



Java : Introduction

B.Sc. 2nd Semester (Paper Code-CC3)

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Topics Covered



How Java was created



Motivation behind Java's creation



Properties of Java



A Sample Program



Java Components



Data Types



Operators



How Java was Created!

Java was created by James Gosling and team at Sun Microsystems in 1991.

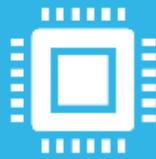
Initially, it was named Oak, the term “Java”.

It was the next step after C and C++.

In fact, Java borrows some of its syntax from C++.

Java is a truly Object Oriented Programming (OOP) language.

Motivation behind Java's creation



Need of a platform independent programming language:

with its ByteCode, which was its key to platform independence. The output of the Java compiler was not an executable code but Byte Code which could be interpreted and run on any machine.



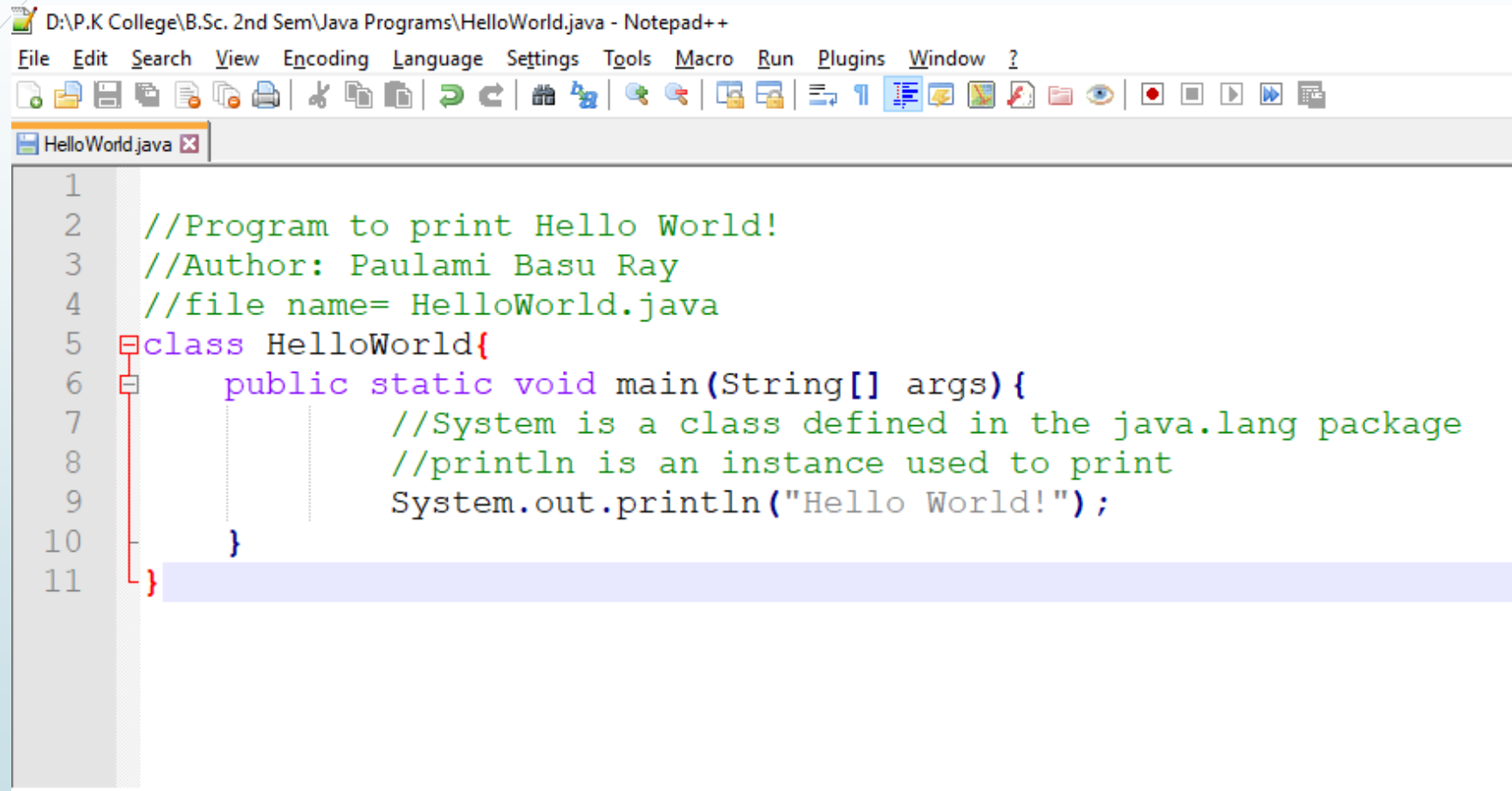
Rise of the Internet: Java introduced the Applets and Servlets, which was a breakthrough for the Internet technology.



Properties of Java

- ▶ Simple
- ▶ Object-Oriented
- ▶ Secure
- ▶ Portable/ Architecture Neutral
- ▶ Robust
- ▶ Multi-Threaded
- ▶ Interpreted
- ▶ Distributed

A Simple Program to print Hello World



The image shows a screenshot of a Notepad++ text editor window. The title bar reads "D:\P.K College\B.Sc. 2nd Sem\Java Programs\HelloWorld.java - Notepad++". The menu bar includes "File", "Edit", "Search", "View", "Encoding", "Language", "Settings", "Tools", "Macro", "Run", "Plugins", and "Window". The toolbar contains various icons for file operations and editing. The active window is titled "HelloWorld.java" and contains the following Java code:

```
1
2 //Program to print Hello World!
3 //Author: Paulami Basu Ray
4 //file name= HelloWorld.java
5 class HelloWorld{
6     public static void main(String[] args){
7         //System is a class defined in the java.lang package
8         //println is an instance used to print
9         System.out.println("Hello World!");
10    }
11 }
```

How to Compile & Run ?

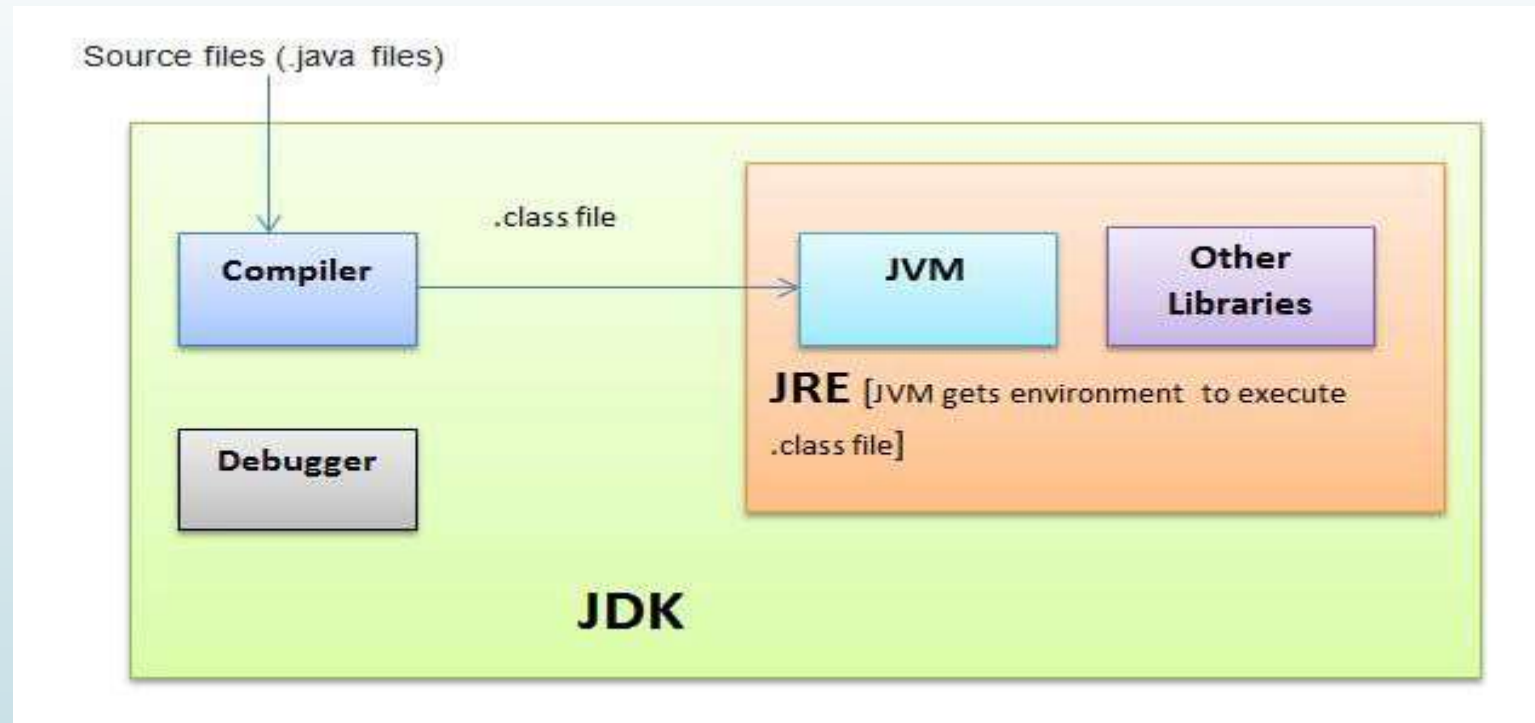
Command Prompt

```
D:\P.K College\B.Sc. 2nd Sem\Java Programs>javac HelloWorld.java
```

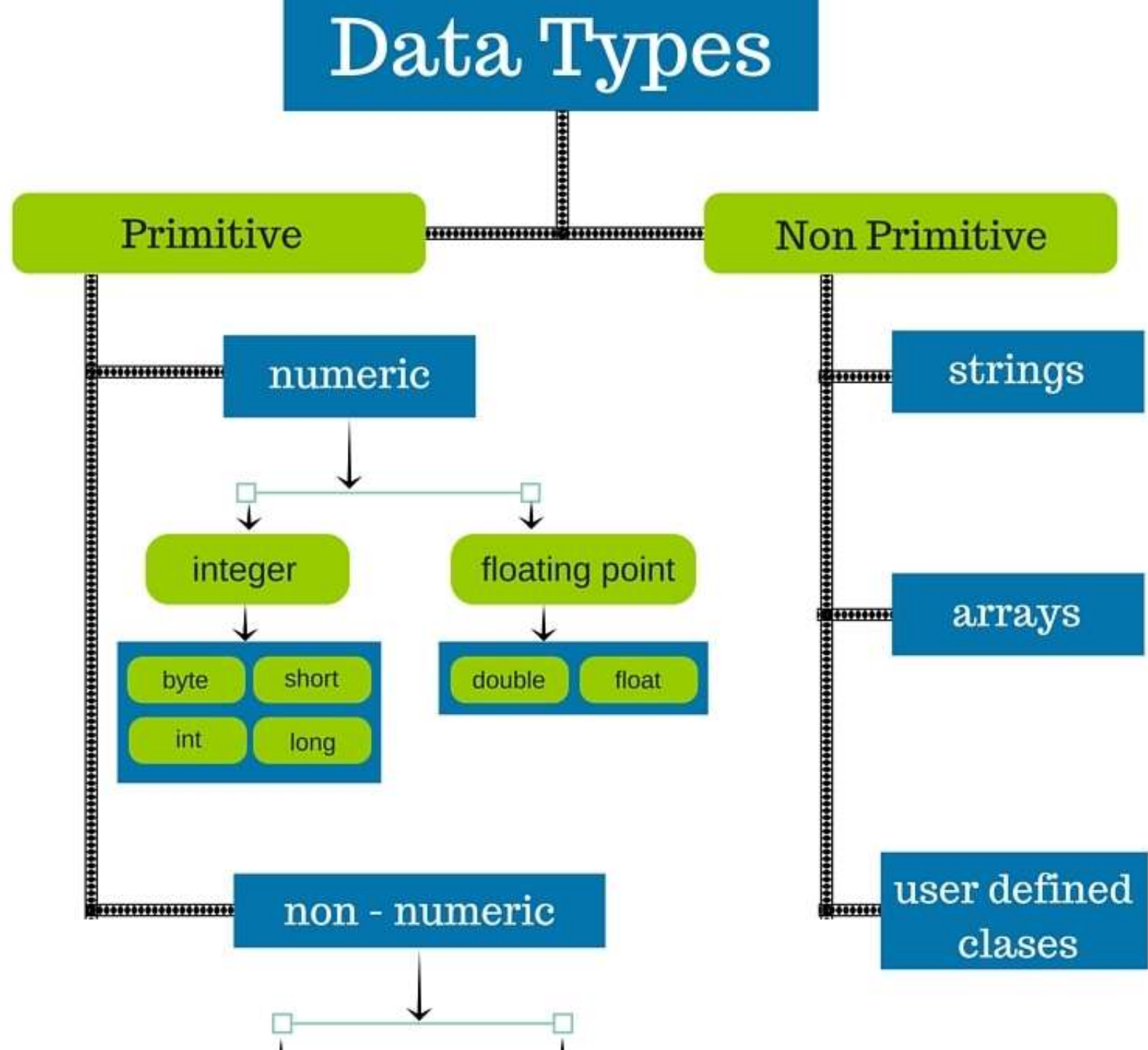
```
D:\P.K College\B.Sc. 2nd Sem\Java Programs>java HelloWorld  
Hello World!
```

```
D:\P.K College\B.Sc. 2nd Sem\Java Programs>_
```

Components of Java Software



Data Types



Properties of the Primitive Datatypes

TYPE	DESCRIPTION	DEFAULT	SIZE	EXAMPLE LITERALS	RANGE OF VALUES
boolean	true or false	false	1 bit	true, false	true, false
byte	twos complement integer	0	8 bits	(none)	-128 to 127
char	unicode character	\u0000	16 bits	'a', '\u0041', '\101', '\', '\', '\n', ' \b'	character representation of ASCII values 0 to 255
short	twos complement integer	0	16 bits	(none)	-32,768 to 32,767
int	twos complement integer	0	32 bits	-2, -1, 0, 1, 2	-2,147,483,648 to 2,147,483,647
long	twos complement integer	0	64 bits	-2L, -1L, 0L, 1L, 2L	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
float	IEEE 754 floating point	0.0	32 bits	1.23e100f, -1.23e-100f, .3f, 3.14F	upto 7 decimal digits
double	IEEE 754 floating point	0.0	64 bits	1.23456e300d, -1.23456e-300d, 1e1d	upto 16 decimal digits

Java Operators

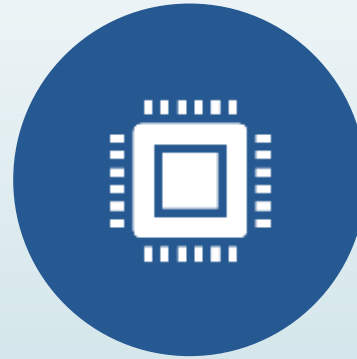


Operator	Category	Precedence
Unary Operator	postfix	expression++ expression--
	prefix	++expression --expression +expression -expression ~!
Arithmetic Operator	multiplication	* / %
	addition	+ -
Shift Operator	shift	<< >> >>>
Relational Operator	comparison	< > <= >= instanceof
	equality	== !=
Bitwise Operator	bitwise AND	&
	bitwise exclusive OR	^
	bitwise inclusive OR	
Logical Operator	logical AND	&&
	logical OR	
Ternary Operator	ternary	? :
Assignment Operator	assignment	= += -= *= /= %= &= ^= = <<= >>= >>>=

Books to consult from...



THE COMPLETE REFERENCE
JAVA – HERBERT SCHIELDT



PROGRAMMING WITH
JAVA- E. BALAGURUSAMI