M.S. Ramaiah Institute of Technology
(Autonomous Institute, Affiliated to VTU)
Department of Computer Science and Engineering

Course Name: Object Oriented Programming
Course Code: CS33
Credits: 3:0:0

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First Java Program


```java
public class HelloWorld {

    /**
     * @param args
     */
    public static void main(String[] args) {
        // TODO Auto-generated method stub
        System.out.println("Hello world!");
    }

}
```

First Java Program

The keyword **'public'** says that, the main function can be accessed even outside the defining class.

The keyword **'static'** indicates that a function can be accessed without an object.

The keyword **'void'** indicates that a function returns nothing.

The Keyword **'main'** is the name of the function and entry point for a Java application.

Variants of main() in Java

Default:
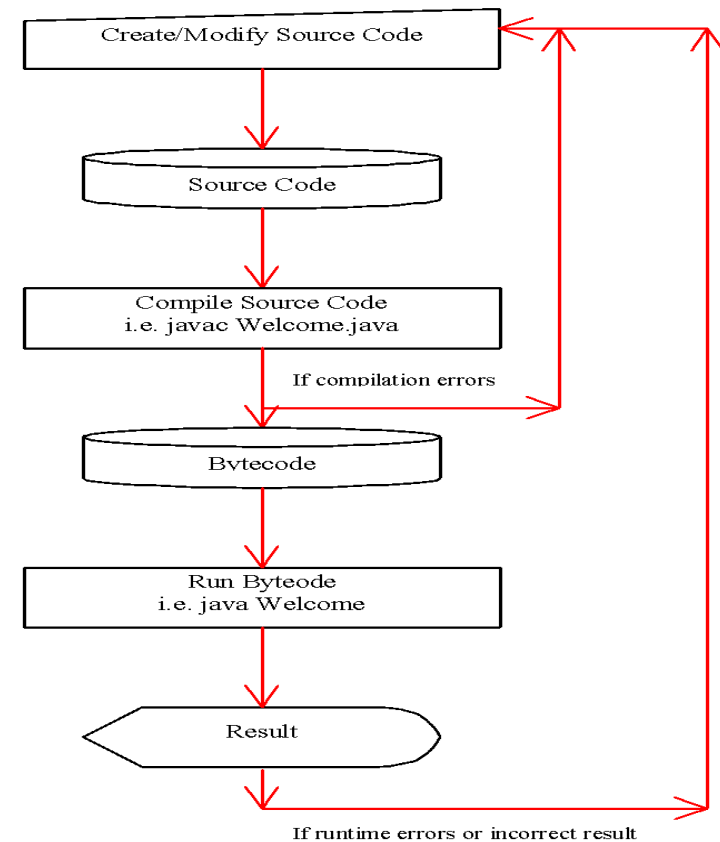- **public static void main(String args[])**

Variants:
- **static** public void main(String args[])
- public static void **main(String[] args**)
- public **final** static void main(String[] args)
- public **synchronized** static void main(String[] args)

The main() can be overloaded but not overridden.

- # On command line
  - ## javac file.java
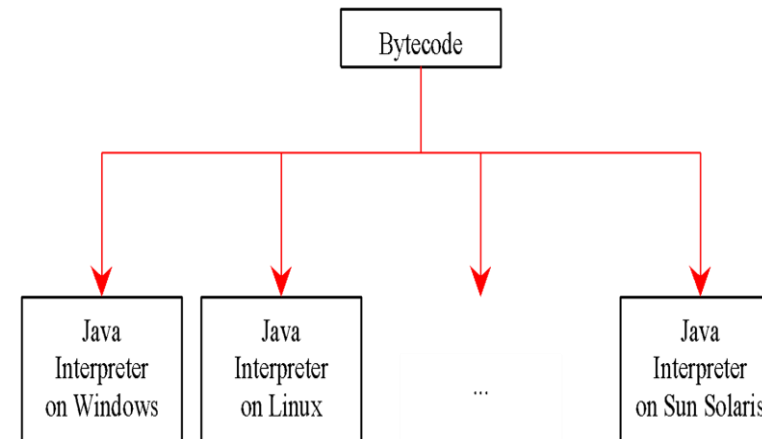

Create/Modify Source Code

Source Code

Compile Source Code
i.e. javac Welcome.java

If compilation errors

Bytecode

Run Byteode
i.e. java Welcome

Result

If runtime errors or incorrect result

Executing programs
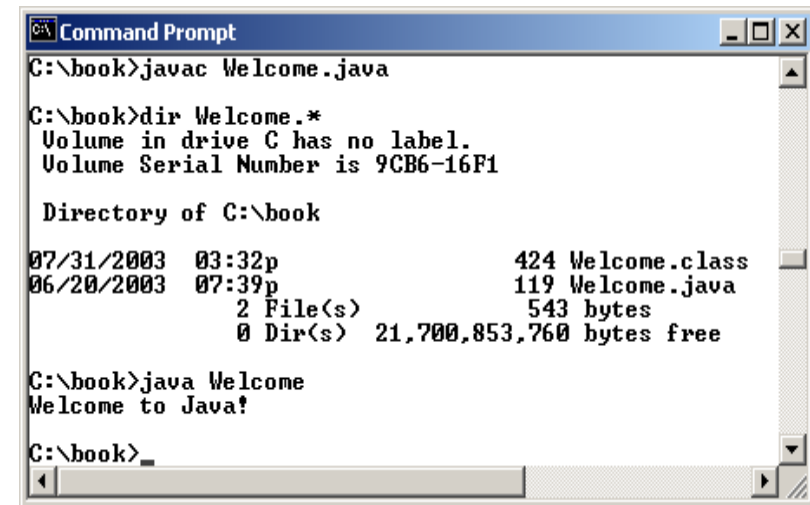
- ## On command line
  – `java classname`


```
javac Helloworld.java
java Hello
output:...
```

- # Set path to JDK bin directory
  - set path=c:\Program Files\java\jdk-12.0.2\bin
- # Compile
  - javac HelloWorld.java
- # Run
  - java HelloWorld

```
Command Prompt                                    _ | □ | ×
C:\book>javac Welcome.java

C:\book>dir Welcome.*
 Volume in drive C has no label.
 Volume Serial Number is 9CB6-16F1

 Directory of C:\book

07/31/2003  03:32p                  424 Welcome.class
06/20/2003  07:39p                  119 Welcome.java
                2 File(s)           543 bytes
                0 Dir(s)  21,700,853,760 bytes free

C:\book>java Welcome
Welcome to Java!

C:\book>_
```

Data Types in Java

- In java, data types are classified into two catagories :

- Primitive Data type

Data Type	Default Value	Default Size
byte	0	1 byte
short	0	2 byte
int	0	4 byte
long	0L	8 byte
float	0.0f	4 byte
double	0.0d	8 byte
char	'\u0000'	2 byte
boolean	false	1 bit

- Non-Primitive Data type are Referenced or object data types:
  - is used to refer to an object. A reference variable is declare to be of specific and that type can never be change. Default value of object data types is null.

Note: Compiler never initialize local variable with default values. So you have to initialize local variable before using otherwise it will result in compile-time error

Type Casting

- Assigning a value of one type to a variable of another type is known as **Type Casting**.

- **Automatic Type casting (Implicit)** take place when, the two types are compatible and the target type is larger than the source type.

byte $\rightarrow$ short $\rightarrow$ int $\rightarrow$ long $\rightarrow$ float $\rightarrow$ double

```
int i = 100;
long l = i;        //no explicit type casting required
float f = l;       //no explicit type casting required
```

- **Explicit type casting:** When you are assigning a larger type value to a variable of smaller type, then you need to perform explicit type casting.

```
double d = 100.04;
long l = (long)d;   //explicit type casting required
int i = (int)l;     //explicit type casting required
```

Java Command Line Argument

- Command line arguments are the optional argument that supplied by the user or programmer at run time. In java command line arguments are handled by the main() function. It is an Array of string so that you can pass argument in the form of String only.

```java
class JavaCommandLine{
public static void main(String args[]){
System.out.println("First String Argument is: "+args[0]);
}
}
```

Reading Input from the Console

1. import java.util.Scanner;

2. Create a Scanner object

```
Scanner input = new Scanner(System.in);
```

3. Use the methods next(), nextByte(), nextShort(), nextInt(), nextLong(), nextFloat(), nextDouble(), or nextBoolean() to obtain to a string, byte, short, int, long, float, double, or boolean value. For example,

```
System.out.print("Enter a double value: ");
Scanner input = new Scanner(System.in);
double d = input.nextDouble();
```

Exercises

- Write a program that obtains hours and minutes from seconds using java operators

- Write a program that converts a Fahrenheit degree to Celsius.

- Write a java program that takes your first name and last name as command line arguments to the program and displays your name and last name on separate lines.
- Write a program to print factorial of a number using loops.
- Write a program that prompts the user to enter an integer from console. If the number is a multiple of 5, print HiFive. If the number is divisible by 2, print HiEven

Thank you