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24BCS298

CSE-A1

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:

```
« Java  
import java.util.ArrayList;
```

Multi Class:

```
« Java  
import java.util.*;
```

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

The package that is always imported by default in every Java class is:

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

```
//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 rectangle with length "+a+" and width "+b+" is "+(a*b));  
            }  
        }  
        method m=new method();  
        m.aos(5);  
        m.aor(5, 10);  
    }  
}
```

```

        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");

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();

    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[]={};

    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

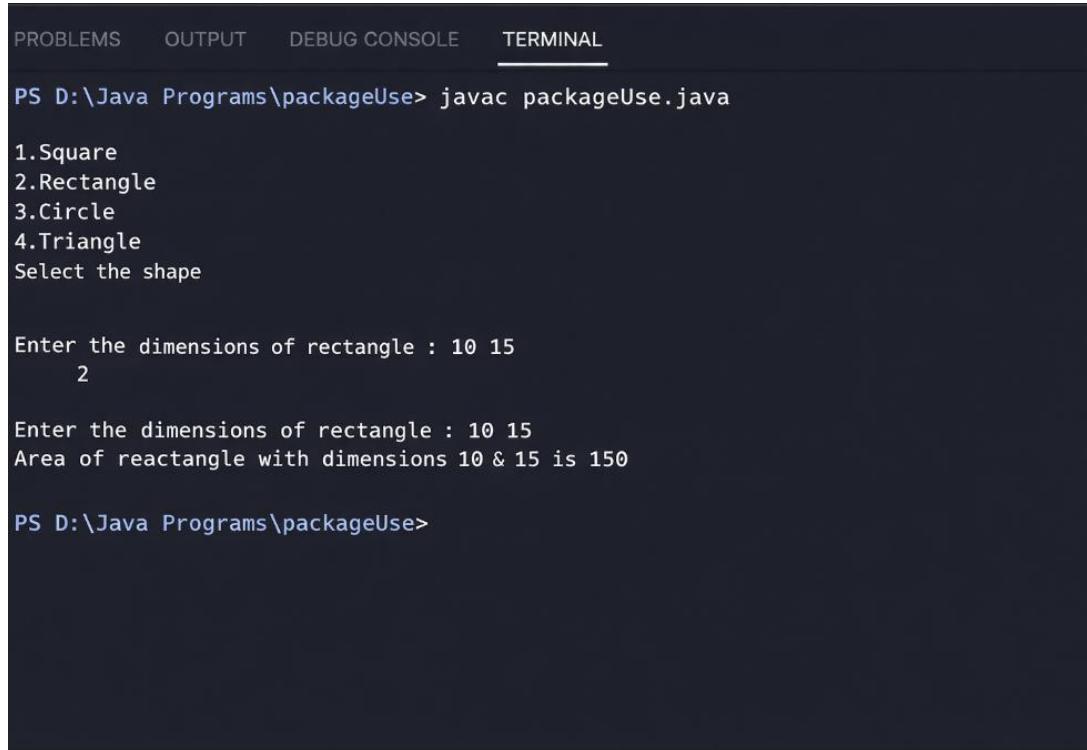
javac packageUse.java

java packageUse

1. Square
2. Rectangle

3. Circle
 4. Triangle
- Select the shape
2

Enter the dimensions of the rectangle: 10 15
Area of the rectangle with dimensions 10&15 is 150



The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS D:\Java Programs\packageUse> javac packageUse.java
1.Square
2.Rectangle
3.Circle
4.Triangle
Select the shape

Enter the dimensions of rectangle : 10 15
2

Enter the dimensions of rectangle : 10 15
Area of reactangle with dimensions 10 & 15 is 150

PS D:\Java Programs\packageUse>
```

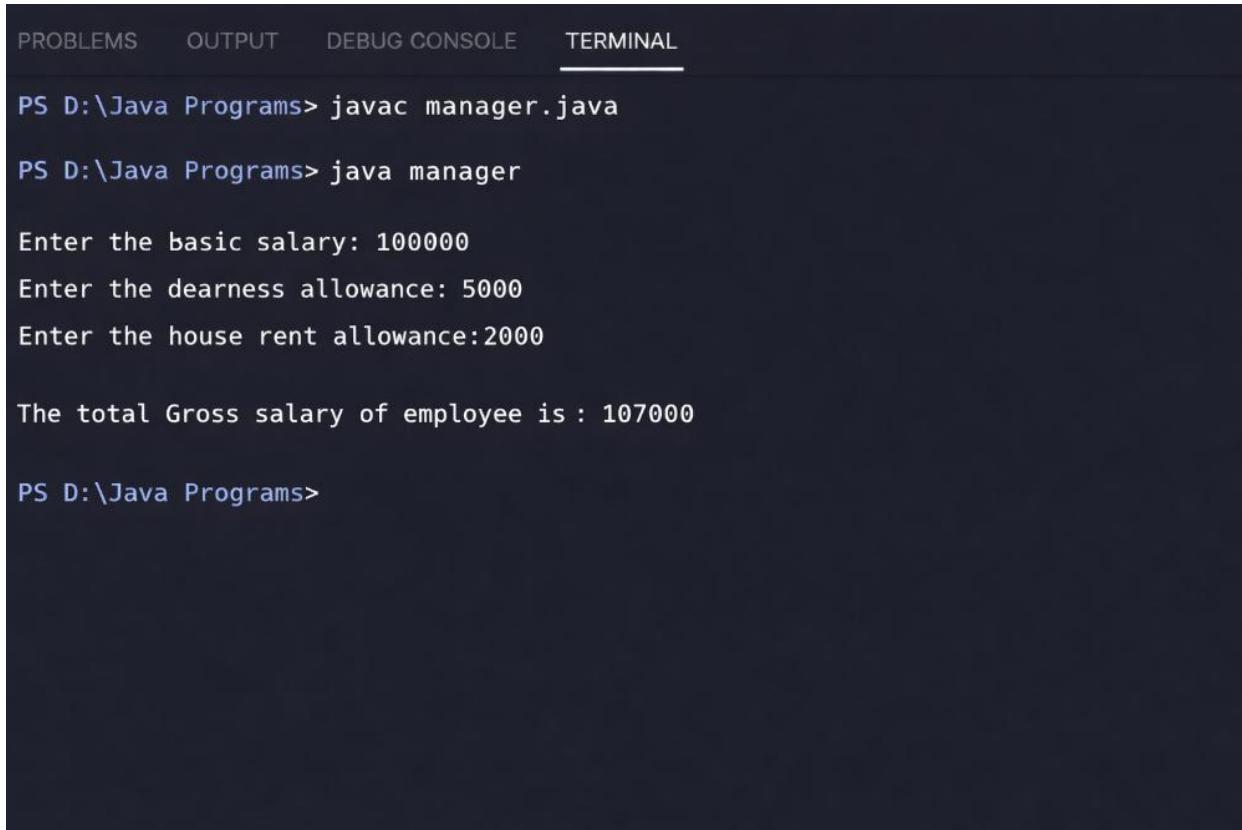
//Package Implementation-2:

```
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: 100000  
Enter the dearness allowance: 5000  
Enter the house rent allowance: 2000  
The total Gross salary of employee is: 107000
```



The screenshot shows a terminal window with the following tabs at the top: PROBLEMS, OUTPUT, DEBUG CONSOLE, and TERMINAL (which is underlined). The terminal content is as follows:

```
PS D:\Java Programs> javac manager.java  
PS D:\Java Programs> java manager  
  
Enter the basic salary: 100000  
Enter the dearness allowance: 5000  
Enter the house rent allowance:2000  
  
The total Gross salary of employee is : 107000  
  
PS D:\Java Programs>
```

POST LAB EXERCISE

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

Aspect	<code>java.lang</code>	<code>java.util</code>
Purpose	Core language support	Utility classes & data structures
Import required?	<input checked="" type="checkbox"/> No (auto-imported)	<input checked="" type="checkbox"/> Yes (<code>import java.util.*;</code>)
Contains	Fundamental classes needed for any Java program	Helper classes for collections, date/time, scanning, randomness, etc.
Usage frequency	Used in every Java program	Used when you need utilities
Examples of classes	<code>Object</code> , <code>String</code> , <code>Math</code> , <code>System</code> , <code>Thread</code> , <code>Exception</code>	<code>Scanner</code> , <code>ArrayList</code> , <code>HashMap</code> , <code>Date</code> , <code>Random</code> , <code>Collections</code>
Dependency level	Lowest level (base of Java)	Built on top of core language

2. List some of the subpackages of `java.util`

- java.util.concurrent**
→ Multithreading utilities (Executor, Future, Locks)
- java.util.concurrent.atomic**
→ Atomic variables for thread-safe operations
- java.util.concurrent.locks**
→ Advanced locking mechanisms
- java.util.function**
→ Functional programming (Predicate, Function, Consumer)
- java.util.stream**
→ Stream API for functional-style data processing
- java.util.regex**
→ Regular expressions (Pattern, Matcher)
- java.util.spi**
→ Service Provider Interfaces (rarely used by beginners)

ASSESSMENT

Description	Max Marks	Marks Awarded
Pre Lab Exercise	5	
In Lab Exercise	10	
Post Lab Exercise	5	

Viva	10	
Total	30	
Faculty Signature		