OOJ LAB REPORT

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1BM19CS204

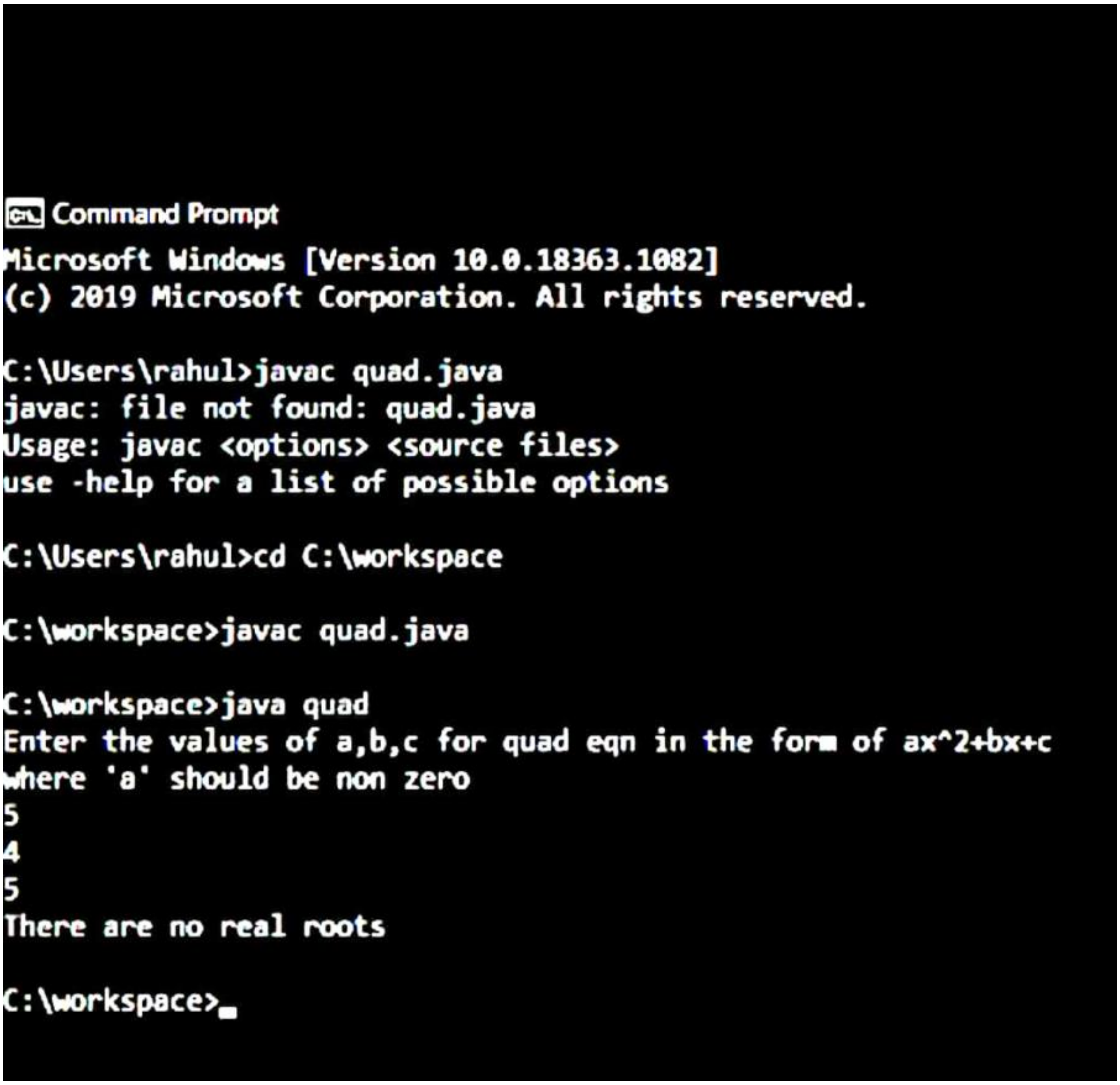
3-D

LAB 1- Develop a Java program that prints all real solutions to the quadratic equation ax2+bx+c =0. Read in a, b, c and use the quadratic formula. If the discriminate b2- 4ac is negative, display a message stating that there are no real solutions.

```
import java.util.scanner;
class quad
{
    public static void main(String[]args)
    {
        double a1,b1,c1,ans1,ans2,a2;
        Scanner sc = new Scanner(system.in);
        System.out.println("Enter the values of a,b,c for
                          quad eqn in the form ax^2+bx+c")
        System.out.println("where 'a' should be non zero");
        a1 = sc.nextDouble();
        b1 = sc.nextDouble();
        c1 = sc.nextDouble();
        if(a1 ==0)
        {
            system.out.println("a' should be non zero");
        }
        else
        {
            a2 =(b1*b1)-(4*a1*c1);
            if(a2>0)
            {
                system.out.println("Roots are real and
                                   unequal");
                ans1 =(-b1+ math.sqrt(a2))/(2*a1);
                ans1=(-b1 - math.sqrt(a2))/2*a1);
                system.out.println("The solution of quad
                                   equation are %.4f and
                                   %.4f\n",ans1,ans2);
            }
```

Scanned with CamScanner

```
else if a2==0)
{
    system.out.println("roots are real and equal");
    ans1=((-b+Math.sqrt(a2))/(2*a1));
    ans2=((-b-Math.sqrt(a2))/2*a1));
    system.out.println(" The solutions of quad eq are
                        %.4f and %.4f\n",ans1,ans2);
}
else
{
    system.out.println("There are no real roots");
}
  }
 }
}
```



```
Microsoft Windows [Version 10.0.18363.1082]
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C:\Users\rahul>javac quad.java
javac: file not found: quad.java
Usage: javac <options> <source files>
use -help for a list of possible options

C:\Users\rahul>cd C:\workspace

C:\workspace>javac quad.java

C:\workspace>java quad
Enter the values of a,b,c for quad eqn in the form of ax^2+bx+c
where 'a' should be non zero
5
4
5
There are no real roots

C:\workspace>_
```
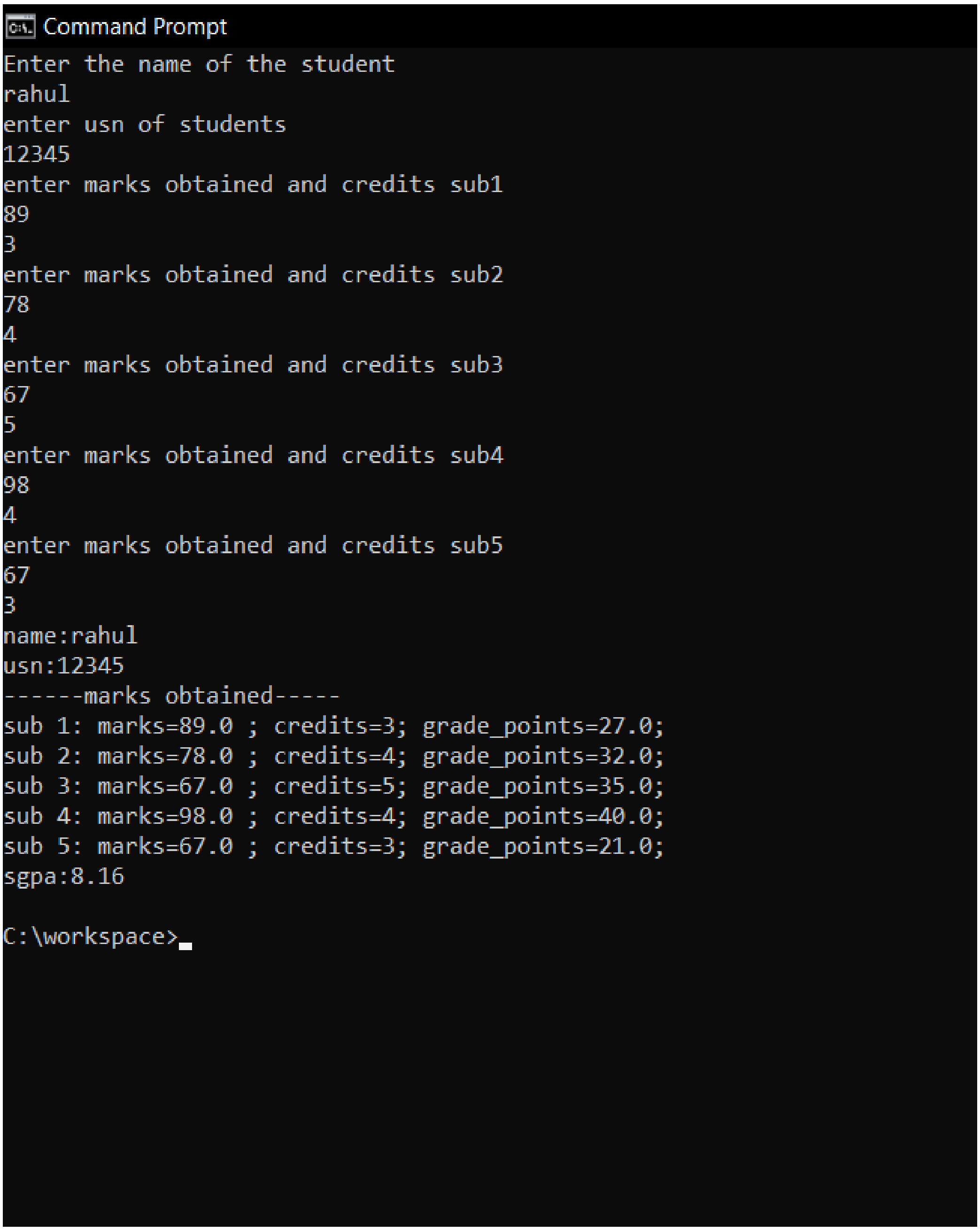

LAB 2- Develop a Java program to create a class Student with members usn, name, an array credits and an array marks. Include methods to accept and display details and a method to calculate SGPA of a student.

```
import java.util.*;
 class studet
 {
        private string usn,name;
         private int credits[];
         private double marks[],sgpa;
          private int size;
          private double gp[];
           Scanner sc=new Scanner(System.in);

            Studet()
             {
                  System.out.println("Enter number of subjects");
                  size=sc.nextInt();
                   credits=new int[size];
                    marks=new double[size];
                     gp=new double[size];
                     usm=" ";
                      name=" ";
               }
               void accept()
               {
                       System.out.println(" Enter the name of the
                                          student");
                        name=sc.name();
                        System.out.println("Enter usn of students");
                        usn=sc.next();
                        for(int i=0; i<size; i++)
                        {
                              System.out.println(" Enter the marks
                                   obtained and credits sub"+(i+1));
                              marks[i]=sc.nextDouble();
            credits(i] = sc.nextInt();
            }
    }
     void display()
     {
            system.out.println(" name: " +name);
            system.out.println(" usn "+ usn);
            system.out.println(" ----marks obtaind----");
            for( int i=0 ; i< size ; i++)
                system.out.println(" sub" + (i+1)+" :marks=
                                    " + marks (i] + ";
                                credits (i]+ "; grade_point
                                = " +gp(i] +";");
                system.out.printf (" sgpa : %.2f \n", sgpa);
     }
     void calc()
     {
            double sum =0; total=0;
            for( int i=0; i<size, i++)
            {
                sum =sum + credits (i];
                if (marks(i) >=90)
                {
                    total=total +(10* credits (i]);
                    gh(i]=10* credits(i);
                }
                else if( marks(i))>=80)
                {
                    total = total +(9 * credits (i]);
                    gh(i] =9 * credits(i);
                }
                else if( marks(i] >=70
                {
```

```
            total = total + (8* credits [i]);
              gh[i] = 8* credits [i];
            }
            else if ( marks [i] >= 60)
             {
                 total= total + (7* credits [i]);
                   gh[i]=7* credits[i];
             }
              else if ( marks[i] >= 50)
              {
                  total = total + ( 5* credits (i]));
                  gh(i) = 5* credits(i);
               }
               else if ( marks[i] >= 40)
               {
                     total = total+ ( 4* credits[i])};
                     gh[i] = 4* credits [i];
                 }
                 else
                  {
                      total= total + ( 0* credits [i]);
                       gh[i]= 0* credits(i);
                    }
                 }
                 sgpa = total / sum;
            }
        }
}
class student1
public static void main (String args [])
 {
      Student s= new student();
      s. accept();
      s. calc ();
```

```
        s.display();
        }
    }
```



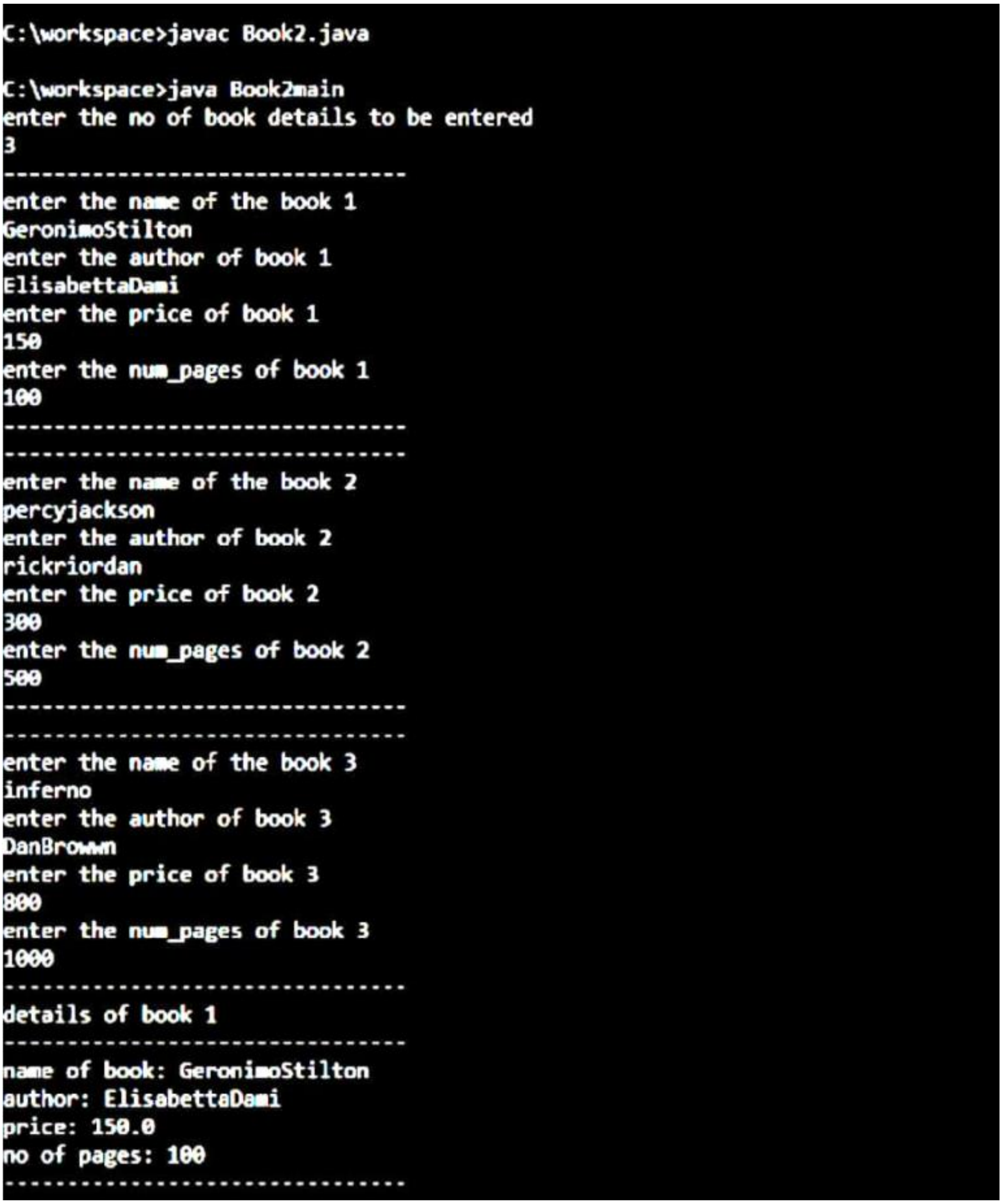
```
Enter the name of the student
rahul
enter usn of students
12345
enter marks obtained and credits sub1
89
3
enter marks obtained and credits sub2
78
4
enter marks obtained and credits sub3
67
5
enter marks obtained and credits sub4
98
4
enter marks obtained and credits sub5
67
3
name:rahul
usn:12345
------marks obtained-----
sub 1: marks=89.0 ; credits=3; grade_points=27.0;
sub 2: marks=78.0 ; credits=4; grade_points=32.0;
sub 3: marks=67.0 ; credits=5; grade_points=35.0;
sub 4: marks=98.0 ; credits=4; grade_points=40.0;
sub 5: marks=67.0 ; credits=3; grade_points=21.0;
sgpa:8.16

C:\workspace>
```

LAB-3

Create a class Book which contains four members: name, author, price, num_pages. Include a constructor to set the values for the members. Include methods to set and get the details of the objects. Include a toString( ) method that could display the complete details of the book. Develop a Java program to create n book objects.

```
import java.util.*;
class book2
{
    String name, author;
    double price;
    int num_pages;
    Scanner sc = new Scanner(system.in);
     Book2()
     {
         name = " ";
         author = " ";
          price = 0;
          num-pages = 0;
       }
       void get_details(int a)
       {
           system.out.println(" - - - - - - - - - - ");
           system.out.println("Enter the name of the book"+a);
           name = sc.next();
           system.out.println("Enter the author of the book"+a);
           author = sc.next();
           system.out.println("Enter the price of the book"+a);
           price = sc.nextDouble();
           System.out.println("Enter the num_pages of
                               book"+a);
            num_pages = sc.nextInt();
             system.out.println(" --------");
         }
         public string tostring()
         {
             return(" name of book:"+name+"\n author
                  :"+author+"\n price"+price+"
                    \n no of pages:"+num_pages+"\n
                                               -----");
```

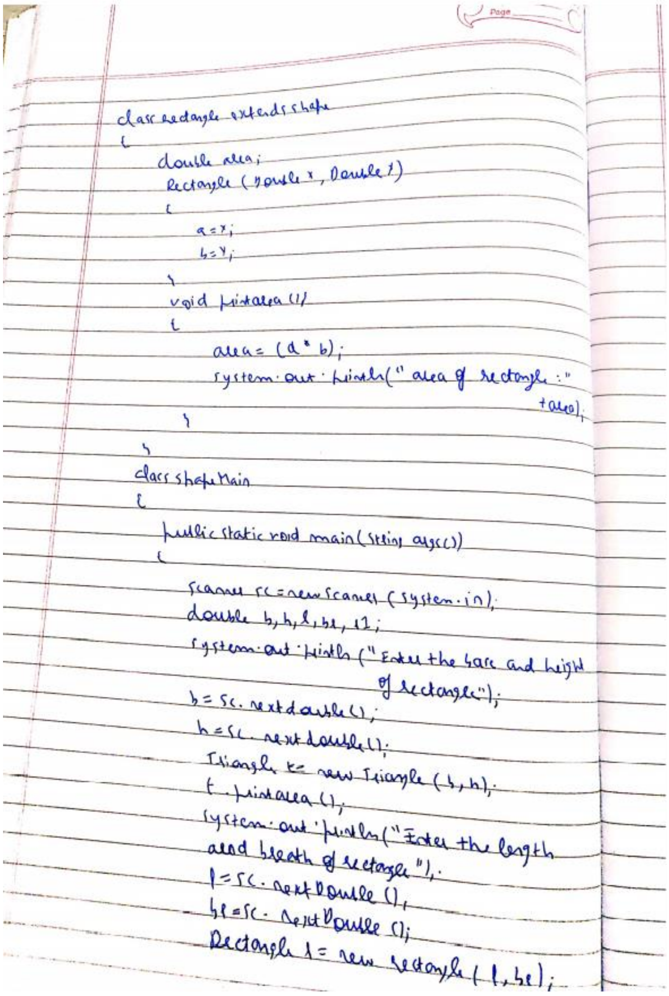
```
        }
    }
    Class Book2main
    {
        public static void main(String args[])
        {
            int n;
            Book2 o[];
            Scanner sc = new Scanner(System.in);
            System.out.println("Enter the number of book
                                  details to be entered");
            n=sc.nextInt();
            o = new Book2[n];
            for(int i=0; i<n; i++)
            {
                o[i]=new Book2();
                o[i].get_details(i+1);
            }
            for(int i=0; i<n; i++)
            {
                System.out.println("details of book"+(i
                System.out.println("--------");
                System.out.println(o[i]);
            }
        }
    }
```



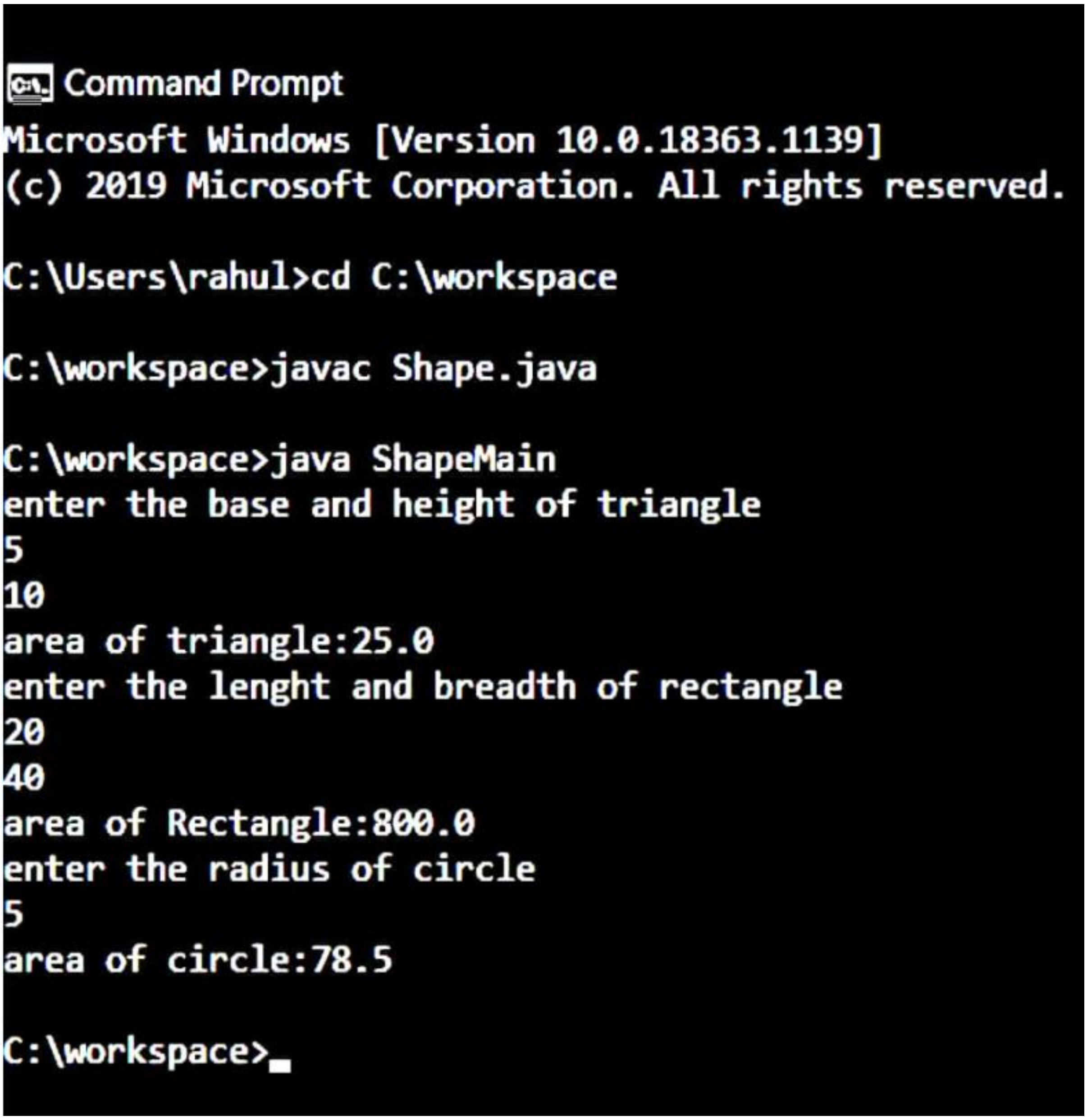
```
C:\workspace>javac Book2.java

C:\workspace>java Book2main
enter the no of book details to be entered
3
--------------------------------
enter the name of the book 1
GeronimoStilton
enter the author of book 1
ElisabettaDami
enter the price of book 1
150
enter the num_pages of book 1
100
--------------------------------
--------------------------------
enter the name of the book 2
percyjackson
enter the author of book 2
rickriordan
enter the price of book 2
300
enter the num_pages of book 2
500
--------------------------------
--------------------------------
enter the name of the book 3
inferno
enter the author of book 3
DanBrowwn
enter the price of book 3
800
enter the num_pages of book 3
1000
--------------------------------
details of book 1
--------------------------------
name of book: GeronimoStilton
author: ElisabettaDami
price: 150.0
no of pages: 100
--------------------------------
```

LAB 4- Develop a Java program to create an abstract class named Shape that contains two integers and an empty method named printArea( ). Provide three classes named Rectangle, Triangle and Circle such that each one of the classes extends the class Shape. Each one of the classes contain only the method printArea( ) that prints the area of the given shape.

```
import java.util.*;
abstract class shape
{
    double a,b;
    abstract void printArea();
}
 class Triangle extends shape
 {
       //Scanner sc = new Scanner(System.in);
       Triangle ( Double x, double y)
       {
            a=x;
            b=y;
       }
        void printArea()
        {
            double area;
            area = (0.5*a*b);
            System.out.println ("area of triangle:"+area);
        }
      }
      class circle extends shape
      {
          double area;
          circle ( Double r)
          {
              a=r;
          }
            void printarea()
            {
                area =(3.14*a*a);
                System.out.println(" area of circle:"+area);
            }
      }
```



```
class rectangle extends shape
{
    double area;
     Rectangle (double x, Double y)
     {
         a=x;
         b=y;
     }
     void printarea()
     {
          area= (a * b);
          system.out.println(" area of rectangle :"
                                              +area);
      }
  }
  class shapeMain
  {
     public static void main(String args[])
     {
        Scanner sc=new Scanner (system.in);
        double b,h,l,br,t1;
        system.out.println ("Enter the bare and heigh
                               of rectangle");
        b= sc.nextdouble();
        h=sc.nextdouble();
         Triangle t= new Triangle (b,h);
         t.printarea();
         system.out.println("Enter the length
         and breath of rectagle");
         l=sc.nextDouble(),
         br=sc.nextDouble();
         Rectangle r= new rectangle (l,br);
    r.printarea();
    system.out.println("Enter the radius of circle");
    r1 = sc.nextDouble();
     Circle c = new Circle(r1);
      c.printArea();
   }
}
```



```
Microsoft Windows [Version 10.0.18363.1139]
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C:\Users\rahul>cd C:\workspace

C:\workspace>javac Shape.java

C:\workspace>java ShapeMain
enter the base and height of triangle
5
10
area of triangle:25.0
enter the lenght and breadth of rectangle
20
40
area of Rectangle:800.0
enter the radius of circle
5
area of circle:78.5

C:\workspace>
```

LAB 5- Develop a Java program to create a class Bank that maintains two kinds of account for its customers, one called savings account and the other current account. The savings account provides compound interest and withdrawal facilities but no cheque book facility. The current account provides cheque book facility but no interest. Current account holders should also maintain a minimum balance and if the balance falls below this level, a service charge is imposed. Create a class Account that stores customer name, account number and type of account. From this derive the classes Curr-acct and Sav-acct to make them more specific to their requirements. Include the necessary methods in order to achieve the following tasks: a) Accept deposit from customer and update the balance. b) Display the balance. c) Compute and deposit interest d) Permit withdrawal and update the balance Check for the minimum balance, impose penalty if necessary and update the balance.

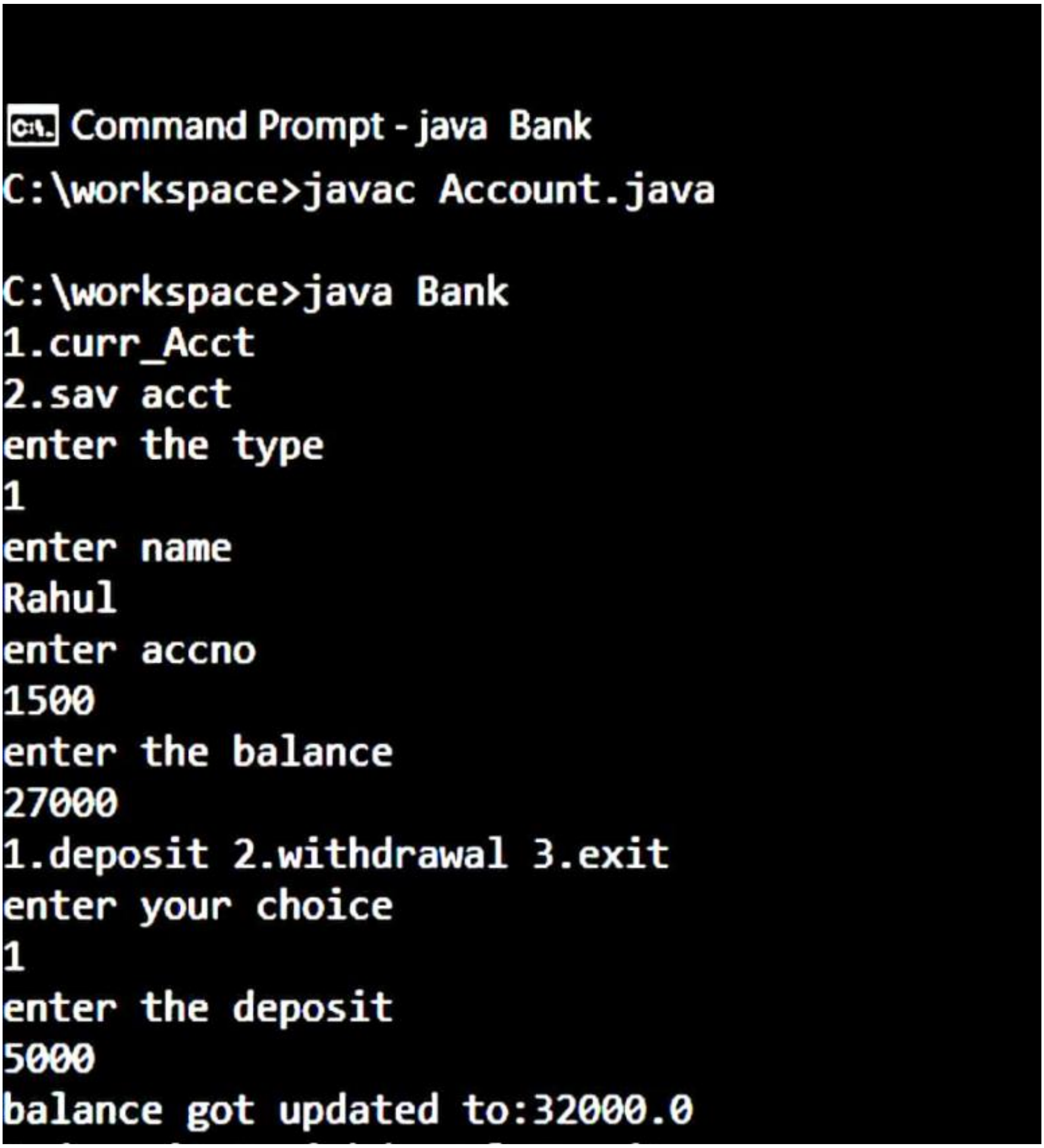
```
import java.util.*;
class Accout
{
    string name;
     int acc no;
     string type;
     double balance;
     scanner sc = new Scanner (system. in);
     void accept ()
     {
          system. out. println(" Enter name");
          name = sc. next();
          system. out. println(" Enter acc no");
           accno = sc. nextInt();
       }
     }
     class Curr_acct extends Accout
     {
          double deposit ;
          double withdraw;
          double min_balance = 1000;
           int penalty = 100;
           Scanner sc = new scanner (system. in);
            void accept1()
            {
               system. out. println (" Enter the balance");
               balance = sc. nextDouble();
            }
            void update()
            {
             system. out. println (" Enter the deposit");
             deposit = sc. nextdouble ();
             balance += deposit;
```

```
  system.out.println("balance got updated to:"+ balance);
}
void check()
{
      if ( balance < mil_bal)
      {
          system.out.println(" a penalty of 100 is imposed");
          balance -= penalty;
          system.out.println(" Balance got updated to:"+ balance);
          check();
      }

}
void withdrawal()
{
      system.out.println("Enter the amt to be withdrawn");
      withdraw =sc.nextdouble();
       balance -= withdraw;
       system.out.println(" balance got updated to:"+balance);
       check();
   }
   void display()
   {
       system.out.println(" ---- DETAILS ---- ");
       system.out.println(" name :"+ name);
       system.out.println("accno:" +accno);
       system.out.println(" type:"+type);
       if ( balance <0)
       {
       system.out.println("balance:0");
       system.out.println(" money to be deposited:"+(-balance);

   }
   else
       system.out.println("balance :"+ balance);
```

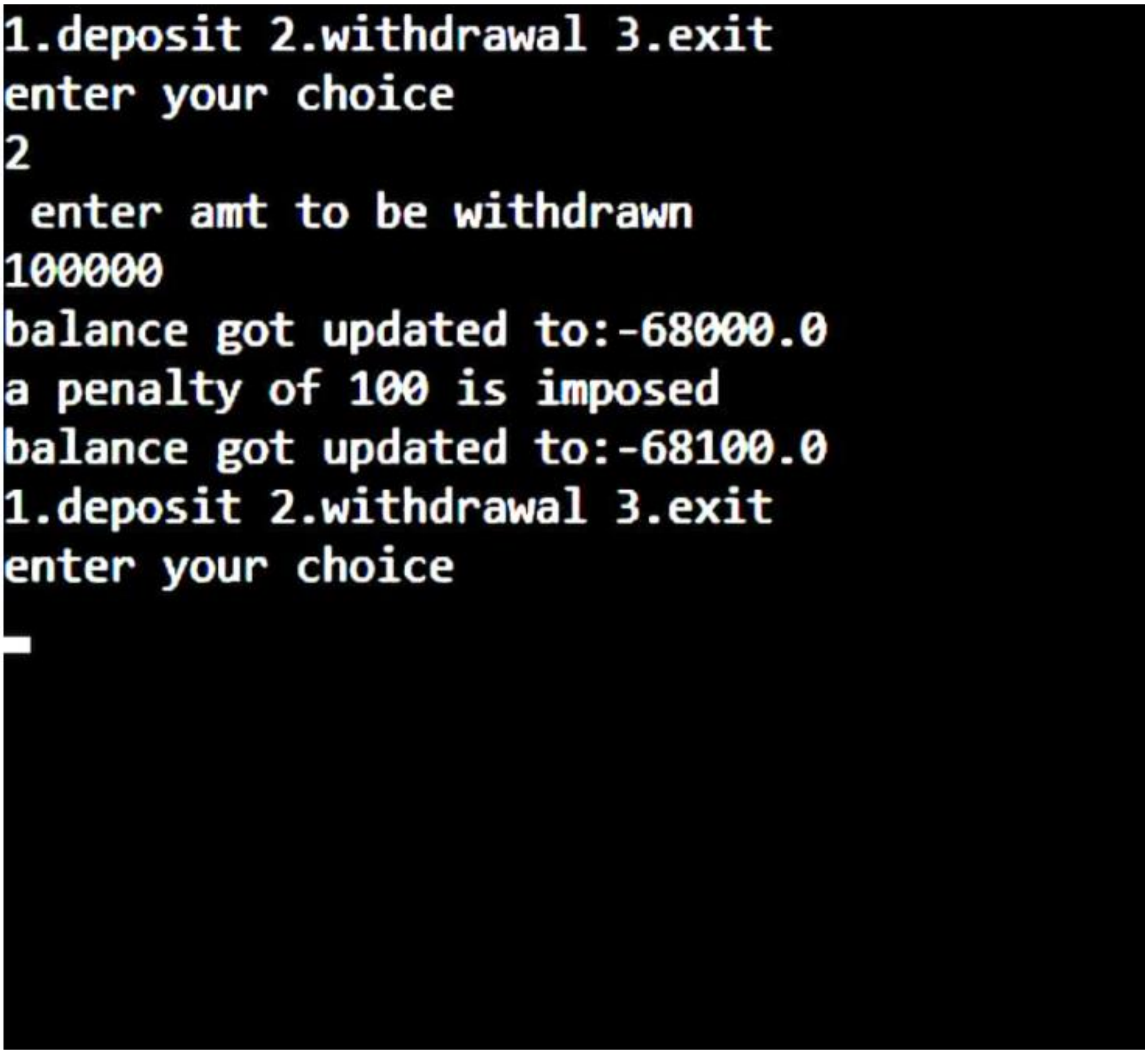
```
    System.out.println("cheque book facility exist");
  }
}
class sav_acct extends Accout
{
      double balance;
      double deposit;
      double withdraw;
      double intrest, time, rate;
      scanner sc = new scanner(system.in);

      void accept1()
      {
          system.out.println(" Enter the balace");
          balance=sc.nextDouble();
      }
      void update();
      {
       system.out.println("Enter the deposit");
       deposit =sc.nextDouble();
        Balace+ - deposit;
        system.out.println("balance got updated to
                                   : "+balance);
  }
  void calc intrest()
  {
  system.out.println(" a rate of 4.5% is given for deposits
                    in savings bank acc");
  system.out.println(" enter the time duration for which
                    intrest should be calculated");
   time=sc.nextDouble();
   rate=4.5;
   double x,y;
```

```
x= (1 + rate/100);
balance = balance * (Math.pow(x,time));
}
 void withdraw()
 {
    system.out.println(" Enter the amt to be withdrawn");
    withdrawn = sc.nextDouble();
     balance -= withdrawn;
     system.out.println(" Balance Just updated to:"
                              + balance");
  }
 void display()
  {
       system.out.println(" ----- DETAILS ----");
        system.out.println("name:"+name);
         system.out.println("accno"+accno);
         system.out.println("type:"+type);
         calcintrest();
          if( balance <0)
          {
          system.out.println(" balance:0");
          system.out.println(" Money to be deposited :"+(-
                                               balance));
          }
       else
       system.out.println("balance: %.3f", balance);
       system.out.println();

       system.out.println("cheque book does not
                 facility exist");
       }
```

```
class bank
{
        public stat void main (string args[])
        {
            int op, ch;

            scanner sc = new scanner (system.in);

            system.out.println("1. curr_acct 2. sav acc
            system.out.println("Enter the type");
             op = sc.nextInt();
             if(op == 1)
             {
                  curr_acct a = new curr_acct();
                  a.type = "cur_Acct");
                   a.accept();
                    a.acceptJ();
                   do {
                   system.out.println("1. deposit
                                         2. d withdrawl
                                          3. exit");
                    system.out.println("enter the choice");
                   ch=sc.nextInt();
                   switch(ch)
                   {
                      case1:
                     a.update();
                     break;
                     case2:
                     a.withdrawal();
                     break;
                     a.display();
                     break;
        default:
        system.out.println("wrong choice");
      }
    } while(ch!=3)
  }
  if (op==2)
  {
        sav_acct b=new sav_acct();
         b.type ="sav-acct";
         b.accept ();
         b.accept1();
         do{
         system.out.println("1.deposit 2.withdrawal 3.Exit");
          system.out.println("Enter your choice");
          ch=sc.nextInt();
          switch(ch)
          {
           case 1:
            b.update();
            break;
            case 2:
             b.withdrawal();
              break;
              case3:
               b.display();
               break;
               default:
                  system.out.println("wrong choice");
               }
         } while(ch!=3);
       }
     }
  }
```



```
C:\workspace>javac Account.java

C:\workspace>java Bank
1.curr_Acct
2.sav acct
enter the type
1
enter name
Rahul
enter accno
1500
enter the balance
27000
1.deposit 2.withdrawal 3.exit
enter your choice
1
enter the deposit
5000
balance got updated to:32000.0
```



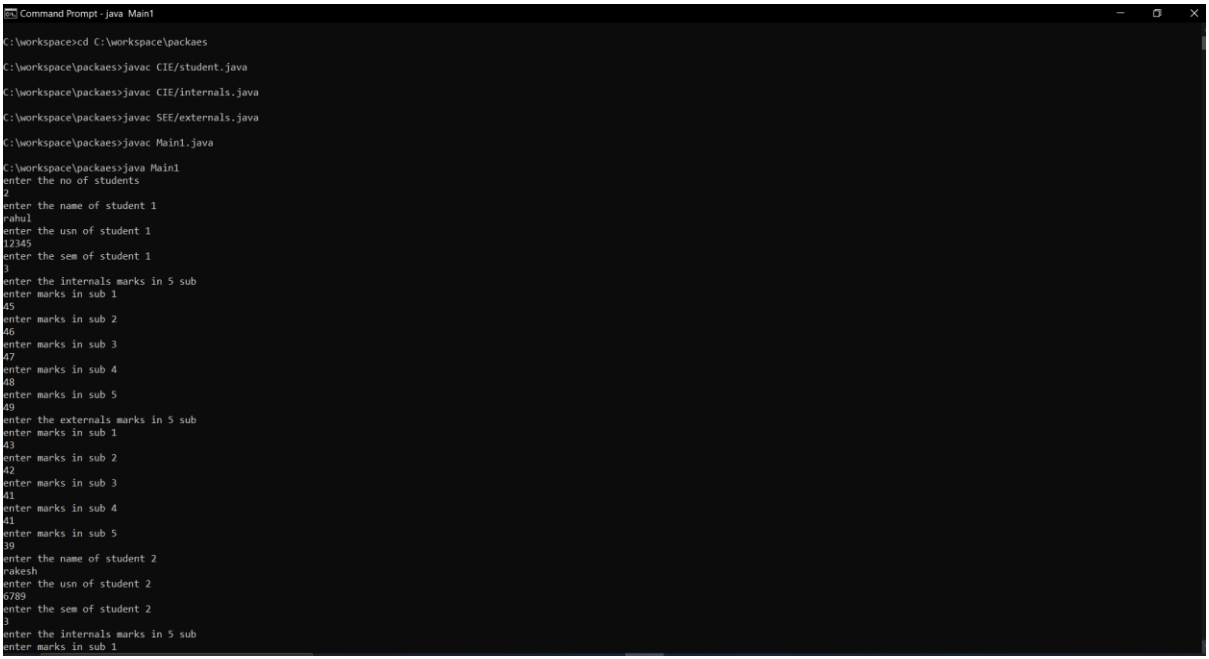
```
1.deposit 2.withdrawal 3.exit
enter your choice
2
 enter amt to be withdrawn
100000
balance got updated to:-68000.0
a penalty of 100 is imposed
balance got updated to:-68100.0
1.deposit 2.withdrawal 3.exit
enter your choice
```

LAB 6: Create a package CIE which has two classes- Student and Internals. The class Personal has members like usn, name, sem. The class Internals has an array that stores the internal marks scored in five courses of the current semester of the student. Create another package SEE which has the class External which is a derived class of Student. This class has an array that stores the SEE marks scored in five courses of the current semester of the student. Import the two packages in a file that declares the final marks of n students in all five courses.

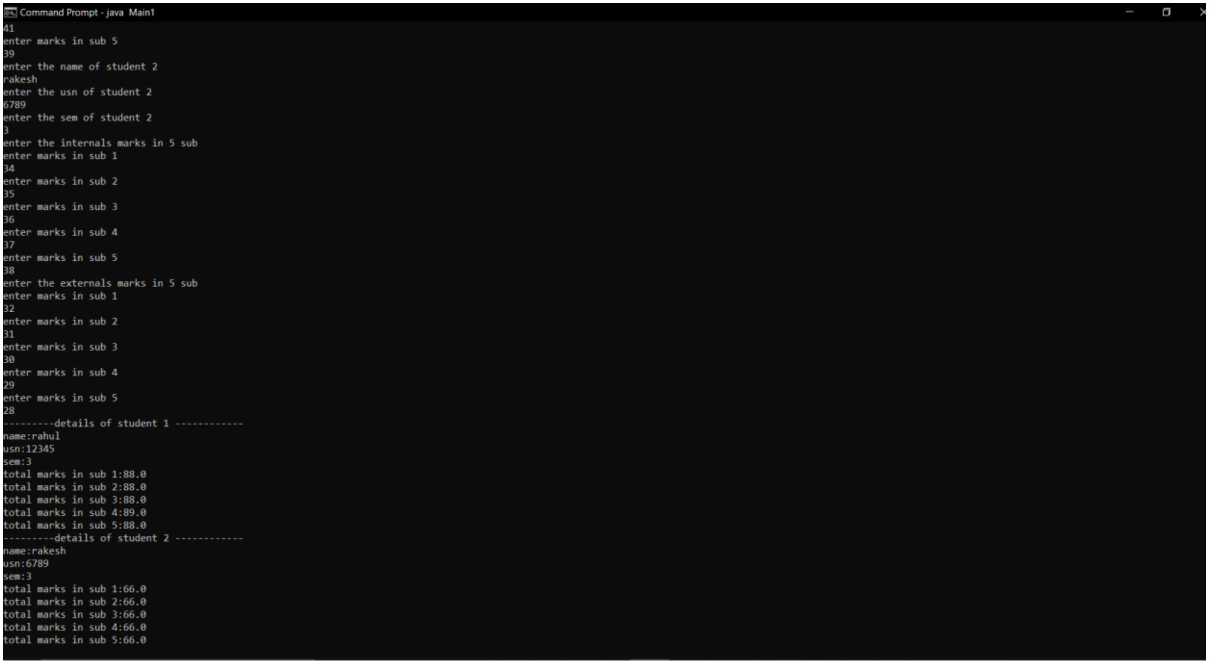
```
package CIE;
import java.util.*;
{
public class internals
{
        public double marks []= new double [5];
        Scanner sc = new scanner (system.in);
        public void accept1()
        {
        system.out.println ("Enter the internals marks in
                              5 sub");
         for (int i=0; i<5, i+1)
         {
         System.out.println("Enter marks in sub" + (i+1));
         marks1[i] = sc.nextDouble();
         }
         }
}

package CIE;
import java.util.*;

public ~~studat~~ class student
{
         public string usn;
         public String name;
         public int sem;
         public double total []= new double [5];
         Scanner sc = new Scanner (System.in);
                 public void accept2(int a)
                 {
```

```
System.out.println("Enter the name of studet"+a);
name = sc.next();
System.out.println("Enter the usn of studet"+a);
Usn = sc.next();
system.out..println("Enter the sem of student "+a);
sem. sc.nextInt();
}
public void display(int a)
{
        system.out.println(" ---- details of studet "+a+
                                        +" ----- ")
        System.out.println("Name:"+name);
        System.out.println("USn:"+usn);
        System.out.println("sem:"+sem);
        for (int i=0; i<5; i++)
        system.out.println("total marks in sub"
                                +(i+1)+":"+total[i]);
    }
}

package SEE;

import CIE.*;
import java.util.*;

public class Externals extends CIE.student
{
        public double marks2[] = new double[5];
        Scanner Sc = new Scanner(system.in);
        public void accept()
        {
        system.out.println("Enter marks in sub"+(i+1));
        marks2[i] =sc.nextdouble();
        }}
```

```
import CIE.*;
import SEE.*;
import java.util.*;

class Main1
{
        public static void main (String args [])
        {
        // CIE.student s[];
        // double total[] = new double [5];
        SEE.externals s2[];
        CIE.Internals s1[];
        int n;
        system.out.println("Enter the number of students");
         Scanner sc = new scanner (system.in);
          n = sc.nextInt();
          s2 = new SEE. Externals [n];
          s1 = new CIE . Internals [n];

          for (int i=0; i<n; i++)
          {
          // s[i] = new CIE.Student();
           s1[i] = new CIE. Internals();
           s2[i] = new SEE . Externals();

           s2[i].*accept2(i+1);
           s1[i].accept1();
            s2[i]. accept3();
            for (int j=0; j<5; j++)
              s2[i].total[j] = s1[i].marks1[j] + s2[i].marks2
                                                              [j];

}
for (int i =0; i<n; i++)
    s[i].display(i+1);
  }
}
```



```
C:\workspace>cd C:\workspace\packaes

C:\workspace\packaes>javac CIE/student.java

C:\workspace\packaes>javac CIE/internals.java

C:\workspace\packaes>javac SEE/externals.java

C:\workspace\packaes>javac Main1.java

C:\workspace\packaes>java Main1
enter the no of students
2
enter the name of student 1
rahul
enter the usn of student 1
12345
enter the sem of student 1
3
enter the internals marks in 5 sub
enter marks in sub 1
45
enter marks in sub 2
46
enter marks in sub 3
47
enter marks in sub 4
48
enter marks in sub 5
49
enter the externals marks in 5 sub
enter marks in sub 1
43
enter marks in sub 2
42
enter marks in sub 3
41
enter marks in sub 4
41
enter marks in sub 5
39
enter the name of student 2
rakesh
enter the usn of student 2
6789
enter the sem of student 2
3
enter the internals marks in 5 sub
enter marks in sub 1
```

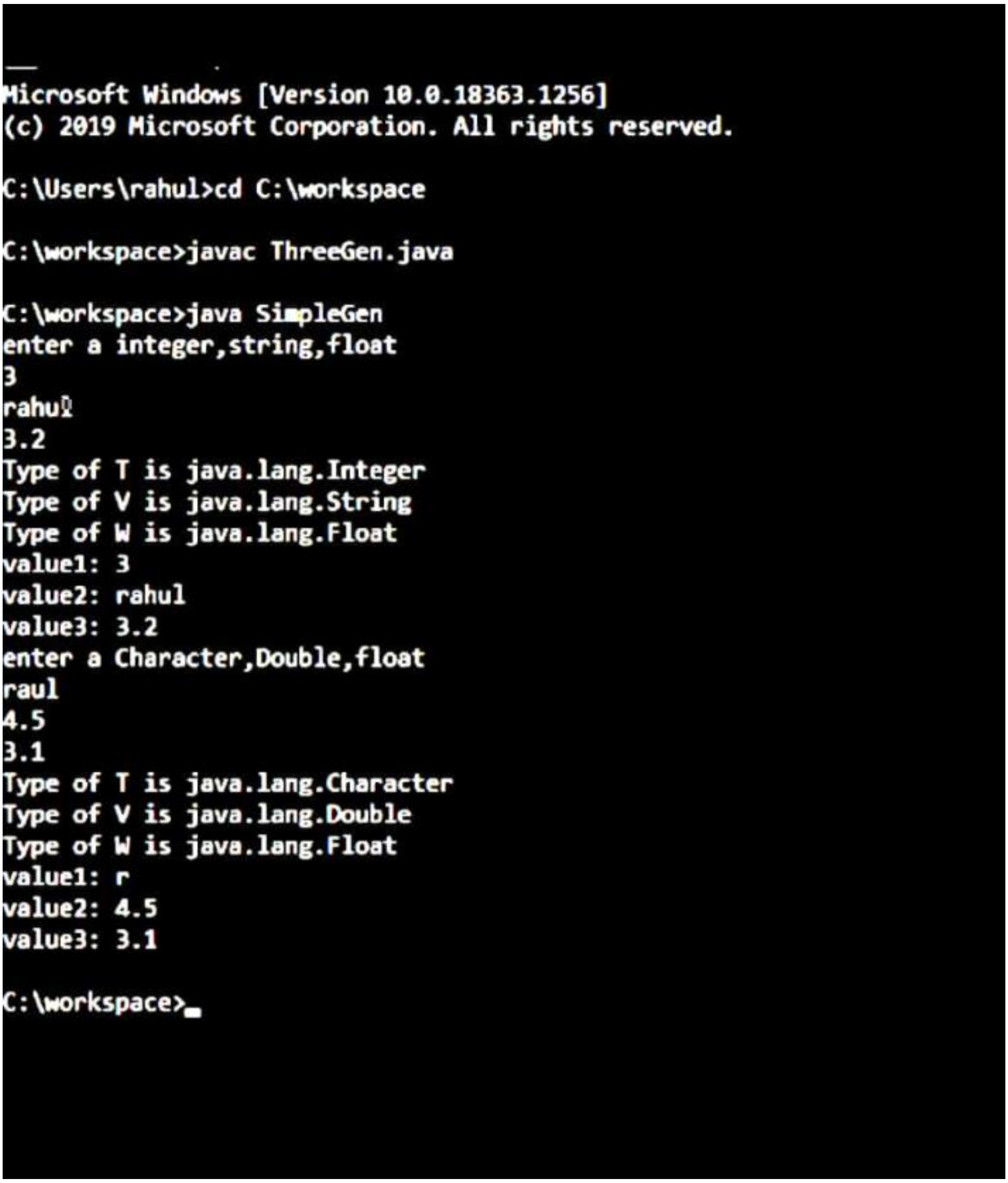


```
41
enter marks in sub 5
39
enter the name of student 2
rakesh
enter the usn of student 2
6789
enter the sem of student 2
3
enter the internals marks in 5 sub
enter marks in sub 1
34
enter marks in sub 2
35
enter marks in sub 3
36
enter marks in sub 4
37
enter marks in sub 5
38
enter the externals marks in 5 sub
enter marks in sub 1
32
enter marks in sub 2
31
enter marks in sub 3
30
enter marks in sub 4
29
enter marks in sub 5
28
---------details of student 1 ------------
name:rahul
usn:12345
sem:3
total marks in sub 1:88.0
total marks in sub 2:88.0
total marks in sub 3:88.0
total marks in sub 4:89.0
total marks in sub 5:88.0
---------details of student 2 ------------
name:rakesh
usn:6789
sem:3
total marks in sub 1:66.0
total marks in sub 2:66.0
total marks in sub 3:66.0
total marks in sub 4:66.0
total marks in sub 5:66.0
```

LAB7: Write a program to demonstrate generics with multiple object parameters.

```
import java.util.*;
class threeGen <T, V, W > {
T ob1;
V ob2;
W ob3;
ThreeGen( T o1 , V o2, W o3){
ob1 = o1;
ob2 = o2;
 ob3 = o3;
}

void showTypes(){
System.out.println(" Type of T is" + ob1.get Class().getNa
System. out. println(" Type of V is" + ob2. get class().getName
system.out.println(' Type of W is' + ob3. getclass(). getName
}
T getob1(){
 return ob1;
 }
 V getob2(){
 return ob2;
 }
 W get ob3()
 {
   return ob3;
  }
 }
 class SimpleGen{
  public static void main (String args[]){
  Scanner sc = new scanner (System.in);
   int a;
```

```
String b;
float c,c1;
char a1;
double d1;
System.out.println("Enter a integer, string, float");
 a = sc.nextInt();
 b = sc.next();
  c = sc.nextFloat();
  Threegen <integer,string, float > tgobj =
   new threegen <Integer ,String, float >(a,b,c);
  tgobj.showtypes();
  int v = tgobj.getobj1();
  system.out.println (" value 1: "+v);
  string str = tgobj.getobj2();
 system.out.println( " value 2: "+str);
  float x= tgobj.getobj3();
 system.out.println ("value 3: "+x);
system.out.println(" Enter a character, double, float"
a1.sc.next(). charAt(0);
d1.sc. nextDouble();
c1.sc. nextFloat();
Three gen< character, double, float > tgobj1 =
 newthreegen < character, double, float >(a1,d1,c1
tgobj1. showTypes();
Char v1 = tgobj1 .getobj1();
System.Out.println(" value1: "+v1);
double str1 = tgobj2();
System-Out.println("value2: "+str1);
float x1= tgobj1.get obj3();
System.Out .println(" value3:"+x1);
}
}
```



```
Microsoft Windows [Version 10.0.18363.1256]
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C:\Users\rahul>cd C:\workspace

C:\workspace>javac ThreeGen.java

C:\workspace>java SimpleGen
enter a integer,string,float
3
rahul
3.2
Type of T is java.lang.Integer
Type of V is java.lang.String
Type of W is java.lang.Float
value1: 3
value2: rahul
value3: 3.2
enter a Character,Double,float
raul
4.5
3.1
Type of T is java.lang.Character
Type of V is java.lang.Double
Type of W is java.lang.Float
value1: r
value2: 4.5
value3: 3.1

C:\workspace>_
```
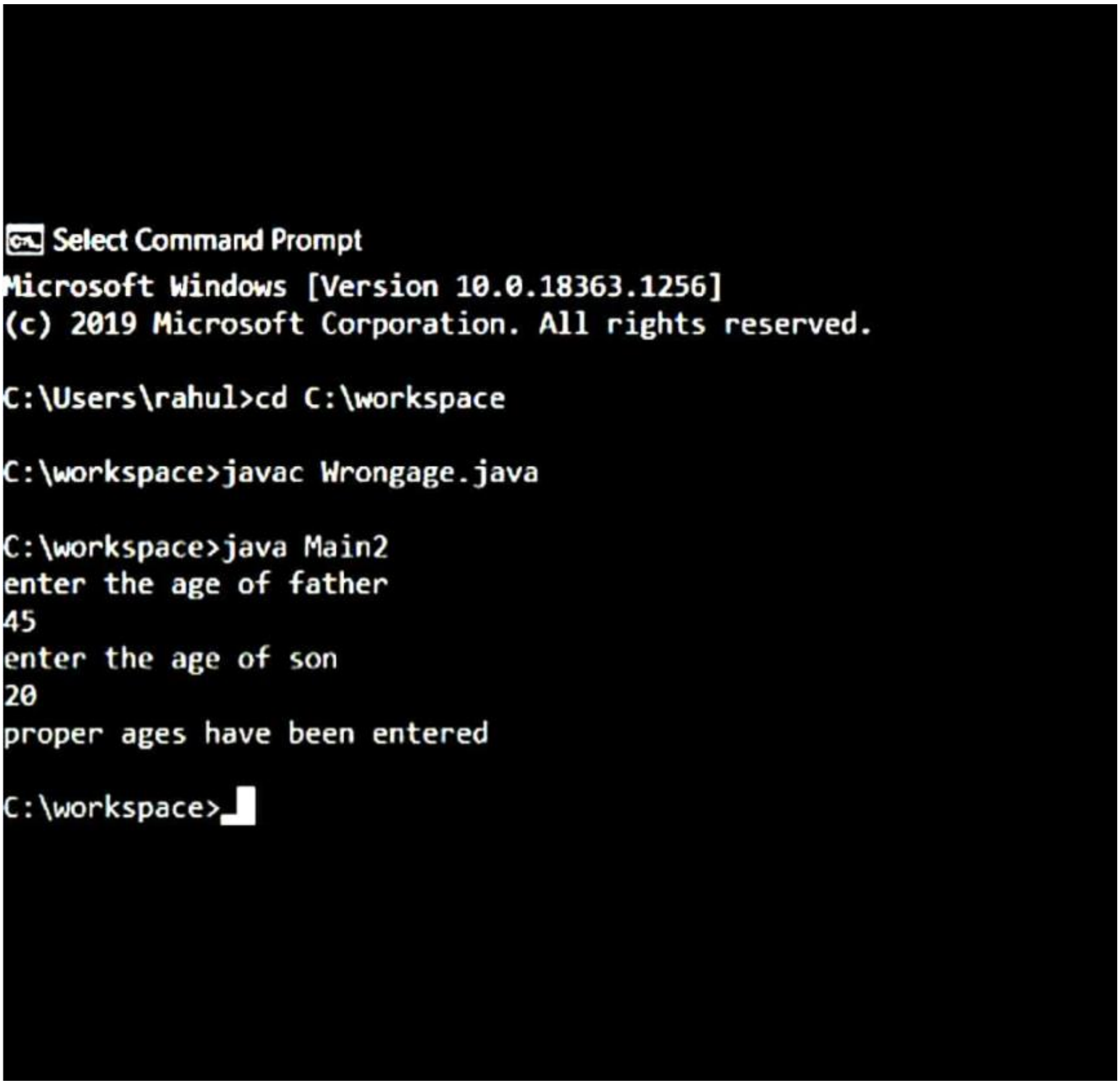

LAB8: Write a program that demonstrates handling of exceptions in inheritance tree. Create a base class called “Father” and derived class called “Son” which extends the base class. In Father class, implement a constructor which takes the age and throws the exception WrongAge( ) when the input age=father’s age.

```
import java.util.*;
class wrongAge extends Exception
{
        private int a1,b1;
        wrongAge(int a, int b)
        {
            a1=a;
            b1=b;
        }
        public string to string()
        {
            if(a1<0||b<0)
            return "input age cannot be less than 0";
            else if(a1<=b1)
                return "father age cannot be less than or
                        equal to sons age";
                return "";
        }
  }
  class father
  {
        int fage,sage;
        Scanner sc= new Scanner(System.in);
        Father() throws wrongAge
        {
            System.out.println(" Enter the age of father");
            fage = sc.nextInt();
            System.out.println(" enter the age of son");
            sage = sc.nextInt();
            if(fage<0||sage<0)
                throw new wrongAge(fage,sage);
            }
```

```
class son extends Father
{
        son () throws wrongAge
        {
                if (sage >= fage)
                    throw new wrongAge (fage, sage);
                else
                system.out.println ("proper ages have been
                                        entered");
        }
}
class main {
{
      public static void main (String args[])
      {
            try
            {
                son s = new son ();
            } catch (wrongAge e) {
                system.out.println ("error: "+e);
            }
      }
}
```



```
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C:\Users\rahul>cd C:\workspace

C:\workspace>javac Wrongage.java

C:\workspace>java Main2
enter the age of father
45
enter the age of son
20
proper ages have been entered

C:\workspace>
```
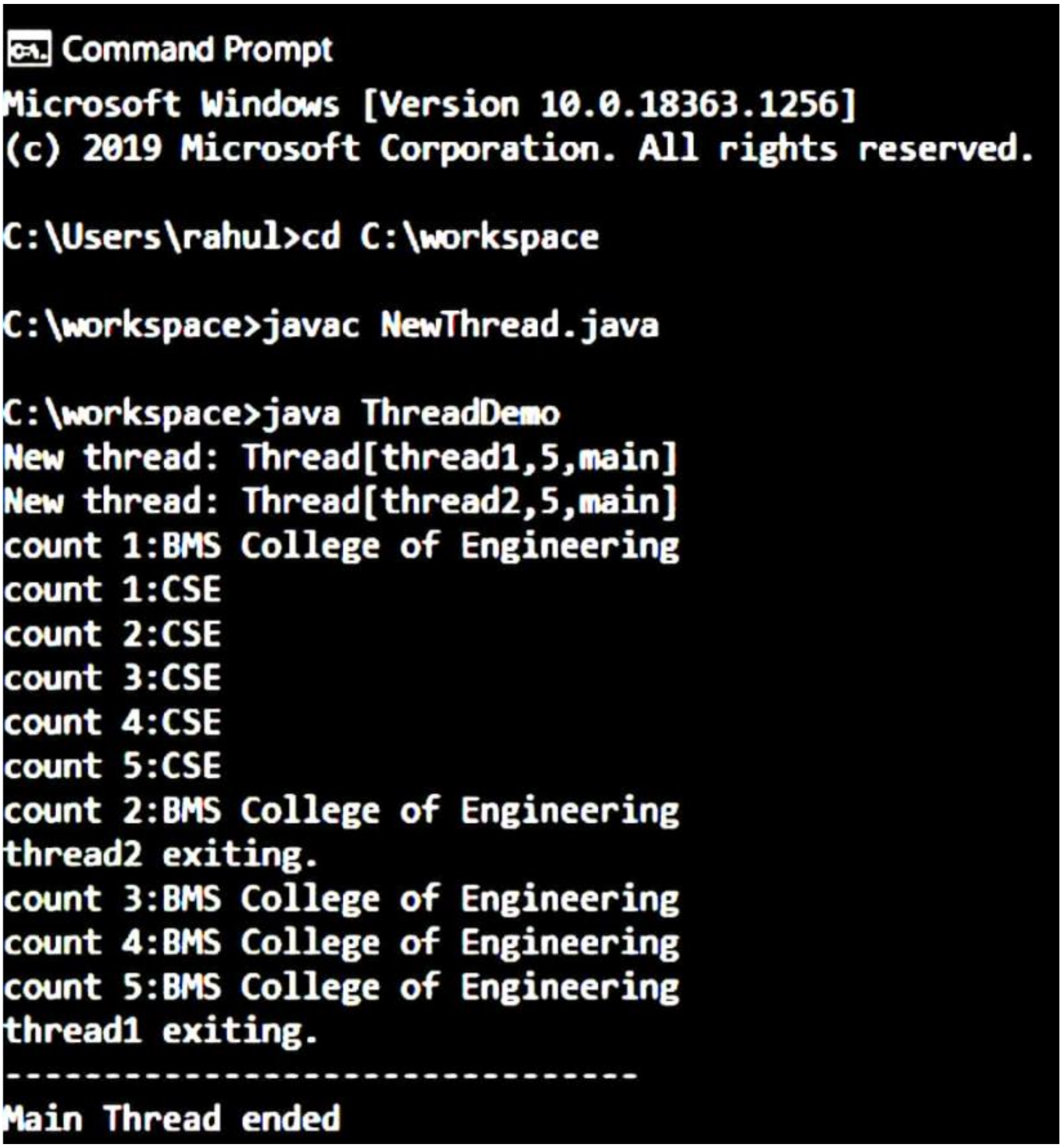

LAB9: Write a program which creates two threads, one thread displaying “BMS College of Engineering” once every ten seconds and another displaying “CSE” once every two seconds.

```
import java.util.*;
import java.lang.*;
class NewThread implements Runable
{
      String name;
      String dish;
      int n1;
      Thread t;
      New Thread (String Threadname, string x, int time)
       {
            name = threadname;
             n1= time;
             disp= x;
             t= new Thread(this, name);
             system.out.println ("New thread "+t);
             t.start();
         }
         public void run()
         {
              try
              {
                  for (int i=1; i<=5; i++)
                  {
                     system.out.println("count"+i+":"+
                                         disp").
                     Thread.sleep(n1);
                  }
              }
              catch (InterruptedException e)
              {
                  system.out.println (name+"Interrupted")
              }
System. out. println (name + "Exiting");
 }
}
class ThreadDemo
{
      public static void main (String args[])
      {
        new newthread ("Thread1", "BMS college of engineering",
                     10000);
        new newthread ("Thread2", "CSE", 2000);

        try
        {
            Thread sleep(51000);
            system. out. println (". . . . . . . .");
            System. out. println ("Main thread ended\n")
        }
        catch (interruptedException e)
        {
            System. out. println ("Main thread
               interrupted");
        }
    }
}
```



```
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C:\Users\rahul>cd C:\workspace

C:\workspace>javac NewThread.java

C:\workspace>java ThreadDemo
New thread: Thread[thread1,5,main]
New thread: Thread[thread2,5,main]
count 1:BMS College of Engineering
count 1:CSE
count 2:CSE
count 3:CSE
count 4:CSE
count 5:CSE
count 2:BMS College of Engineering
thread2 exiting.
count 3:BMS College of Engineering
count 4:BMS College of Engineering
count 5:BMS College of Engineering
thread1 exiting.
--------------------------------
Main Thread ended
```
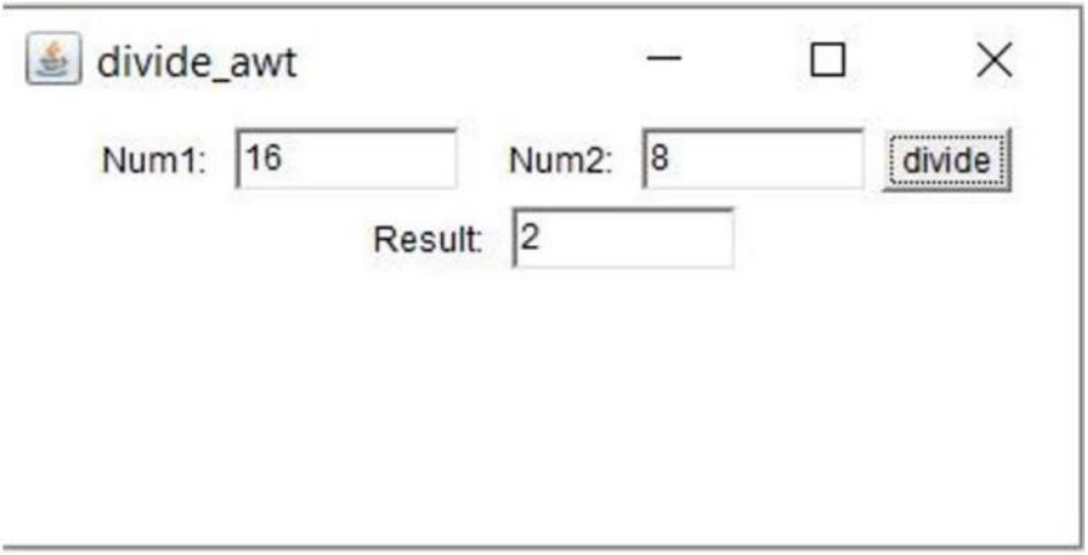

LAB10: Write a program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 were not an integer, the program would throw a NumberFormatException. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.

```
import java.awt.*;
import java.awt.event.*;
class DialogB extends Dialog implements ActionListener
{
        Division div;
        DialogB (Flame parent, String title)
        {
            super (parent, title, falce);
            div =(Division) parent;
            setlayout (new FlowLayout());
            setsize (400, 150);
            add(new label (div.msg));
            Button b;
            add ( b = new Button ("OK"));
            b.addActionListenel (this);
        }
        public void actionPerformed (ActionEvent ae)
        {
            dispose ();
        }
    }

public class Division extends Frame implements ActionListener {
    TextField num1, num2, result;
    Button b1;
    String msg = " ";
    public division ()
    {
        setLayout (new FlowLayout ());
        Label num1p = new label ("Number 1 :", label
                                                .RIGHT);
        Label num2p = new label ("Number 2 :", label.
                                                RIGHT);
```

```
b1 = new Button("divide");
Label resultP = new label("Result:", Label.Rigth);
 num1 = new TextField(12);
  num2 = new Textfield(12);
  result = new Textfield
  add(num1p);
   add(num1);
    add(num12p);
    add(num2);
     add(b1);
     add(resultp);
      add(result);
      num1.addActionListener(this);
      num2.addActionListener(this);
       b1.addActionListener(this);
       addwindowListener(new windowadapter()
       {
             public void windowclosing(windowEvent we)
             {
                  system.exit(0);
             }
       });
}
      public void actionPerformed(ActionEvent ae)
      {
           if(!(num1.gettext().equals("")) && !
                  (num2.gettext().equals(""))){
             try
             {
                  int x = Integer.parseInt(num1.getText());
                  int y = Integer.parseInt(num2.getText());
                  int z;
                   z=x/y;
msg = ""+z;
}
catch (NumberFormatException e)
 {
     msg = ""+e;
     result = setText(" ");
     DialogB d = new dialogB (this, "ERROR");
     d.setvisible (true);
   }
   catch (ArithmeticException e)
   {
       msg = ""+e;
       result *setText(" ");
        DialogB d = new dialogB (this, "ERROR");
        d. setvisible(true);
      }
 }
 else
 {
      msg = " Number fields should not be empty";
       result . setText(" ");
       DialogB d = new dialogB ( this, "ERROR");
        d.setvisible(true);
    }
    //re paint();
}
public void paint (Graphic g)
 {
     result .setText (msg);
   }
   public static void main( String args[])
   {
        division a = new division ();
        a. setSize( new dimension( 500,600));
         a. setTitle ( "1st-division");
          a. setVisible ( true);
        }
   }
```



Num1: 16

Num2: 8

Result: 2