Java – Learn From Home

Assignment – Chapter 1

Concept: Stepping towards OOPs

Objective: At the end of the assignment, participants will be able to:

- Creating Classes and Objects
- Working with Control Structures
- Working with String
- Working with Arrays

Problems:

Exercise 1:

Create a Product class with the following attributes and methods

Attributes: - productId, productName, productType, productPrice

Methods: - displayProductDetails ()

Guided Solution:

Step 1: Create a class name Product

```
class Product {
```

Step 2: Declare the above mentioned attributes

```
int productId=111;
String productName="Yardley";
```

```
String productType=”Deoderant”;
float productPrice=200.00f;
```

Step 3: Declare the method displayProductDetails () in which write System.out.println() statements to display all the details

```
void displayProductDetails(){
    System.out.println(“Product Id :”+productId);
    System.out.println(“ProductName : “+productName);
    System.out.println(“ProductType : “+productType);
    System.out.println(“ProductPrice : “+productPrice);
}

}
```

Exercise 2: Write a class ProductTest program and create object of Product class and call the method through that object.

Guided Solution:

Step 1: Create a class name ProductTest

```
class ProductTest{
```

Step 2: Write main () method in the class

```
public static void main(String[] a){
```

Step 3: Create Object of Product class and call the displayProductDetails () Method

```
    Product p = new Product();
    p.displayProductDetails();
  }
}
```

Exercise 3: Create a class Student and add following attributes and methods.

Attributes :-

rollno, studentName, mathsMarks, scienceMarks, socialMarks, englishMarks, teluguMarks, hindiMarks,total marks, average and grade.

Initialize these instance variables in the class

Methods :-

calculateTotalMarks() – which should calculate the sum of all the subjects marks

calculateAverageMarks() – which should calculate the average of the total marks

calculateGrade() – which should calculate the grade based on the following conditions

- If average >= 80 then grade='Distinction'
- If average >=60 && average <80 then grade='First Class'
- If average >=50 && average <60 then grade='Second Class'
- If average >=40 && average <50 then grade='Third Class'
- If average <40 then grade='Fail'

displayStudentDetails() – which should display all the details of the Student

Create a class StudentTest and in the main() create object of the class Student and call all the four methods one after another.

Guided Solution:

Step 1: Create a class named Student

```
class Student{
```

Step 2: declare an instance variable named rollno, studentName, mathsMarks, scienceMarks, socialMarks, englishMarks, teluguMarks, hindiMarks, total marks, average and grade and initialize instance variables in the class.

```
int rollno;
String studentName;
int mathsMarks=70;
int scienceMarks=80;
int socialMarks=80;
int englishMarks=80;
int teluguMarks=85;
int hindiMarks=88;
int totalMarks;
float average;
```

Step 3: declare the four methods and write the respective logic in it

```
void calculateTotalMarks(){
totalMarks=mathsMarks+scienceMarks+socialMarks+englishMarks+teluguMarks+
hindiMarks;
}
```

```
 void  calculateAverageMarks(){
average=totalMarks/6;
}
void  calculateGrade(){
 If (average >= 80)  {
    grade='Distinction';
}
else If (average >=60 && average <80) {
        grade='First Class'; }
else  If (average >=50 && average <60) {
       grade='Second Class';
       }
else If(average >=40 && average <50){
    grade='Third Class';}
else
{ grade='Fail';
}
}
  void displayStudentDetails{
    System.out.println("Rollno : "+rollno+"Student Name : "+studentName);
```

```
System.out.println("Maths : "+mathsMarks+"Science :"+ scienceMarks+"Social :"+ socialMarks+ "English : "+englishMarks+ "Telugu : "+ teluguMarks+"Hindi : "+ hindiMarks);

System.out.println("Total Marks : "+totalMarks);

System.out.println("Average : "+average);

System.out.println("Grade : "+grade);

}

class StudentTest

{

public static void main(String[] a){

Student s = new Student();

s.calculateTotalMarks();

s.calculateAverageMarks();

s.calculateGrade();

s.displayStudentDetails();


}

}
```

Exercise 4: Create a class named StringExamples with main() method and accept two Strings through Command Line Arguments and display the following through System.out.println()

- Length of both the Strings
- Get the substring of it
- Concatenate two Strings and the knowing the length of it
- Converting both the Strings into uppercase and lowercase and then display

Guided Solution :

Step 1: Create a class named StringExamples

```
public class StringExamples {
```

Step 2: declare public static void main(String[] a){ and accept two strings as command line arguments

```
public static void main(String[] a){
  String string1=a[0];
  String string2=a[1];
```

Step 3: length of two strings, substring and converting them to uppercase and lowercase

```
String string3 = string1.concat(string2);
      System.out.println("string3: " + string3);

      // Get length
     System.out.println("Length: " + string1.length());
     System.out.println("Length: " + string2.length());
     System.out.println("Length: " + string3.length());
     // Get SubString
     System.out.println("Sub: " + string3.substring(0, 5));
```

```
    // Uppercase
    System.out.println("Upper: " + string3.toUpperCase());
}
```

Exercise 5: Create a class named ArrayExamples and declare main() and create an integer array of length 5 and write code for the following options

- Display the sum of all the elements in the array
- Display all the even position elements in the array
- Display all the odd position elements in the array
- Display the array elements in the reverse order.

Guided Solution:

Step 1: Create a class named ArrayExamples

Step 2: declare public static void main(String[] a) {

Step 3: declare integer array as int x[]=new int[5];

Step 4: Initialize the array as

x[0]=10;x[1]=20;x[2]=30;x[3]=40;x[4]=40;

Step 5:

1) Display the sum of all the elements in the array

```
int sum=0; //declare a variable for storing the sum
for(int i=0;i<x.length;i++){
sum=sum+x[i];
```

```
        }
System.out.println("Sum of the elements in the array : "+sum);
```

2) Display all the even position elements in the array

```
    for(int i=0;i<x.length;i+=2){
      System.out.println(x[i]);
}
```

3) Display all the odd position elements in the array

```
    for(int i=1;i<x.length;i+=2){
      System.out.println(x[i]);
}
```

4) Display the array elements in the reverse order

```
    for(int i=x.length-1;i>=0;i--){
      System.out.println(x[i]);
}
}
```