Implementation of a Java Program to import packages using different methods

Aim:

Write a Java program to import packages using different methods for different use cases.

PRE LAB EXERCISE

QUESTIONS

1. How to import a single class and multiple classes from a package in Java?

To import a single class:

import packageName.ClassName;

To import multiple classes from a package:

import packageName.*;

Using * imports all classes in the package but not sub-packages.

2. Which package is always imported by default in every Java class?

- The java.lang package is imported by default in every Java program.
- It contains core classes like String, Math, Object, Integer, etc.
- No explicit import statement is needed for java.lang.

IN LAB EXERCISE

Objective

To understand and implement the Java packages using different methods and import them.

Problem

Define a package named 'useFul' with a class names 'UseMe' having following methods:

1) area()- To calculate the area of given shape.

2) salary()- To calculate the salary given basic Salary,da,hRA.

3) percentage()-To calculate the percentage given total marks and marks obtained.

4) Develop a program named 'Package Use' to import the above package 'useFul' and use the method area().

5) Develop a program named 'manager'

Source Code

```java
//Package Creation:
package useFull;
import java.util.*;
public class UseMe
{
        Scanner obj=new Scanner(System.in);
public static void area()
    {
        class method{
         void aos(int a)
         {
           System.out.print("\nArea of square with length "+a+" is "+(a*a));
         }
         void aor(int a,int b)
         {
           System.out.print("\nArea of reactangle with dimensions "+a+" & "+b+" is "+(a*b));
         }
         void aoc(int r)
         {
          double a=3.14*r*r;
         }
        System.out.print("\nArea of circle with radius "+r+" is "+a);
       }
      void aot(int a,int b)
       {
```

```java
            float ar=(a*b)/2;
            System.out.print("\nArea of triangle with dimensions "+a+" &"+b+" is "+ar);
        } }
        Scanner obj=new Scanner(System.in);
        method m=new method();
        System.out.print("\n1.Square\n2.Rectangle\n3.Circle\n4.Triangle\nSelect the shape\n");
        int ch=obj.nextInt();
        UseMe u=new UseMe();
        switch(ch)
            {
            case 1:System.out.print("\nEnter the length of side of square : ");
                    int s=obj.nextInt();m.aos(s);
                    break;
            case 2:System.out.print("\nEnter the dimensions of rectangle : ");
                    int l=obj.nextInt();
                    int b=obj.nextInt();
                    m.aor(l,b);
                    break;
            case 3:System.out.print("\nEnter the radius of circle : ");
                    int r=obj.nextInt();
                    m.aoc(r);
                    break;
            case 4:System.out.print("\nEnter the dimensions of triangle : ");
                    int ba=obj.nextInt();
                    int w=obj.nextInt();
                    m.aot(ba,w);
                    break; } }
public void salary()
    {
        int ba,da,hra;
```

```java
        System.out.print("\nEnter the basic salary : ");
        ba=obj.nextInt();
        System.out.print("\nEnter the dearness allowance :");
        da=obj.nextInt();
        System.out.print("\nEnter the house rent allowance : ");
        hra=obj.nextInt();
        System.out.print("\nThe total Gross salary of employee is : "+(ba+da+hra));
    }
public void percentage()
    {
        int n,sum=0;
        float p;
        System.out.print("\nEnter the total number of subjects : ");
        n=obj.nextInt();
        int m[]=new int[n];
        System.out.print("\nEnter the marks of "+n+" subjects : ");
        for(int i=0;i<n;i++)
        {
            m[n]=obj.nextInt();
        }
        for(int i=0;i<n;i++)
        {
            sum=sum+m[i];
        }
        p=sum/n;
        {
                System.out.print("\nPercentahe of student : "+p);
        }
    }
}
```

//Package Implementation-1:

```
import useFull.UseMe;

class packageUse

{

        public static void main(String args[])

        {

        UseMe o=new UseMe();o.area();

        }

}
```
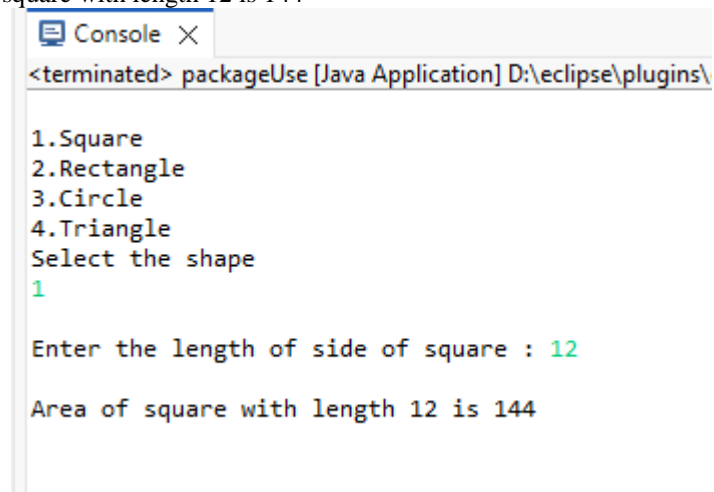
Output

javac packageUse.java

java packageUse

```
1.Square
2.Rectangle
3.Circle
4.Triangle
Select the shape
1
```

Enter the length of side of square : 12

Area of square with length 12 is 144

```
Console ×
<terminated> packageUse [Java Application] D:\eclipse\plugins\

1.Square
2.Rectangle
3.Circle
4.Triangle
Select the shape
1

Enter the length of side of square : 12

Area of square with length 12 is 144
```

//Package Implementation-2:

```
import useFull.UseMe;

class manager

{
```

```
        public static void main(String args[])

        {

         UseMe obj=new UseMe();obj.salary();

         }

      }
```
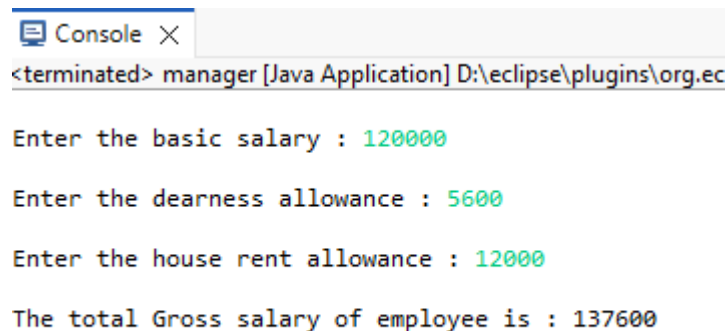
Output

javac manager.java

java manager

Enter the basic salary: 120000

Enter the dearness allowance: 5600

Enter the house rent allowance: 12000

The total Gross salary of employee is: 137600

```
Console  X
<terminated> manager [Java Application] D:\eclipse\plugins\org.ec

Enter the basic salary : 120000

Enter the dearness allowance : 5600

Enter the house rent allowance : 12000

The total Gross salary of employee is : 137600
```

POST LAB EXERCISE

1. Find the key differences between java.util and java.lang packages.
   The java.lang package is automatically imported in every Java program, while java.util must be imported manually. java.lang contains fundamental classes like String, Math, Object, and Integer. On the other hand, java.util provides utility classes such as ArrayList, HashMap, Scanner, and date/time classes. java.lang supports core language features, whereas java.util is mainly used for collections, data structures, and utility functions.

2. List some of the subpackages of java.util.
   The java.util package has several subpackages, including java.util.concurrent for multithreading and concurrency, java.util.regex for regular expressions, java.util.zip for data compression, java.util.spi for service provider interfaces, and java.util.logging for logging purposes.

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	5	
In Lab Exercise	10	
Post Lab Exercise	5	
Viva	10	
Total	**30**	
Faculty Signature		