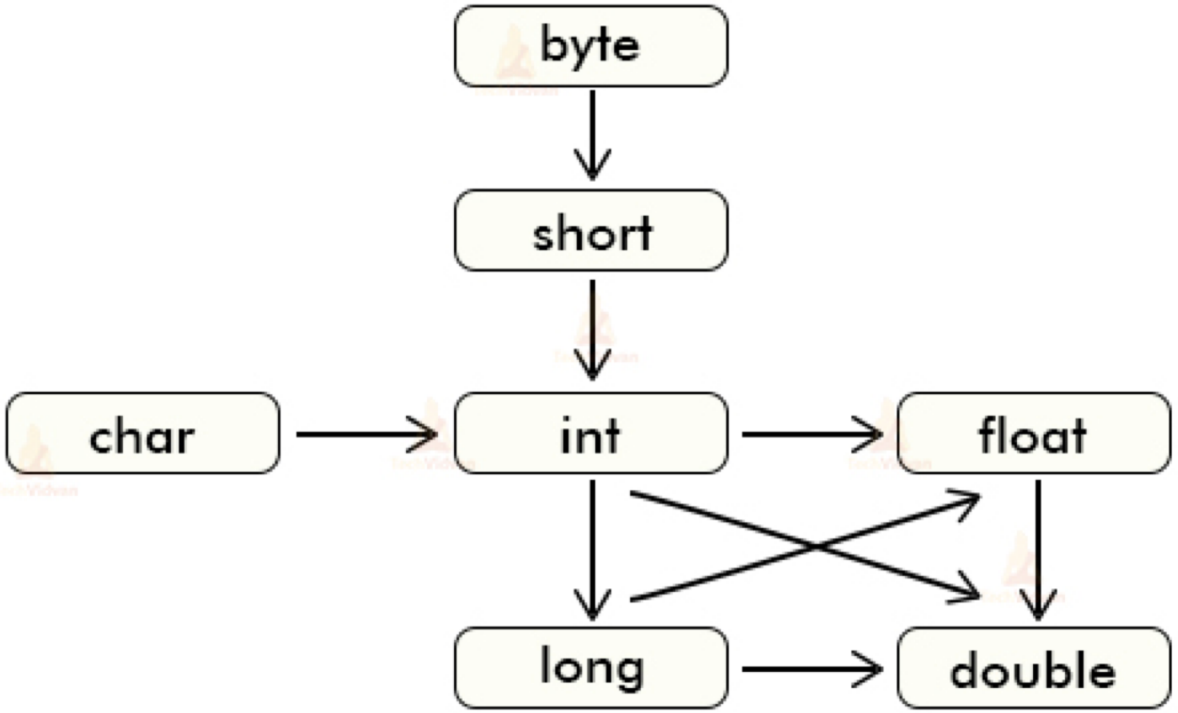
- In Java primitive types are not classes.
- Wrapper class is a class associated with primitive type
- Why Wrapper class?
  1. To parse string into numeric type
     int number = Integer.parseInt("125"); //OK
  2. To use primitive values into generic collection.
     Stack<int> s1 = new Stack<int>(); //Not OK
     Stack<Integer> s2 = new Stack<Integer>(); // OK



Widening

- It is the process of converting state of variable of narrower type into wider type.
- Consider example:

```
int num1 = 10;
double num2 = ( double )num1; //OK
double num3 = num1;      //OK
```



- In case of widening explicit typecasting is optional.

Narrowing

- It is the process of converting state of variable of wider type into wider narrower.

- Consider example:

```
double num1 = 10.5;
int num2 = ( int )num1; //OK
int num3 = num1;  //Not OK
```

- In case of narrowing explicit typecasting is mandatory.

Unboxing

- It is the process of converting state of instance of reference type into value type.

- Consider Example:

```
int num1 = Integer.parseInt("10"); //UnBoxing
float num2 = Float.parseFloat("10.5f"); //UnBoxing
double num3 = Double.parseDouble("10.5d"); //UnBoxing
```

Boxing

- It is the process of converting state of instance of value type into reference type.

- Consider Example:

```
String s1 = Integer.toString( 10 );
String s2 = String.valueOf( 10 );
```

Command Line Arguments

```
class Program
{
	public static void main( String[] args )
	{
		String name = args[ 0 ];
		int empid   = Integer.parseInt( args[ 1 ] );
		float salary = Float.parseFloat( args[ 2 ] );
	}
}
```

- Compilation and execution steps
  - javac Program.java
  - java Program Sandeep 33 45000.50f

Comments

- If we want to maintain documentation of source code then we should use comments.
- Following types of comments, we can use in source code
  1. Single line comment

```
//This is single line comment
```

  2. Multi line comment

```
/*
        This is multi line comment
*/
```

  3. Java documentation/doc comment

```
/**
        This is multi line comment
*/
```

User Input

- Console is a class declared in java.io package.
- "String readLine()" is a non method of java.io.Console class.
- "static Console console()" is a method of java.lang.System class.
- Consider following code:

```
Console console = System.console();
String name = console.readLine();
int empid = Integer.parseInt(console.readLine());
float salary = Float.parseFloat( console.readLine() );
```

Useful Link

1. https://docs.oracle.com/javase/tutorial/
2. https://www.artima.com/java/
3. http://tutorials.jenkov.com/

Thank You.