CSE1007 – Java Programming – ELA

Winter 2019-20

ASSESSMENT - 4

Date – 28-Jan-2020

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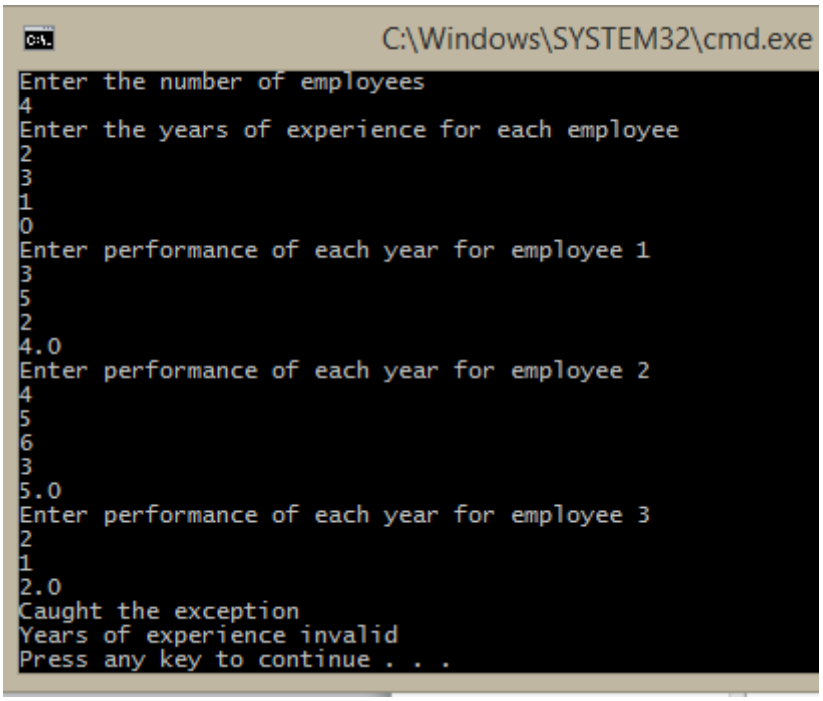
1. **Develop a Java application for calculating the average performance index of 'n' employees in a company for incrementing their salary. Read the years of experience and the performance rating in all the years to calculate the average of them. This hike in the salary is only for the employees who have completed at least one year of service in the company. If it is zero handle that case with a standard exception.**

```
import java.io.*;
import java.util.*;
class invalidyearsexception extends Exception
{
public invalidyearsexception(String s)
{
super(s);
}
}

public class years
{
int yearscheck(int years)throws invalidyearsexception
{
if(years==0)
{
throw new invalidyearsexception("Years of experience invalid");
}
else
return 1;

}

public static void main(String args[])
{
int n,ret,sum=0;
double avg=0;
Scanner sc = new Scanner(System.in);
System.out.println("Enter the number of employees");
n = sc.nextInt();
int ar[] = new int[n];
years obj = new years();
System.out.println("Enter the years of experience for each employee");
int i,j,p;
try
{
for(i=0;i<n;i++)
{
ar[i]= sc.nextInt();
}
for(i=0;i<n;i++)
{
```

```
ret = obj.yearscheck(ar[i]);
if(ret==1)
{ sum=0;
System.out.println("Enter performance of each year for employee "+(i+1));
for(j=0;j<ar[i];j++)
{p=sc.nextInt();sum+=p;}
System.out.println(ar[i]);
avg = sum/ar[i];
System.out.println(avg);
}
}
}

catch(invalidyearsexception excep)
{
System.out.println("Caught the exception");
System.out.println(excep.getMessage());
}


}
}
```



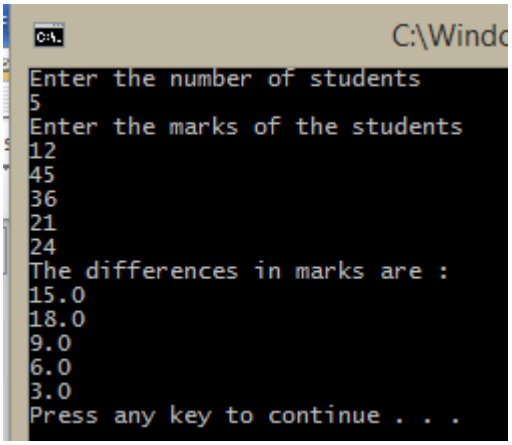
2. **Assume you have the following interface.**

```
interface CSE1007{
void readMarks();
void calcAvg();
void writeDifference();
}
```

Create a class by using the interface CSE1007 for managing CAT-1 marks of all students in the course CSE1007 - Java Programming in our slot. The class maintains an integer 'n' to store the number of students appeared for the test and an array (size is n) of float values for marks. Calculate the class average and display the difference with class average for all the student marks in the array. Write a robust Java program to implement these functionalities with the help of standard exception classes and objects of Java.

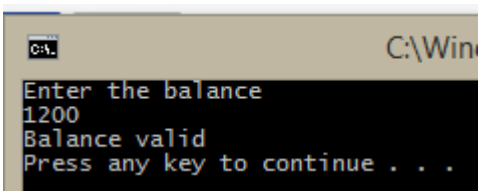
```
import java.io.*;
import java.util.*;
import java.math.*;
class InvalidMarksException extends Exception{
   public InvalidMarksException(String s)    {
      // Call constructor of parent Exception
      super(s);
   }}
interface CSE1007
{
 void readMarks();
 void calcAvg();
 void writeDifference();
 }

 public class avg implements CSE1007
 {
             int ar[];
             double avg;
 static void MarksCheck(int m) throws InvalidMarksException
 {
   if(m<0)
   {
        throw new InvalidMarksException ("Marks Invalid, less than 0");
            }
           if(m>50)
   {
        throw new InvalidMarksException ("Marks Invalid, greater than 50");
            }

 }
 public void readMarks()
 {
              Scanner sc = new Scanner(System.in);
              int n;
              System.out.println("Enter the number of students");
              n = sc.nextInt();
              ar = new int[n];
              System.out.println("Enter the marks of the students");
              for(int i=0;i<n;i++)
              ar[i]=sc.nextInt();

 }
 public void calcAvg()
 {
              int sum=0;
```

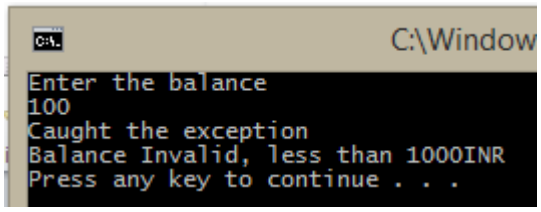
```
            try
            {
             for(int i=0;i<ar.length;i++)
             {
             MarksCheck(ar[i]);
             sum+=ar[i];
    }0
             avg = sum/ar.length;
}
catch (InvalidMarksException ex)
 {
     System.out.println("Caught the exception");
     System.out.println(ex.getMessage());
      }
 }

 public void writeDifference()
 {
             double d=0;
             System.out.println("The differences in marks are :");
             for(int i=0;i<ar.length;i++)
             {
                        d = ar[i]-avg;
                        if(d<0)
                        d*=-1;
             System.out.println((d));
 }
 }
 public static void main(String args[])
 {
             avg ob = new avg();
             ob.readMarks();
             ob.calcAvg();
             ob.writeDifference();
 }


}
```



3. Implement a bank application where an alert message is issued when the minimum balance is going below 1000INR. Create an user-defined exception class and a Bank class for this application and test it with a Java program.

```
import java.io.*;
import java.util.*;
class InvalidBalanceException extends Exception{
   public InvalidBalanceException(String s)    {
      // Call constructor of parent Exception
      super(s);
   }}
public class bank{
  void BalanceCheck(int bal) throws InvalidBalanceException {
   if(bal<1000){
        throw new InvalidBalanceException ("Balance Invalid, less than 1000INR");
            }
            else
            System.out.println("Balance valid");
     }
      public static void main(String args[])
      {
            bank obj = new bank();
            int bal;
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the balance");
            bal = sc.nextInt();
                  try       {
                      obj.BalanceCheck(bal);
                  }
catch (InvalidBalanceException ex)  {
      System.out.println("Caught the exception");
      System.out.println(ex.getMessage());
       }
  }
}
```





4. **Write a Java class 'Course_Registration' for student course registration for the winter semester 2019-20. The name of the course and its credits are to be read from the user. The total credits should be between 16 and 23. A warning message is issued when the total credit is going below 16 and above 23. Create an exception class and a 'Credit' class also. Test them with a Java program.**

```
import java.io.*;
import java.util.*;
class InvalidCreditsException extends Exception{
   public InvalidCreditsException(String s)
   {
      // Call constructor of parent Exception
      super(s);
   }}

class Course_Registration
{
int credits[];
String course[];
int n;
void input(int n)
{
credits = new int[n];
course = new String[n];
Scanner sc = new Scanner(System.in);
System.out.println("Enter the courses and their credits");
for(int i=0;i<n;i++)
{
course[i]=sc.next();
credits[i]=sc.nextInt();
}
}
}
public class credit{
  void CreditCheck(int cred) throws InvalidCreditsException
   {
   if(cred<16)
   {
        throw new InvalidCreditsException ("Total credits Invalid, less than 16");
           }
           else if(cred>23)
             throw new InvalidCreditsException ("Total credits Invalid, greater than 23");
           else
           System.out.println("Credits valid");
    }
     public static void main(String args[])
     {
                    Course_Registration ob = new Course_Registration();
                    Scanner sc = new Scanner(System.in);
                    int n,sum=0;
                    System.out.println("Enter the number of courses");
                    n=sc.nextInt();
           ob.input(n);
           for(int i=0;i<n;i++)
           sum+=ob.credits[i];
           credit obj = new credit();
                 try       {
                    obj.CreditCheck(sum);
                }
catch (InvalidCreditsException ex)  {
      System.out.println("Caught the exception");
```

```
        System.out.println(ex.getMessage());
         }
    }
}
```