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?
   - Single class import:
     import java.util.ArrayList;
   - Multiple classes import (entire package):
     import java.util.;*
2. Which package is always imported by default in every Java class?
   - The **java.lang** package is automatically imported in every Java program, so we do not need to import it explicitly
   - It contains essential classes like String, System, and Math that are commonly used in Java programs.

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)
         {
           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");
```

```java
        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;
        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();
```

```java
            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

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

Enter the dimensions of the rectangle: 10
30
Area of the rectangle with dimensions 10&30 is 300
```

//Package Implementation-2:

```
import useFull.UseMe;

class manager
{
  public static void main(String args[])
  {
  UseMe obj=new UseMe();obj.salary();
  }
}
```

Output

```
Enter the basic salary: 10000
Enter the dearness allowance: 2000
Enter the house rent allowance: 5000
The total Gross salary of employee is: 17000
```

POST LAB EXERCISE

1. Find the key differences between java.util and java.lang packages.

   - **java.lang** is automatically imported in every Java program and contains fundamental classes like String, System, Math, and Object.
   - **java.util** must be imported explicitly and contains utility classes like ArrayList, HashMap, Scanner, Date, and other data structure classes.

2. List some of the subpackages of java.util

   Some important subpackages of java.util are:
   - java.util.concurrent
   - java.util.function
   - java.util.logging
   - java.util.regex
   - java.util.stream

   These subpackages provide support for concurrency, functional programming, logging, regular expressions, and streams.

ASSESSMENT

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