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S.P.-40, Kukas Industrial Area (RIICO) Jaipur-302 028 • Website : www.aryainstitutejpr.com
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Experiment 3. Develop understanding to developing packages & Interfaces in Java.

    A. WAP in java to demonstrate the concept of package.
    B. WAP in java to demonstrate the concept of super and final keyword.
    C. WAP in java to demonstrate the concept of interfaces.

Exp 3 (A) WAP in java to demonstrate the concept of package.

Theory:

A **package** is a mechanism to group the similar type of classes, interfaces and sub-packages and provide access control. It organizes classes into single unit. In Java already many predefined packages are available, used while programming. **For example:** java.lang, java.io, java.util etc.

Types of Packages

There are two types of packages available in Java.

1.Built-in packages
Built-in packages are already defined in java API. For example: java.util, java.io, java,lang, java.awt, java.applet, java.net, etc.

2. User defined packages
The package we create according to our need is called user defined package.

How to access package from another package?

There are **three** ways to access the package from outside the package.

    1. import package.*;

    2. import package.classname;

    3. fully qualified name.

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Code:

```java
//Save as Calculator.java
package letmecalculate;
public class Calculator {
public int add(int a, int b)
{
    returna+b;
  }
public static void main(String args[]){
    Calculator obj = new Calculator();
    System.out.println(obj.add(10, 20));
  }
}
//Save as Demo.java
import letmecalculate.Calculator;
public class Demo{
public static void main(String args[]){
    Calculator obj = new Calculator();
    System.out.println(obj.add(100, 200));
  }
}
```

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Output-

```
C:\Windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\abc>cd\

C:\>cd Amit_java

C:\Amit_java>javac -d . Calculator.java

C:\Amit_java>javac -d . Demo.java

C:\Amit_java>java Demo
300

C:\Amit_java>
```

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Exp 3 (B) WAP in java to demonstrate the concept of super and final keyword.

Theory: Super Keyword

Super is a keyword of Java which refers to the immediate parent of a class and is used inside the subclass method definition for calling a method defined in the superclass. A superclass having methods as private cannot be called. Only the methods which are public and protected can be called by the keyword super. It is also used by class constructors to invoke constructors of its parent class.

Code: Super keyword

```java
class employee
{
int wt = 8;
}
class clerk extends employee
{
int wt = 10;  //work time
void display()
{
System.out.println(super.wt); //will print work time of clerk
}
public static void main(String args[])
{
clerk c = new clerk();
c.display();
}
}
```

Output: 8

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Theory: Final Keyword

The **final keyword** in java is used to restrict the user. The java final keyword can be used in many context. Final can be:

1. variable
2. method
3. class

1.Java final variable

If you make any variable as final, you cannot change the value of final variable(It will be constant).

Code :

```
class Bike9{

final int speedlimit=90;//final variable

void run(){

 speedlimit=400;

}

public static void main(String args[]){

Bike9 obj=new  Bike9();

obj.run();

}

}//end of class
```

Output: Compile Time Error

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2) Java final method

If you make any method as final, you cannot override it.

Code:

```java
class Bike{
  final void run(){System.out.println("running");}
}
class Honda extends Bike
{
  void run()
{
System.out.println("running safely with 100kmph");
}
  public static void main(String args[])
{
  Honda honda= new Honda();
  honda.run();
  }
}
```

Output: Compile Time Error

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3) Java final class

If you make any class as final, you cannot extend it.

Code:

```java
final class Bike{}

class Honda1 extends Bike{

 void run()

{

System.out.println("running safely with 100kmph");

}

 public static void main(String args[])

{

 Honda1 honda= new Honda1();

 honda.run();

 }

}
```

Output: Compile Time Error

Output:Compile Time Error

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Exp 3 (C) WAP in java to demonstrate the concept of interfaces.

Theory:

An interface is declared by using the interface keyword. It provides total abstraction; means all the methods in an interface are declared with the empty body, and all the fields are public, static and final by default. A class that implements an interface must implement all the methods declared in the interface.

Code:

Program-amimal.java

```java
interface Animal

{

public void eat();

public void travel();

}
//MammalInt.java

public class MammalInt implements Animal

{

public void eat()

{

System.out.println("Mammal eats");

 }

public void travel()

{

System.out.println("Mammal travels");

 }
```

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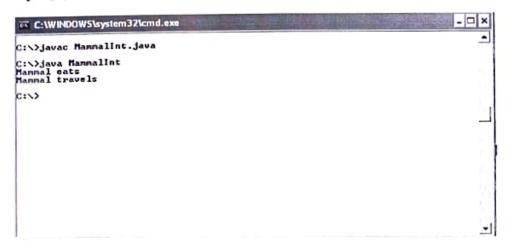S.P.-40, Kukas Industrial Area (RIICO) Jaipur-302 028 • Website : www.aryainstitutejpr.com
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```java
public int noOfLegs()

{

return 0;

  }

public static void main(String args[])

{

MammalInt m = new MammalInt();

m.eat();

m.travel();

}

}
```

Output-Exp 3 (C)

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S.No.	Viva Questions (to be answered in the Lab file)
1.	What is an object?
2.	What is the difference between an object-oriented programming language
3.	What will be the initial value of an object reference which is defined as an instance variable?
4.	What is the constructor?
5.	How many types of constructors are used in Java?
6.	What is the purpose of a default constructor?
7.	Does constructor return any value?
8.	Is constructor inherited?
9.	Can you make a constructor final?
10.	Can we overload the constructors?