Course title	: **CSE2005**
Course title	: **Object Oriented Programming**
Module	: **1**
Topic	: **2**

Java - Language Basics

Objectives

This session will give the knowledge about

- How to set the java path
- How to execute a simple java program

How to verify Java installation

- Open command prompt using “cmd” in search bard. In Linux OS, use Terminal option.
- Type “javac”, if you get all the libraries loaded, you can compile and run java programs
- If you get “javac is not an internal or external command” response, you need to set the path

- Java path can be set in two different ways
  - Temporary path
  - Permanent path (need administrator rights)

What is PATH

- PATH is an *environmental variable* in DOS(Disk Operating System), Windows and other operating systems like Unix.

- PATH tells the operating system which directories(folders) to search for executable files, in response to commands issued by a user .

- It is a convenient way of executing files without bothering about providing the absolute path to the folder, where the file is located.

What is CLASSPATH

- CLASSPATH is a parameter which tells the JVM or the Compiler, where to locate classes that are not part of Java Development Tool Kit (JDK).

- CLASSPATH is set either on command-line or through environment variable.

- CLASSPATH set on command-line is temporary in nature, while the environment variable is permanent.

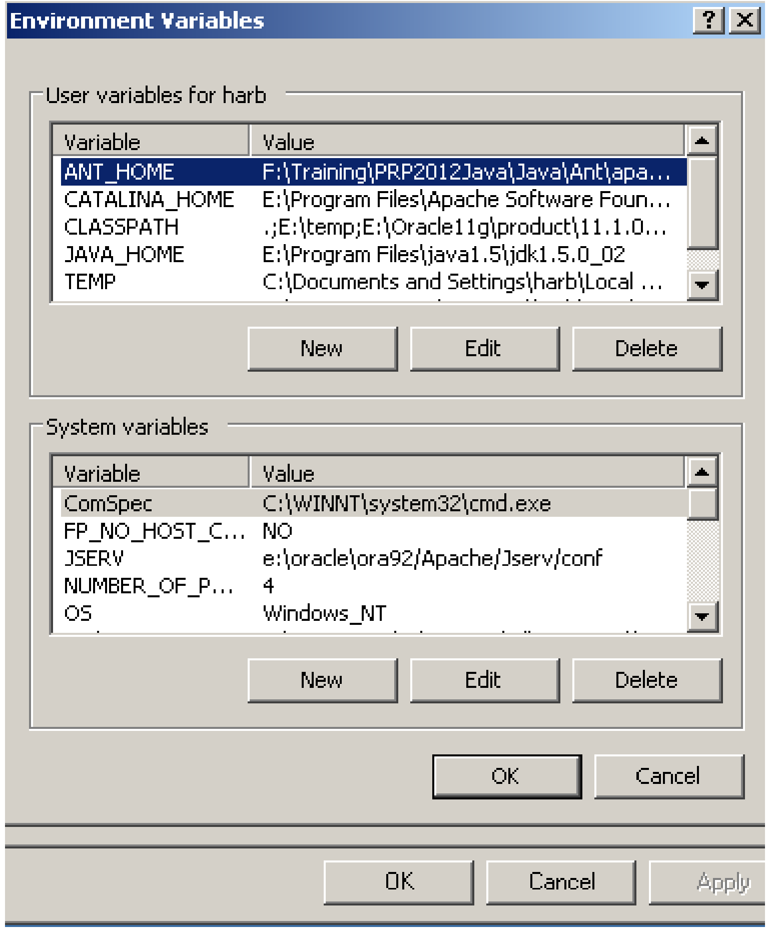
How to set Temporary path

- Open command prompt using “cmd” in search bard. In Linux OS, use Terminal option.
- Type “set path=“<type the location of jdk installation directory>”;
- Type “set classpath= “<type the location of jre installation directory>”;

- Example
- C:\Users\KRISHNAN>set path=“C:\Program Files\Java\jdk1.8.0_112\bin”;
- C:\Users\KRISHNAN>set classpath=“C:\Program Files\Java\jre1.8.0_112\bin”;

How to set Permanent path

1. Right Click My Computer
2. Select Properties
3. You will get to see the Properties Page of My Computer
4. Select Advanced Tab
5. Select Environment Variables
6. You will see Environment Variables Page as displayed here



Environment Variables

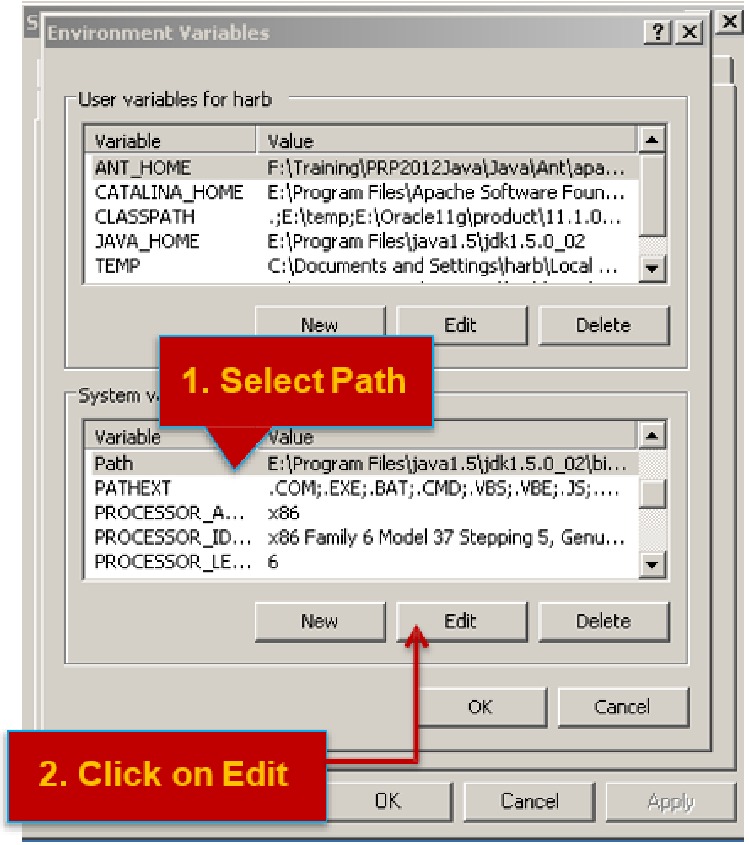
User variables for harb

Variable	Value
ANT_HOME	F:\Training\PRP2012Java\Java\Ant\apa...
CATALINA_HOME	E:\Program Files\Apache Software Foun...
CLASSPATH	.;E:\temp;E:\Oracle11g\product\11.1.0...
JAVA_HOME	E:\Program Files\java1.5\jdk1.5.0_02
TEMP	C:\Documents and Settings\harb\Local ...

System variables

Variable	Value
ComSpec	C:\WINNT\system32\cmd.exe
FP_NO_HOST_C...	NO
JSERV	e:\oracle\ora92/Apache/Jserv/conf
NUMBER_OF_P...	4
OS	Windows_NT

How to set Permanent path



Environment Variables

User variables for harb

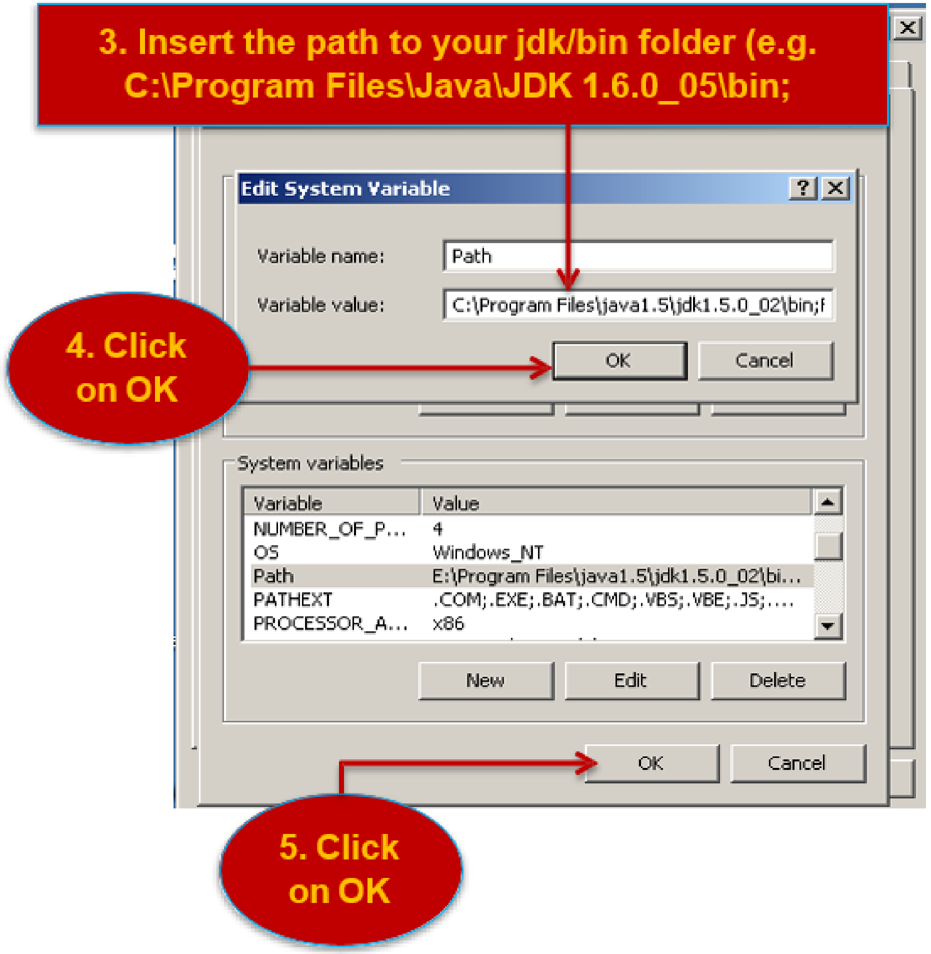
Variable	Value
ANT_HOME	F:\Training\PRP2012Java\Java\Ant\apa...
CATALINA_HOME	E:\Program Files\Apache Software Foun...
CLASSPATH	.;E:\temp;E:\Oracle11g\product\11.1.0...
JAVA_HOME	E:\Program Files\java1.5\jdk1.5.0_02
TEMP	C:\Documents and Settings\harb\Local ...

System v...

Variable	Value
Path	E:\Program Files\java1.5\jdk1.5.0_02\bi...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;....
PROCESSOR_A...	x86
PROCESSOR_ID...	x86 Family 6 Model 37 Stepping 5, Genu...
PROCESSOR_LE...	6

1. Select Path

2. Click on Edit



3. Insert the path to your jdk/bin folder (e.g. C:\Program Files\Java\JDK 1.6.0_05\bin;

Edit System Variable

Variable name: Path

Variable value: C:\Program Files\java1.5\jdk1.5.0_02\bin;f

4. Click on OK

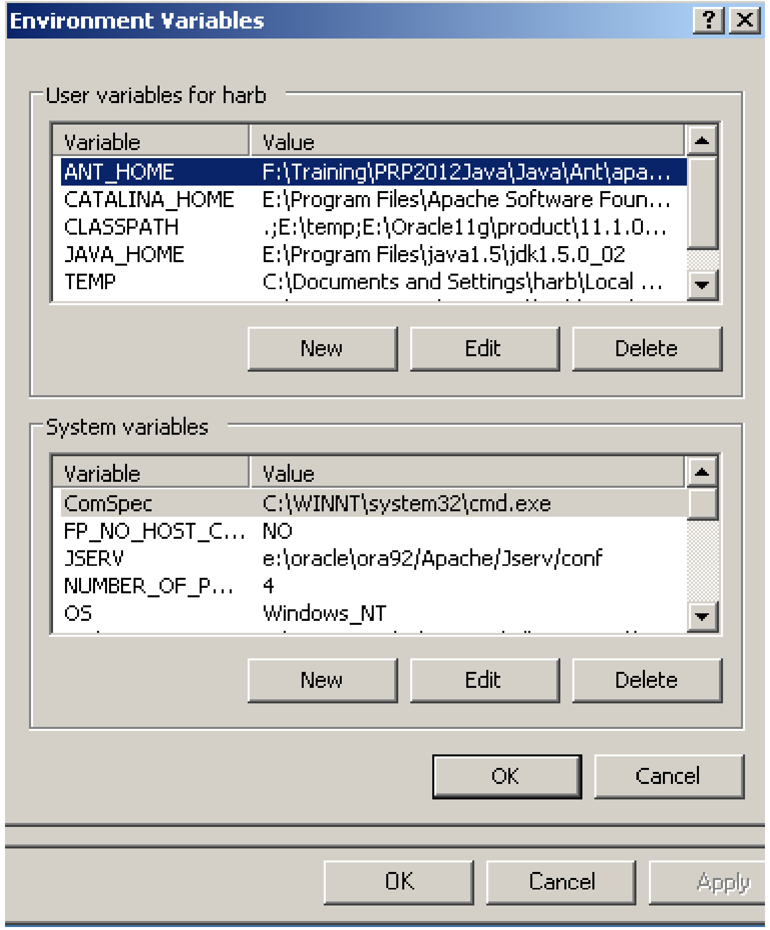
System variables

Variable	Value
NUMBER_OF_P...	4
OS	Windows_NT
Path	E:\Program Files\java1.5\jdk1.5.0_02\bi...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;....
PROCESSOR_A...	x86

5. Click on OK

How to set Permanent class path

1. Right Click My Computer
2. Select Properties
3. You will get to see the Properties Page of My Computer
4. Select Advanced Tab
5. Select Environment Variables
6. You will see Environment Variables Page as displayed here



Environment Variables

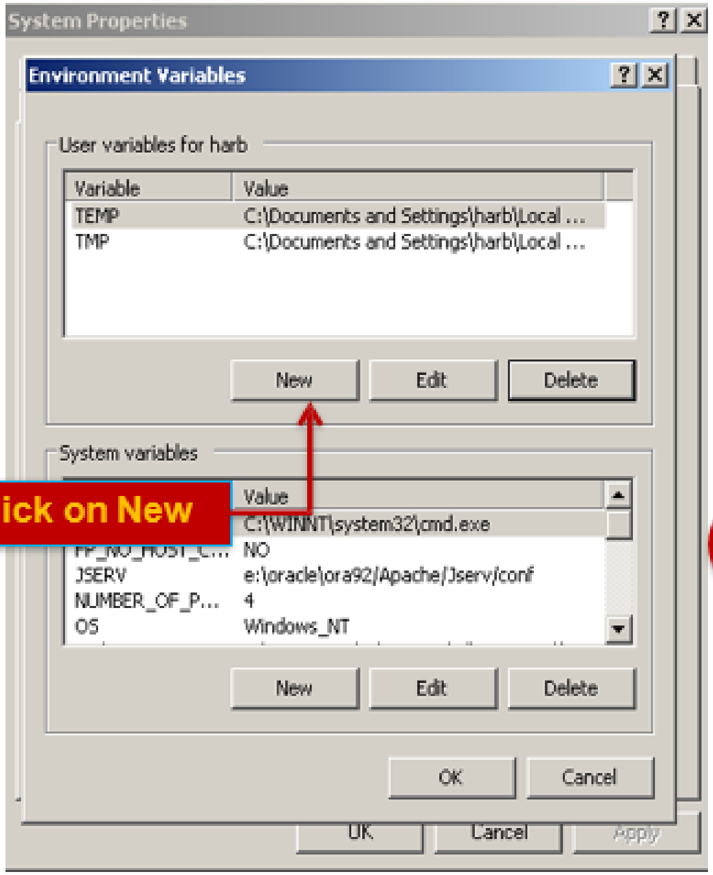
User variables for harb

Variable	Value
ANT_HOME	F:\Training\PRP2012Java\Java\Ant\apa...
CATALINA_HOME	E:\Program Files\Apache Software Foun...
CLASSPATH	.;E:\temp;E:\Oracle11g\product\11.1.0...
JAVA_HOME	E:\Program Files\java1.5\jdk1.5.0_02
TEMP	C:\Documents and Settings\harb\Local ...

System variables

Variable	Value
ComSpec	C:\WINNT\system32\cmd.exe
FP_NO_HOST_C...	NO
JSERV	e:\oracle\ora92/Apache/Jserv/conf
NUMBER_OF_P...	4
OS	Windows_NT

How to set Permanent class path



1. Click on New

System Properties

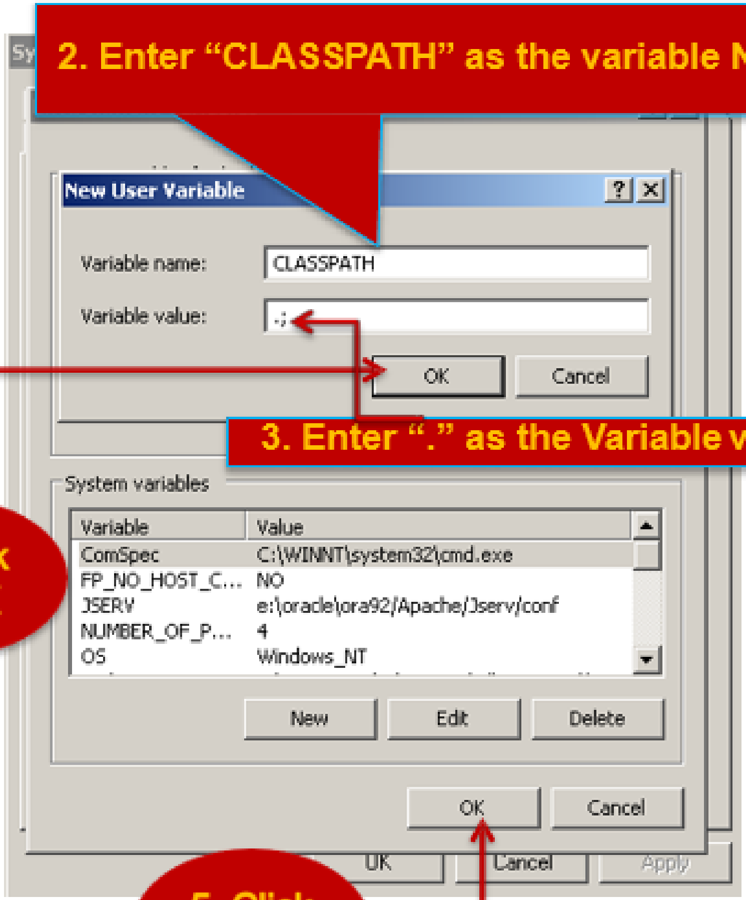
Environment Variables

User variables for harb

Variable	Value
TEMP	C:\Documents and Settings\harb\Local ...
TMP	C:\Documents and Settings\harb\Local ...

System variables

Variable	Value
	C:\WINNT\system32\cmd.exe
FP_NO_HOST_C...	NO
JSERV	e:\oracle\ora92/Apache/Jserv/conf
NUMBER_OF_P...	4
OS	Windows_NT



2. Enter “CLASSPATH” as the variable Name

3. Enter “.” as the Variable value

4. Click on OK

5. Click on OK

New User Variable

Variable name: CLASSPATH

Variable value: .;

System variables

Variable	Value
ComSpec	C:\WINNT\system32\cmd.exe
FP_NO_HOST_C...	NO
JSERV	e:\oracle\ora92/Apache/Jserv/conf
NUMBER_OF_P...	4
OS	Windows_NT

A Simple Java Program

Our first Java Program:

```
public class Welcome
{
  public static void main(String args[])
  {
      System.out.println(“Welcome..!”);
   }
}
```

This program displays the output “Welcome..!” on the console

Create source file: Welcome.java

Compile: javac Welcome.java

Execute: java Welcome

Quiz

1. Sample.java file contains class A, B and C. How many .class files will be created after compiling Sample.java? What is your observation?

Sample.java

```
class A {
   void m1() { }
}
class B {
   void m2() { }
}
class C {
   void m3() { }
}
```

Quiz

2. What will be the result if you try to compile and execute the following program ? Reason out :

Sample.java

```
class Sample {
   public static void main() {
         System.out.println(“Welcome”);
   }
}
```

a. Compilation Error
b. Runtime Error
c. The program compiles and executes successfully but prints nothing.
d. It will print “Welcome”

Good Programming Practices

Naming Conventions

Class Names

- Class names should be nouns, in mixed case with the first letter of each internal word capitalized
- Class names should be simple and descriptive
- Eg: class Student, class TestStudent

Good Programming Practices

Variable Names

- The variables are in mixed case with a lowercase first letter
- Variable names should not start with underscore _ or dollar sign $ characters, even though both are allowed
- Variable names should be small yet meaningful
- One-character variable names should be avoided except for temporary “throwaway” variables
- Eg: int y, myWidth;

Good Programming Practices

Naming Conventions

Method Names

- Methods should be verbs, in mixed case with the first letter lowercase, with the first letter of each internal word capitalized
- Eg: void run(), void getColor()

Good Programming Practices

Comments

- Block Comments
  - Block comments are used to provide descriptions of files, methods, data structures and algorithms
  - Block comments may be used at the beginning of each file and before each method

```
/*
        Here is a block comment
*/
```

Good Programming Practices

Comments

Single line Comment

- Single line comments can be written using // Single line

Number per Line

One declaration per line is recommended

```
int height;
int width;
```

is preferred over

```
int height, width;
```

Do not put different types on the same line

- int height, width[];   // Not recommended

Summary

We have discussed about

- How to set the java path
- How to execute a simple java program