Object Oriented Programming
[Static Member]

Task No. 1: Write a program to calculate area of rectangle by using static method. Use parameterized constructor to assign width and height to the instance. Use Output area method which uses the static method to calculate the area.

Solution:

Main Method:

```
package javaapplication75;
 import java.util.Scanner;
public class JavaApplication75 {
   public static void main(String[] args) {
              Scanner input = new Scanner(System.in);

         System.out.println("Enter the Width: ");
         double w = input.nextDouble();
          System.out.println("Enter the Heigth: ");
         double h = input.nextDouble();

         Rectangle R1= new Rectangle(w,h);
         R1 .output();
   }
}
```

Class:

```
package javaapplication75;
public class Rectangle {
   private static double width;
    private static double heigth;
 public Rectangle (double height,double width){
    this .width=width;
     this .heigth=height;
 }
 static double Area(){
    double Area =heigth*width;
    return Area;

 }
 static void output(){
    double a = Area();
    System.out.println("Area is : "+a);
 }
```

Output:

```
run:
Enter the Width:
2
Enter the Heigth:
3
Area is : 6.0
BUILD SUCCESSFUL (total time: 5 seconds)
```

Task No. 2: Write a program to display Name, Enrollment Number, University Name and ,Semester of students that are from same university and semester using static fields and methods.(Hint: first set the university name and semester as follows:

```
Student.setCllg("XYZ");
```

Then use static variable counter to get unique roll numbers as follows:

```
static int setRollNo()
{
    counter++;
    return counter;
}
```

Solution:

Main Method:

package com.mycompany.mavenproject19;

public class Mavenproject19 {

```java
    public static void main(String[] args) {
         student s1 = new student("John Doe", 12345);
      s1.roll_no = student.setroll_no();
      s1.display();

      student s2 = new student("Jane Smith", 67890);
      s2.roll_no = student.setroll_no();
      s2.display();
  }
  }
```

Class:

```java
package com.mycompany.mavenproject19;
public class student {
  String name;
  int Enrollement_no;
  static String university_name = "bahria university";
  static int semester = 2;
  static int roll_no = 1;
  static int counter = 0;
   static int setroll_no(){
       counter ++;
       return counter;
     }
  student(String n , int en ){
    name = n;
    Enrollement_no = en;
  }
  void display(){
    System.out.println("Name is: "+name + ",Roll no is: " +roll_no + ",Enrollement no: "
+Enrollement_no+ ",Semester : "+ semester+ ",University Name: " +university_name);
  }
}
```

Output:

```
--- exec-maven-plugin:3.0.0:exec (default-cli) @ mavenpro
What is your name? Hammad
Hello, Hammad! Nice to meet you.
How old are you? 18
You are 18 years old.
------------------------------------------------------------
BUILD SUCCESS
------------------------------------------------------------
Total time:  21.925 s
Finished at: 2023-03-25T13:42:09-07:00
------------------------------------------------------------
```

Task No. 3: Write a static method called printNTimes that takes an integer n and a string (in that order) as its parameters and prints the string n times. For example

```
> printNTimes(5, "hello");
hello
hello
hello
hello
hello
> printNTimes(2, "hello");
hello
hello
```

Solution:

Main Method:

```
package com.mycompany.mavenproject25;
public class Mavenproject25 {
   public static void main(String[] args) {
     print p = new print();
      int n = 5;
String alp = "Hello world!";
```

```
        p.display(n,alp);

    }
}
```

Class:

```
package com.mycompany.mavenproject25;
public class print {
   public static void display(int n, String alp){
     for(int i=0;i<n;i++){

        System.out.println(alp);
    }
  }
}
```

Output:

```
--- exec-maven-plugin:3.0.0:exec (default-cli)
Hello world!
Hello world!
Hello world!
Hello world!
Hello world!
------------------------------------------------
BUILD SUCCESS
------------------------------------------------
Total time:  5.916 s
Finished at: 2023-03-26T03:38:57-07:00
------------------------------------------------
```

Task No. 4: Write a static method called insult that has two paramaters, a String which represents a person's name and an integer which represents the persons age. This method should *create* and **return** a String which is a personal insult based on the value of the argument age that was passed. Use the following *age* cuttoffs (or variations of your choosing) for creating your insults:

Solution:

Main Method:

```
package com.mycompany.mavenproject23;

import java.util.Scanner;

public class Mavenproject23 {

    public static void main(String[] args) {

     Scanner sc=new Scanner(System.in);

            System.out.println("Enter your name:");

            String name=sc.next();

            System.out.println("Enter your age:");

            int age=sc.nextInt();

            InsultGenerator i1=new InsultGenerator(name,age);

            i1.insulted(name, age);

    }

}
```

Class:

```
package com.mycompany.mavenproject23;
public class InsultGenerator {
     private static String name;
   private static int age;
   InsultGenerator(String name,int age){
    this.name=name;
    this.age=age;
   }
   public static void insulted(String name,int age){
if(age>1 && age<=10){
   System.out.println("Everyone is sweet");}
```

```java
if(age>=11 && age<=17){
    System.out.println("They are dweebs");}
if(age>=18 && age<=20){
    System.out.println("They are counting down to legal age");}
if(age==21){
    System.out.println("They just made legal age");}
if(age>=22 && age<=29){
    System.out.println("They are counting down to 30");}
if(age>=30 && age<=40){
    System.out.println("They are suffering adults");}
if(age>=41 && age<50){
    System.out.println("They are miserable adults");}
if(age>=50){
    System.out.println("50 you a speechless!"); }
    }
}
```

Output:

```
--------------------< com.mycompany:mavenproject23
Building mavenproject23 1.0-SNAPSHOT
-------------------------------[ jar ]----------

--- exec-maven-plugin:3.0.0:exec (default-cli) @
Enter your name:
hammad
Enter your age:
18
They are counting down to legal age
------------------------------------------------
BUILD SUCCESS
------------------------------------------------
Total time:  11.049 s
Finished at: 2023-03-26T03:55:30-07:00
------------------------------------------------
```

Task No. 5: Write a static method called greetMe that greets you. The method should issue a prompt asking for your name, display a polite (or not so polite) greeting message and then prompt you to enter your age.

Solution:

Main Method:

```
package com.mycompany.mavenproject22;

public class Mavenproject22 {

  public static void main(String[] args) {

Greeting G = new Greeting();

    G.greetMe();

}
```

Class:

```
package com.mycompany.mavenproject22;

import java.util.Scanner;

public class Greeting {

    public static void greetMe() {

    Scanner scanner = new Scanner(System.in);

    // Prompt user for their name

    System.out.print("What is your name? ");

    // Read the user's name

    String name = scanner.nextLine();

    // Display greeting message
```

```
    System.out.println("Hello, " + name + "! Nice to meet you.");

    // Prompt user for their age

    System.out.print("How old are you? ");

    // Read the user's age

    int age = scanner.nextInt();

    // Display age

    System.out.println("You are " + age + " years old.");

  }

}
```

Output:


```
-------------------< com.mycompany:mavenproje
Building mavenproject26 1.0-SNAPSHOT
-----------------------------[ jar ]------

--- exec-maven-plugin:3.0.0:exec (default-cli)
What is your name? hammad
Hello, hammad! Nice to meet you.
How old are you? 18
You are 18 years old.
------------------------------------------
BUILD SUCCESS
------------------------------------------
Total time:  10.619 s
Finished at: 2023-03-26T04:11:02-07:00
------------------------------------------
|
```