OBJECT™
TECHNOLOGIES

Introduction to Java

What will be covered

OBJECT TECHNOLOGIES

- First Program
- Setting the path
- Compilation and Execution
- Setting the classpath
- Difference between path and classpath

First Program

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```
// Your First Program

class HelloWorld {
    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }
}
```

- Comments can be written with // for single line or /*.....*/ for multiline
- If the class is declared as public, name of the source file should be HelloWorld.java compulsorily.
- Even the main method should belong to the class. No variable or method can be written outside the class as java is object oriented programming language.

First Program

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- Every application in Java must contain the main method. The Java compiler starts executing the code from the main method. The signature of the main method in Java is: public static void main(String [] args)
- If main method is declared with some other name, program will get compiled but can not get executed.
- args is String [] which is command line arguments.
- System is a class in java library.
  out is a static object of PrintStream class
  println() is a method in PrintStream class.
- Hello, World! is printed to standard output (your screen).

Setting the path

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- The path is required to be set for using tools such as javac, java, etc.
- There are two ways to set the path in Java:
  Temporary
  Permanent
- **To set the temporary path** of JDK, you need to follow the following steps:
  - Open the command prompt
  - Copy the path of the JDK/bin directory
  - Write in command prompt:
    set path=%path%;copied_path
  - %path% helps in appending the path in the existing path varibale and not overwriting.

Setting the path

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- **For setting the permanent path** of JDK, you need to follow these steps:
  - Go to MyComputer properties -> advanced system settings -> environment variables
  - System environment variables are globally accessed by all users.
    User environment variables are specific only to the currently logged-in user.
  - Select path from either system or user environment variables and append it in the existing path. In windows 10 it allows to create new entry
  - If multiple versions of java are installed, entry of that JDK/bin should be at the beginning which needs to be currently used.

Compilation and Execution

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- Tools like javac and java are used for compilation and execution of java programs. Thses tools are available in the bin directory of installation folder
- Save source file with .java extension.
- Open the command prompt and move to the location where .java file is saved
- Use javac tool for compilation. If it does not display any error message that means compilation is successful.
- After successful compilation, use java tool for executing the application

```
E:\javaprogs>javac Hello.java

E:\javaprogs>java Hello
Hello World
```

Setting the classpath

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- CLASSPATH is an environment variable which is used by Application ClassLoader to locate and load the .class files. The CLASSPATH defines the path, to find third-party and user-defined classes that are not extensions or part of Java platform.
- Include all the directories which contain .class files and JAR files when setting the CLASSPATH.
- The CLASSPATH has a directory name or file name (in case of jar or zip) at the end.
- The default value of CLASSPATH is a dot (.). It means the only current directory searched. The default value of CLASSPATH overrides when you set the CLASSPATH variable.
- Classpath can even be set using temporary or permanent way like path setting.

Setting the classpath

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- Temporary setting of the classpath
- Open the command prompt
  set CLASSPATH=%CLASSPATH%;D:\myclasses;
- %CLASSPATH% helps in appending in the classpath so that existing classpath will not be overwritten.
- Permanent setting of the classpath
- Go to MyComputer properties -> advanced system settings -> environment variables
- Select classpath from either system or user environment variables and append the required path in the existing classpath. In windows 10 it allows to create new entry

Difference between path and classpath

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Path	Classpath
It is used by the operating system to find the executable files (.exe).	It is used by Application ClassLoader to locate the .class file.
You are required to include the directory which contains .exe files.	You are required to include all the directories which contain .class and JAR files.
PATH environment variable once set, cannot be overridden.	The CLASSPATH environment variable can be overridden by using the command line option -cp or -CLASSPATH to both javac and java command.