Lab Program 1:

Develop a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate b^2-4ac is negative, display a message stating that there are no real solutions.

1BM19CS045
Derek Stanley Kannatha

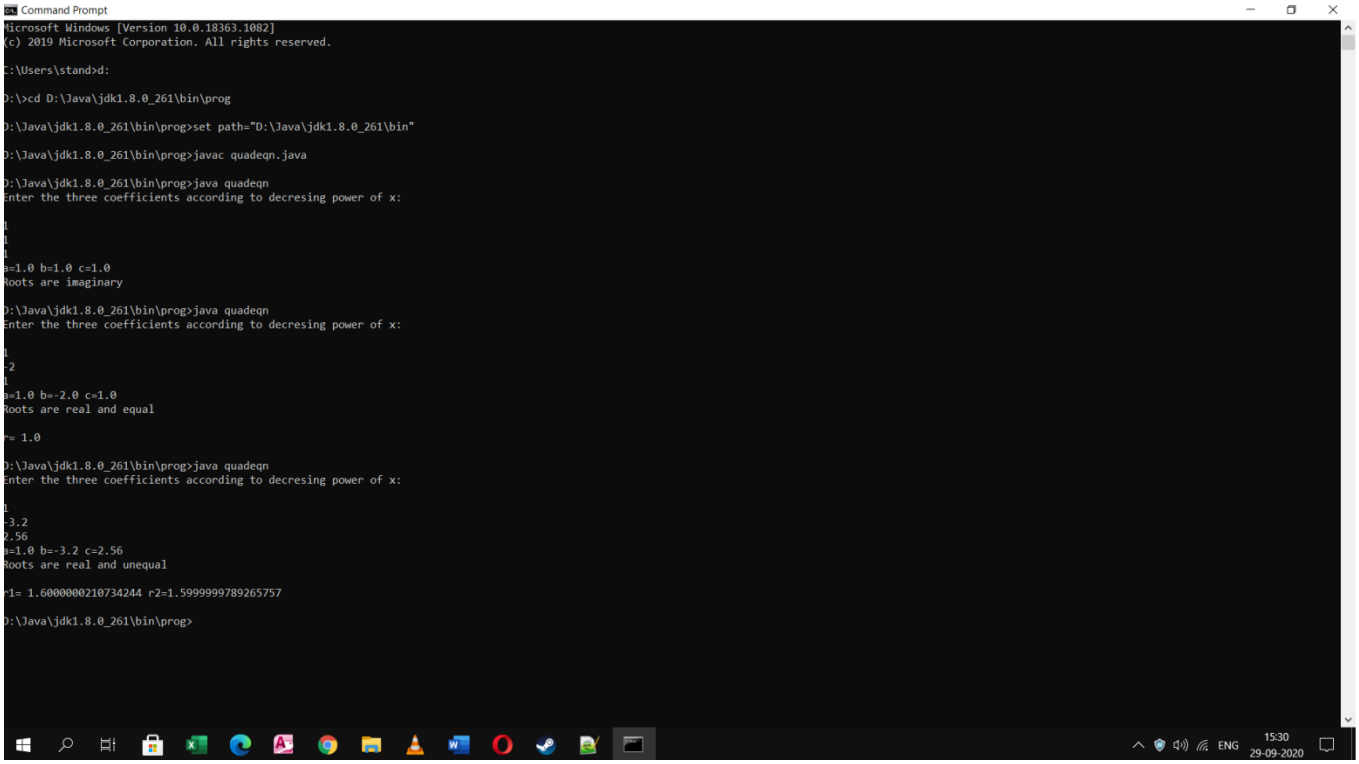
Date

Expt. No. 1 WEEK 3 QUADRATIC EQUATION Page No. 29/9/20

```
import java.util.Scanner;
class equadeqn
{ public static void main (String args[])
  { int double a,b,c,d;
    double r1,r2;
    Scanner get= new Scanner(System.in);
    System.out.println("Enter the three coefficients according
    to decreasing power of x : \n");
    a = get.nextDouble();
    b = get.nextDouble();
    c = get.nextDouble();
    System.out.println("a="+a+"b="+b+"c="+c);
    d= b*b - 4*a*c;
    if(d>0)
    { System.out.println("Roots are real and unequal");
      r1 = (-b + Math.sqrt(d))/(2*a);
      r2 = (-b - Math.sqrt(d))/(2*a);
      System.out.println("\n r1="+r1+"r2="+r2);
    }
    else
    if(d==0)
    { System.out.println("Roots are equal and real");
      r1=(-b)/(2*a);
      System.out.println("\n r="+r1); }
    else if(d<0)
      System.out.println("Roots are Imaginary");
  }
}
```

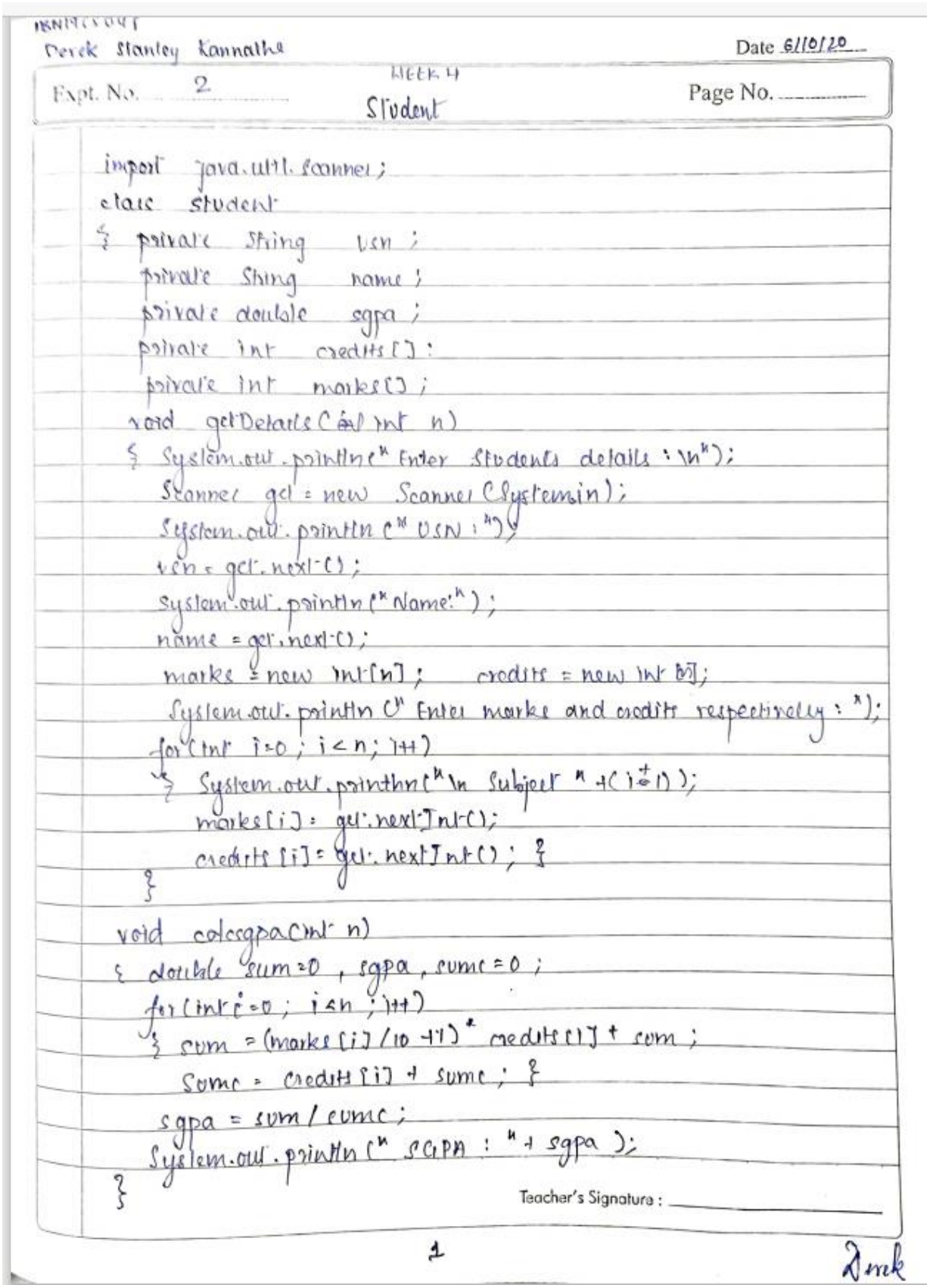
Teacher's Signature :

Derek


Command Prompt
Microsoft Windows [Version 10.0.18363.1082]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\stand>d:
D:\>cd D:\Java\jdk1.8.0_261\bin\prog
D:\Java\jdk1.8.0_261\bin\prog>set path="D:\Java\jdk1.8.0_261\bin"
D:\Java\jdk1.8.0_261\bin\prog>javac quadeqn.java
D:\Java\jdk1.8.0_261\bin\prog>java quadeqn
Enter the three coefficients according to decresing power of x:
1
1
1
a=1.0 b=1.0 c=1.0
Roots are imaginary
D:\Java\jdk1.8.0_261\bin\prog>java quadeqn
Enter the three coefficients according to decresing power of x:
1
-2
1
a=1.0 b=-2.0 c=1.0
Roots are real and equal
r= 1.0
D:\Java\jdk1.8.0_261\bin\prog>java quadeqn
Enter the three coefficients according to decresing power of x:
1
-3.2
2.56
a=1.0 b=-3.2 c=2.56
Roots are real and unequal
r1= 1.6000000210734244 r2=1.5999999789265757
D:\Java\jdk1.8.0_261\bin\prog>
ENG
15:30
29-09-2020

Lab Program 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.



1BM19CS041
Derek Stanley Kannatha
Date 6/10/20
Expt. No. 2
WEEK 4
Student
Page No.

```
import java.util.Scanner;
class student
{ private String usn;
  private String name;
  private double sgpa;
  private int credits[];
  private int marks[];
  void getDetails(int n)
  { System.out.println("Enter Students details:\n");
    Scanner scl = new Scanner(System.in);
    System.out.println("USN:");
    usn = scl.next();
    System.out.println("Name:");
    name = scl.next();
    marks = new int[n]; credits = new int[n];
    System.out.println("Enter marks and credits respectively:");
    for(int i=0; i<n; i++)
    { System.out.println("\n Subject "+(i+1));
      marks[i] = scl.nextInt();
      credits[i] = scl.nextInt(); }
  }
void calcsgpa(int n)
{ double sum=0, sgpa, sumc=0;
  for(int i=0; i<n; i++)
  { sum = (marks[i]/10+7)*credits[i] + sum;
    sumc = credits[i] + sumc; }
  sgpa = sum/sumc;
  System.out.println("SGPA: "+sgpa);
}
```

Teacher's Signature :

1

Derek

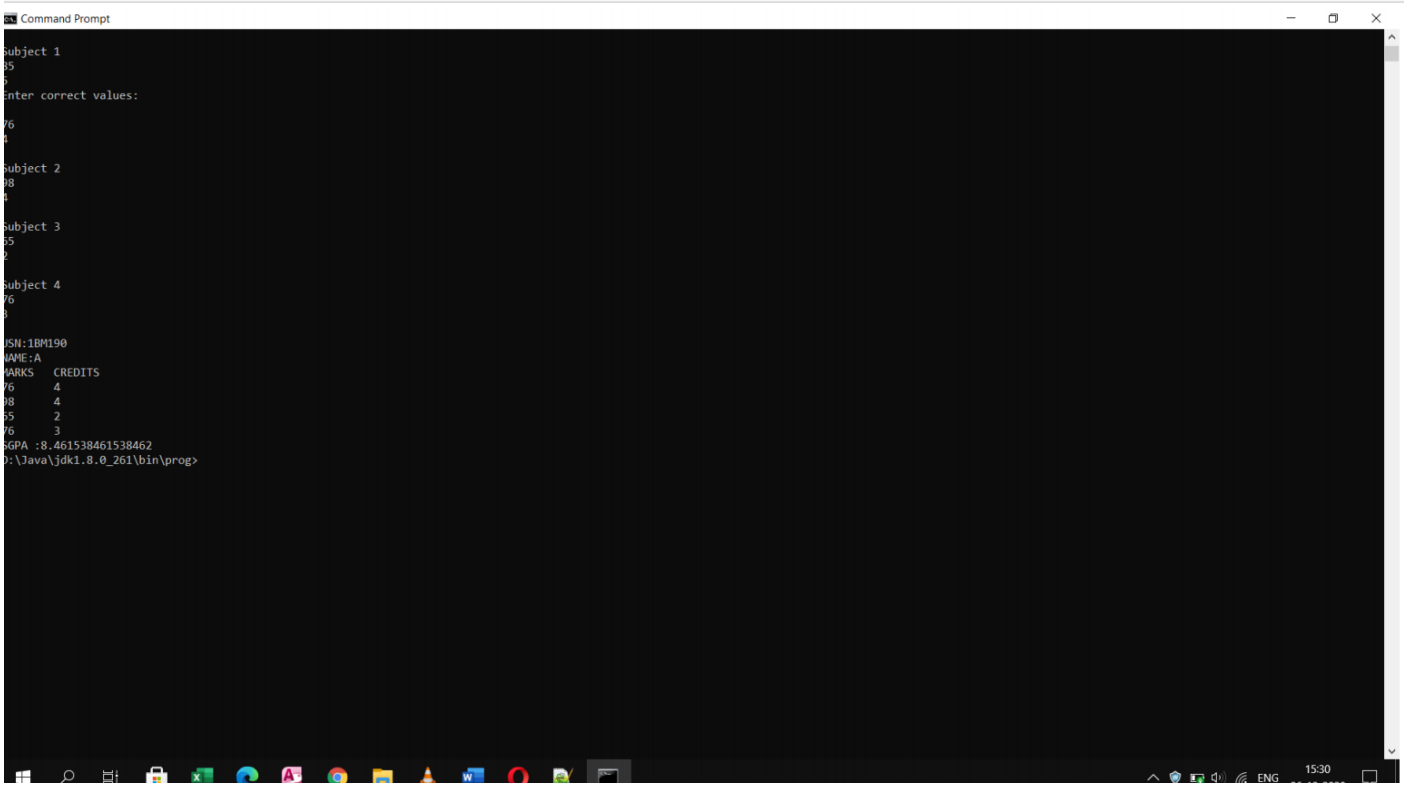
Expt. No. Page No.

```
void printDetails(int n)
{ System.out.println("\n USN : "+usn);
  System.out.println("NAME : "+name);
  System.out.println("Marks \t CREDITS");
  for(int i=0;i<n;i++)
  { System.out.println(marks[i]+"\t"+credits[i]); }
  calcGpa();
 }
}

class StudentMain
{ public static void main(String args[])
  { int n;
    System.out.println("Enter the no of subjects : ");
    Scanner get=new Scanner(System.in);
    n=get.nextInt();
    Student s1 = new Student();
    s1.getDetails(n);
    s1.printDetails(n);
  }
}
```

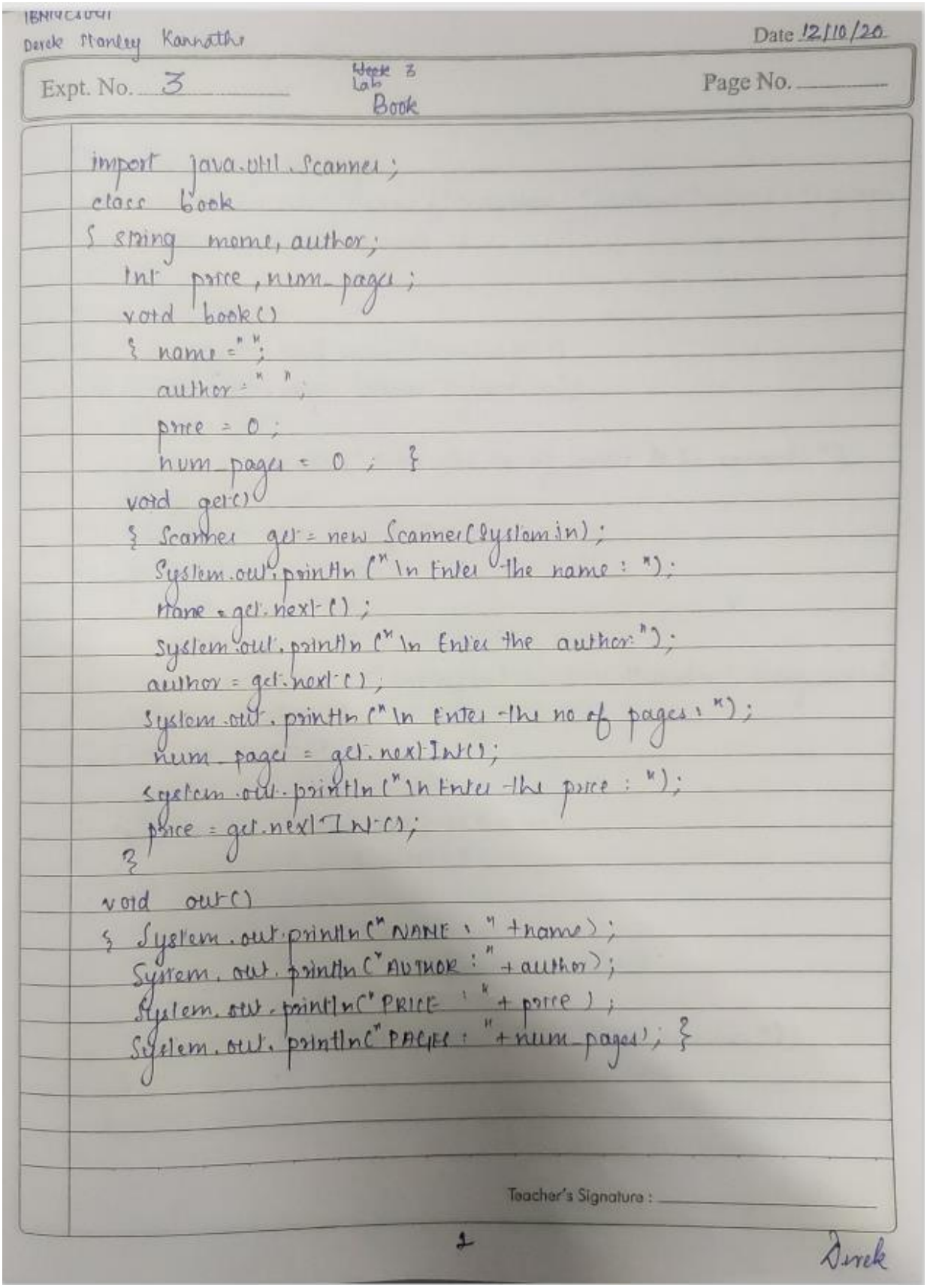
Teacher's Signature :

Derek


Command Prompt
ubject 1
35
nter correct values:
76
4
ubject 2
98
4
ubject 3
55
2
ubject 4
76
3
SN:1BM190
AME:A
ARKS CREDITS
76 4
98 4
55 2
76 3
GPA :8.461538461538462
:\Java\jdk1.8.0_261\bin\prog>
ENG
15:30

Lab Program 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.



Derek Stanley Kannathu

Date 12/10/20

Expt. No. 3 — Week 3 Lab — Book — Page No.

```
import java.util.Scanner;
class book
{ string name, author;
  int price, num_pages;
  void book()
  { name = " ";
    author = " ";
    price = 0;
    num_pages = 0; }
  void get()
  { Scanner get = new Scanner(System.in);
    System.out.println("\n Enter the name : ");
    name = get.next();
    System.out.println("\n Enter the author");
    author = get.next();
    System.out.println("\n Enter the no of pages : ");
    num_pages = get.nextInt();
    System.out.println("\n Enter the price : ");
    price = get.nextInt();
  }
void out()
{ System.out.println("NAME : " +name);
  System.out.println("AUTHOR : " +author);
  System.out.println("PRICE : " + price);
  System.out.println("PAGES : " +num_pages); }
```

Teacher's Signature :

1

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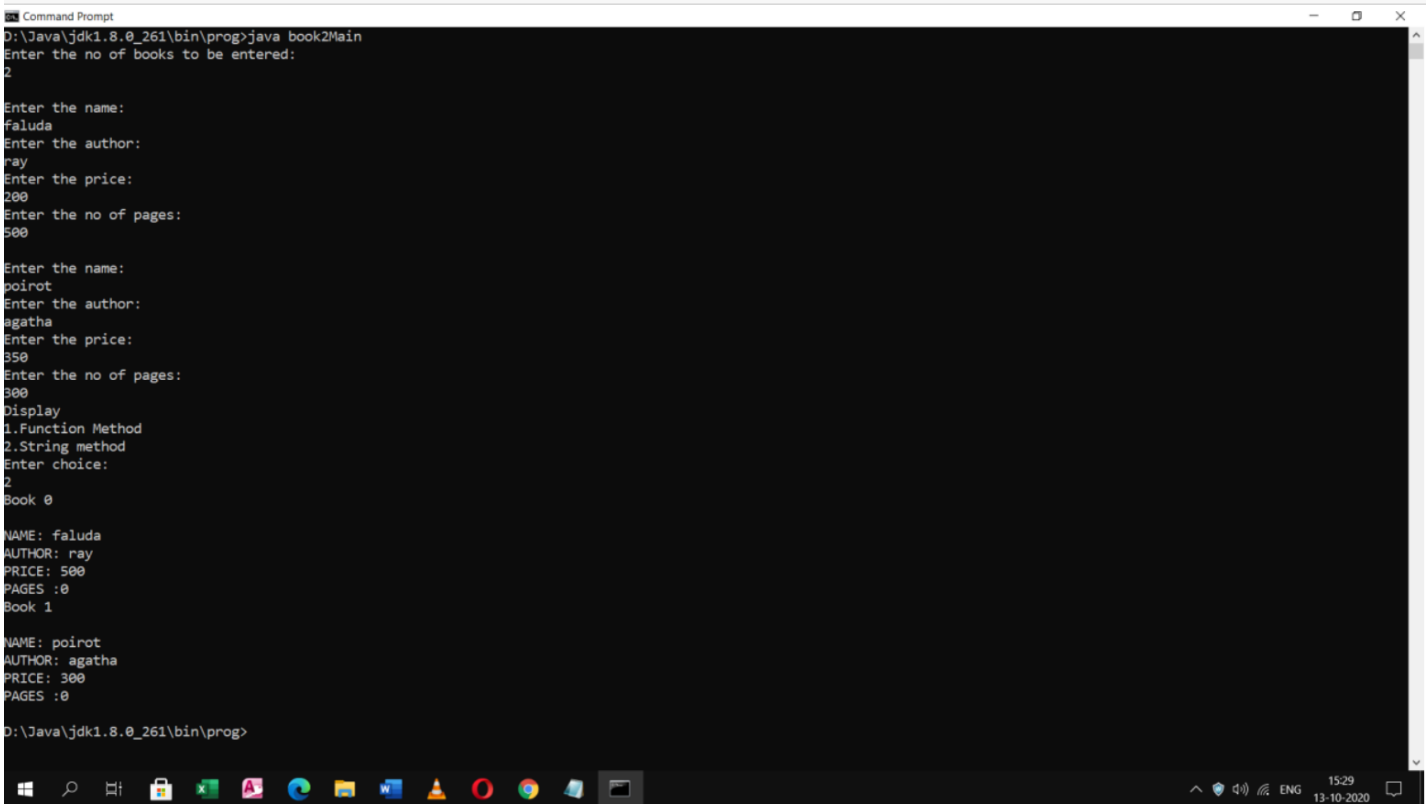
```
public String toString()
{ return("\nNAME: "+name+"\nAUTHOR: "+author+"\nPRICE: "+price+"
  \nPAGES: "+num_pages); }
}
class book2Main
{ public static void main(String args[])
{ Scanner get = new Scanner(System.in);
  int n,ch;
  System.out.println("Enter the no of books to be entered: ");
  n=get.nextInt();
  book b[] = new book[n];
  for(int i=0;i<n;i++)
  { b[i] = new book();
    b[i] = get(); }
  System.out.println("Display\n1. Function Method\n2. String method
  \nEnter Choice: ");
  ch = get.nextInt();
  switch(ch)
  { case 1: for(int i=0;i<n;i++)
            { b[i].out(); }
            break
   case 2: for(int i=0;i<n;i++)
           { System.out.println(b[i]); }
           break;
   default: System.out.println("Enter valid number");
  }
 }
}
```

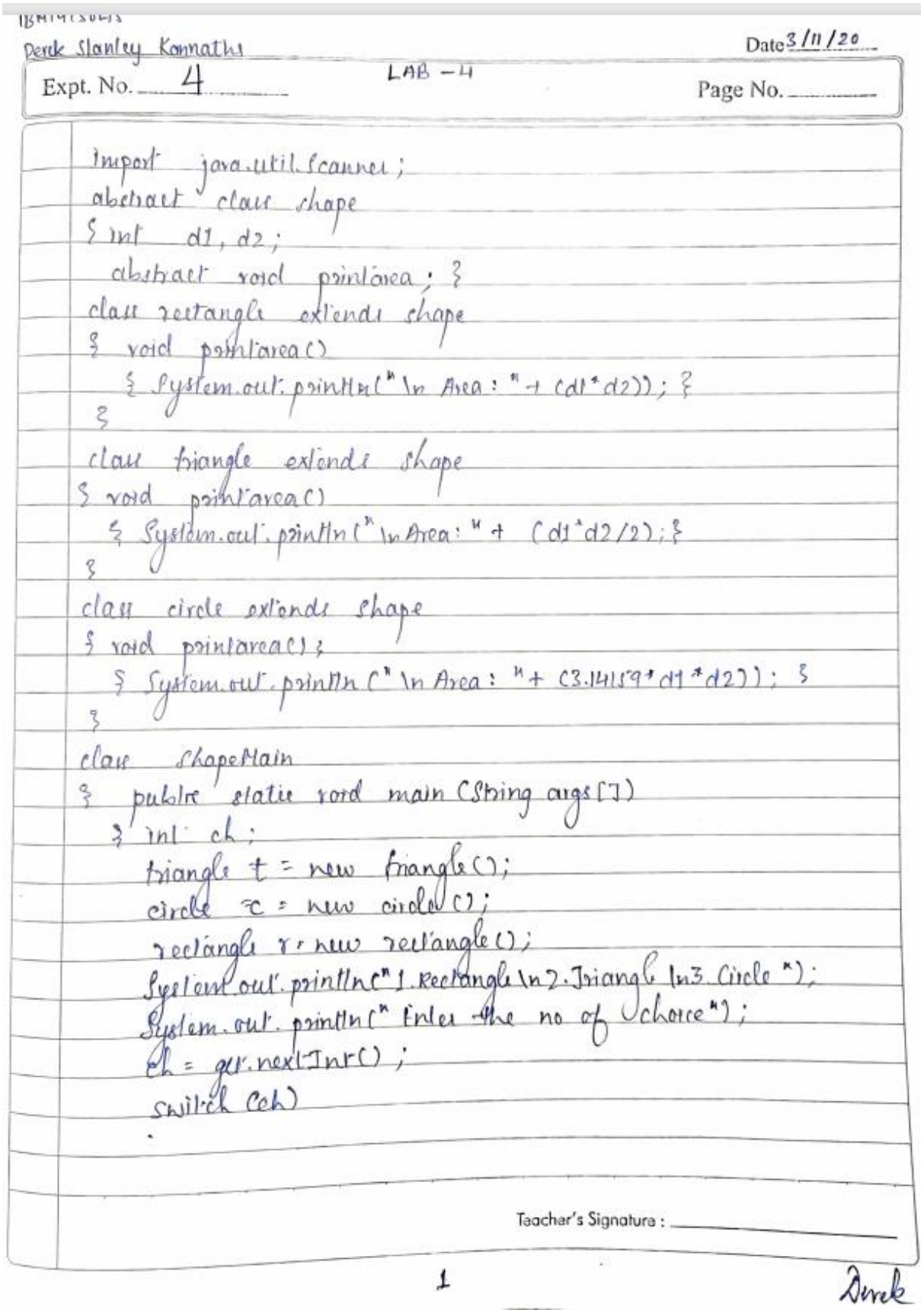
Teacher's Signature :

Derek


Command Prompt
D:\Java\jdk1.8.0_261\bin\prog>java book2Main
Enter the no of books to be entered:
2
Enter the name:
faluda
Enter the author:
ray
Enter the price:
200
Enter the no of pages:
500
Enter the name:
poirot
Enter the author:
agatha
Enter the price:
350
Enter the no of pages:
300
Display
1.Function Method
2.String method
Enter choice:
2
Book 0
NAME: faluda
AUTHOR: ray
PRICE: 500
PAGES :0
Book 1
NAME: poirot
AUTHOR: agatha
PRICE: 300
PAGES :0
D:\Java\jdk1.8.0_261\bin\prog>
ENG
15:29
13-10-2020

Lab Program 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.



1BM19CS043

Derek Stanley Kannathu

Date 3/11/20

Expt. No. 4 LAB – 4 Page No.

```
import java.util.Scanner;
abstract class shape
{ int d1, d2;
  abstract void printArea; }
class rectangle extends shape
{ void printArea()
  { System.out.println("\n Area :" + (d1*d2)); }
}
class triangle extends shape
{ void printArea()
  { System.out.println("\n Area:" + (d1*d2/2); }
}
class circle extends shape
{ void printArea();
  { System.out.println("\n Area :" + (3.14159*d1*d2)); }
}
class ShapeMain
{ public static void main (String args[])
  { int ch;
    triangle t = new triangle();
    circle c = new circle();
    rectangle r = new rectangle();
    System.out.println("1.Rectangle \n2.Triangle \n3.Circle");
    System.out.println("Enter the no of choice");
    ch = scr.nextInt();
    switch(ch)
```

Teacher's Signature :

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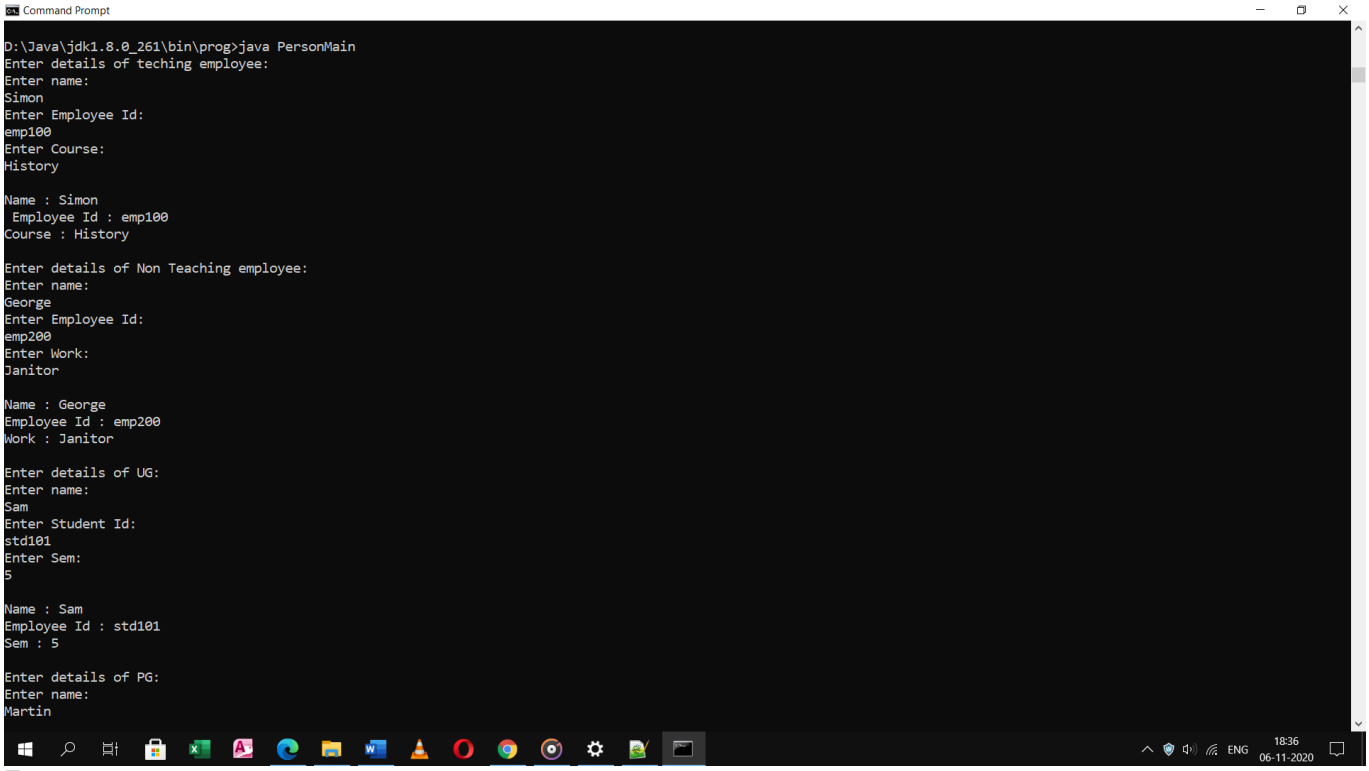
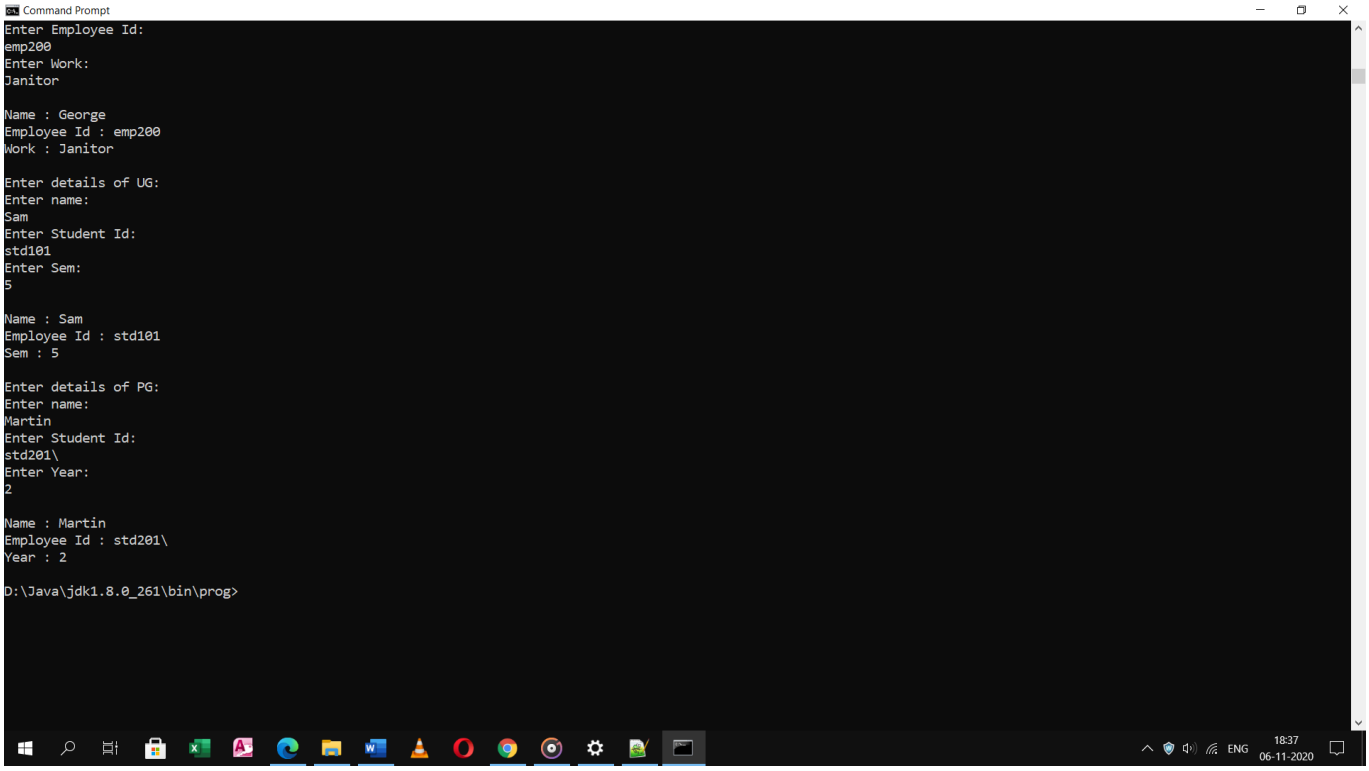
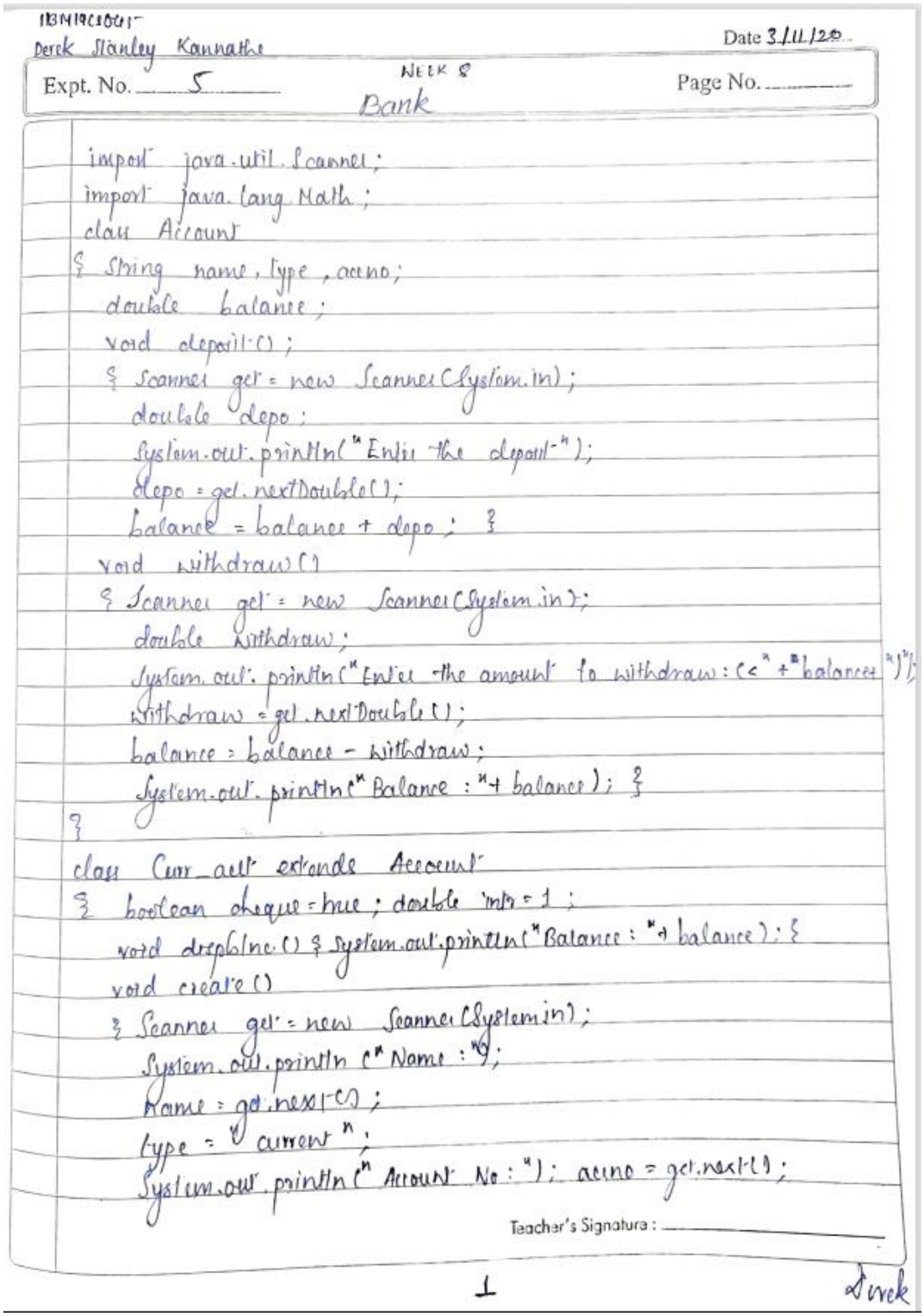

Command Prompt
D:\Java\jdk1.8.0_261\bin\prog>java PersonMain
Enter details of teching employee:
Enter name:
Simon
Enter Employee Id:
emp100
Enter Course:
History
Name : Simon
Employee Id : emp100
Course : History
Enter details of Non Teaching employee:
Enter name:
George
Enter Employee Id:
emp200
Enter Work:
Janitor
Name : George
Employee Id : emp200
Work : Janitor
Enter details of UG:
Enter name:
Sam
Enter Student Id:
std101
Enter Sem:
5
Name : Sam
Employee Id : std101
Sem : 5
Enter details of PG:
Enter name:
Martin
ENG
18:36
06-11-2020


Command Prompt
Enter Employee Id:
emp200
Enter Work:
Janitor
Name : George
Employee Id : emp200
Work : Janitor
Enter details of UG:
Enter name:
Sam
Enter Student Id:
std101
Enter Sem:
5
Name : Sam
Employee Id : std101
Sem : 5
Enter details of PG:
Enter name:
Martin
Enter Student Id:
std201\
Enter Year:
2
Name : Martin
Employee Id : std201\
Year : 2
D:\Java\jdk1.8.0_261\bin\prog>
ENG
18:37
06-11-2020

Lab Program 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: • Accept deposit from customer and update the balance. • Display the balance. • Compute and deposit interest • Permit withdrawal and update the balance • Check for the minimum balance, impose penalty if necessary and update the balance



1BM19CS041
Derek Stanley Kannathe
Date 3/11/20
Expt. No. 5
WEEK 8
Page No.
Bank

```
import java.util.Scanner;
import java.lang.Math;
class Account
{ String name, type, accno;
  double balance;
  void deposit();
  { Scanner get = new Scanner(System.in);
    double depo;
    System.out.println("Enter the deposit");
    depo = get.nextDouble();
    balance = balance + depo; }
  void withdraw()
  { Scanner get = new Scanner(System.in);
    double withdraw;
    System.out.println("Enter the amount to withdraw:(<" + balance + ")");
    withdraw = get.nextDouble();
    balance = balance - withdraw;
    System.out.println("Balance :" + balance); }
}
class Curr_acct extends Account
{ boolean cheque = true; double min = 1;
  void display() { System.out.println("Balance :" + balance); }
  void create()
  { Scanner get = new Scanner(System.in);
    System.out.println("Name :");
    name = get.next();
    type = "current";
    System.out.println("Account No:"); accno = get.next();
```

Teacher's Signature :

1

Derek

```
    System.out.println("Balance : "); balance = gd.nextDouble();
}
void calcint()
} double interest ; int time ;
  Scanner gd =new Scanner(System.in);
  System.out.println("Enter time: ");
  time = gd.nextInt();
  interest = balance* Math.pow((1+ intr/100), time) - balance ;
  System.out.println("Interest : "+ interest );
  balance = balance + interest ;
  System.out.println("Balance : "+balance); }
{ void check()
  { System.out.println("\nMinimum Balance : "+5000);
    if( balance < 5000)
    { System.out.println("Penalty is imposed please deposit minimum"
      + (5000 -balance +200)+"Rs \nRs 200 is service charge");
      deposit(); balance = balance -200 ; }
      else
      { System.out.println("Balance : "+balance+" safe "); }
  }
}
class Sav_acct extends Account
{ double intr=7;
  boolean cheque =false;
  void display(){ System.out.println("Balance : "+balance); }
  void create()
  { Scanner get = new Scanner(System.in);
```

Teacher's Signature :

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```
System.out.println("Name :");
        name = get.next();
type="savings";
System.out.println("Balance : "); balance = get.nextDouble();
System.out.println("Account No :"); accno = get.next();
}
void calcint()
{ double interest; int time;
Scanner get = new Scanner(System.in);
System.out.println("Enter time: "); time = get.nextInt();
interest = balance * Math.pow((1+ intr/100), time) - balance;
System.out.println("Interest : "+ interest);
balance = balance + interest;
System.out.println("Balance : "+balance);
}
}
class Bank
{ public static void main(String args[])
{ Scanner get = new Scanner(System.in);
String type;
Sav_acct acce = new Sav_acct();
Curr_acct accr = new Curr_acct();
System.out.println("Enter type of account : (current/savings)");
type = get.next();
if (type.equals("savings"))
{acce.create();}
else if (type.equals("current"))
{ accr.create(); }
```

Teacher's Signature :

Derek

```
int ch;
do
{ System.out.println("\n1. Deposit \n2. Display Balance \n3. Deposit
  Interest \n4. Withdraw \n5. Check \n6. ChequeBook (under development)
  \n7. Exit "); ch = getNextInt();
switch (ch)
{ case 1 : if (type.equals("savings"))
             acc.deposit();
           else
             acc.deposit();
           break;
  case 2 : if (type.equals("saving")) { acc.displnc(); }
           else { acc.displnc(); }
           break;
  case 3 : if (type.equals("savings")) { acc.calcint(); }
           else
           { System.out.println("The account does not have provision"); }
           break;
  case 4 : if (type.equals("savings"))
             System.out.println acc.withdraw();
           else { acc.withdraw(); }
           break;
  case 5 : if (type.equals("savings"))
           { System.out.println("The account does not have this provision"); }
           else { acc.echeck(); }
           break;
```

Teacher's Signature :

Derek

1BM19IS045
Derek Hanley Kannathu

Date

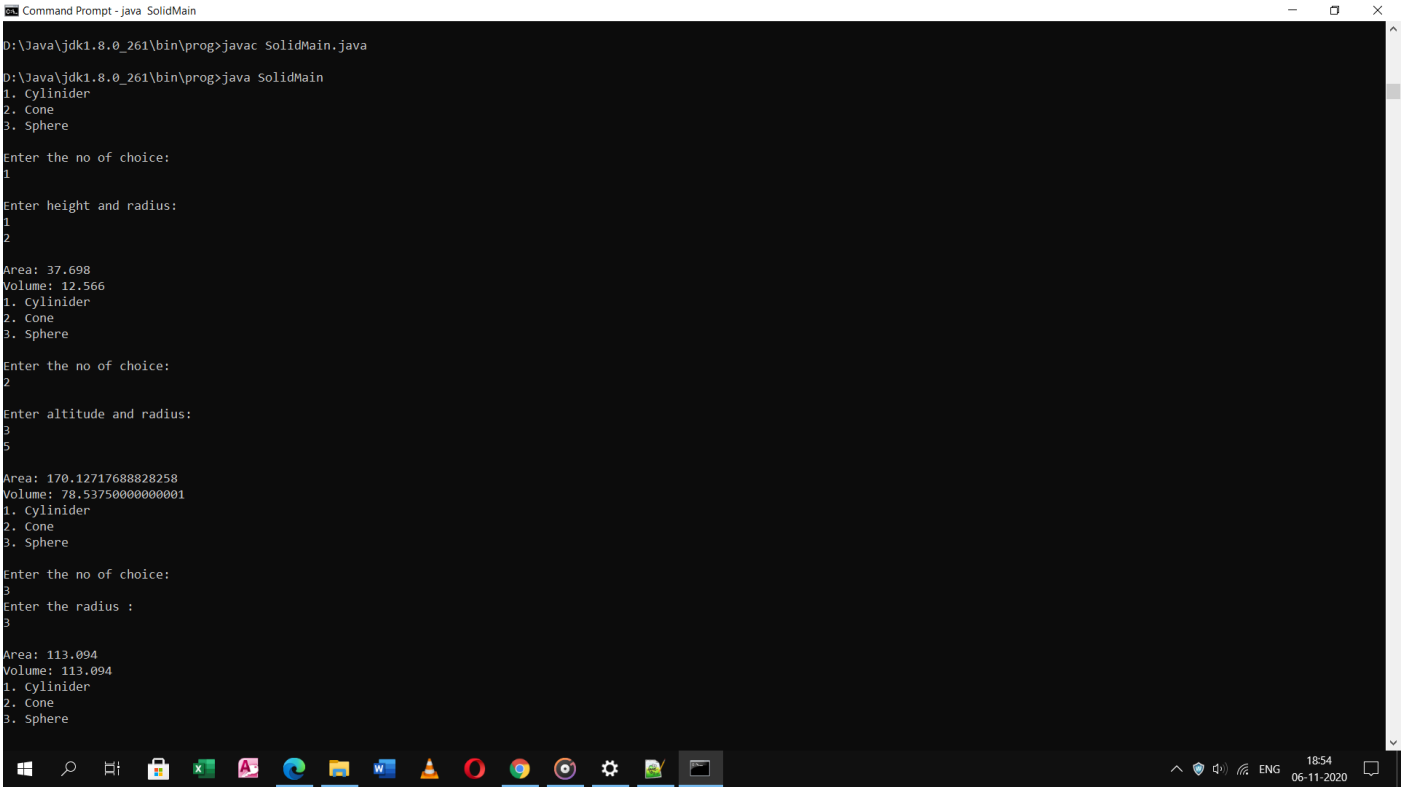
Expt. No.

Page No.

```
        case 6: if (type.equals("savings"))
                {System.out.println("This account not have provision");}
                else
                System.out.println("This account has provision");}
                break;
        default: if (ch!=7)
                System.out.println("Enter valid option");
    }
    } while(ch!=7);
}
}
```

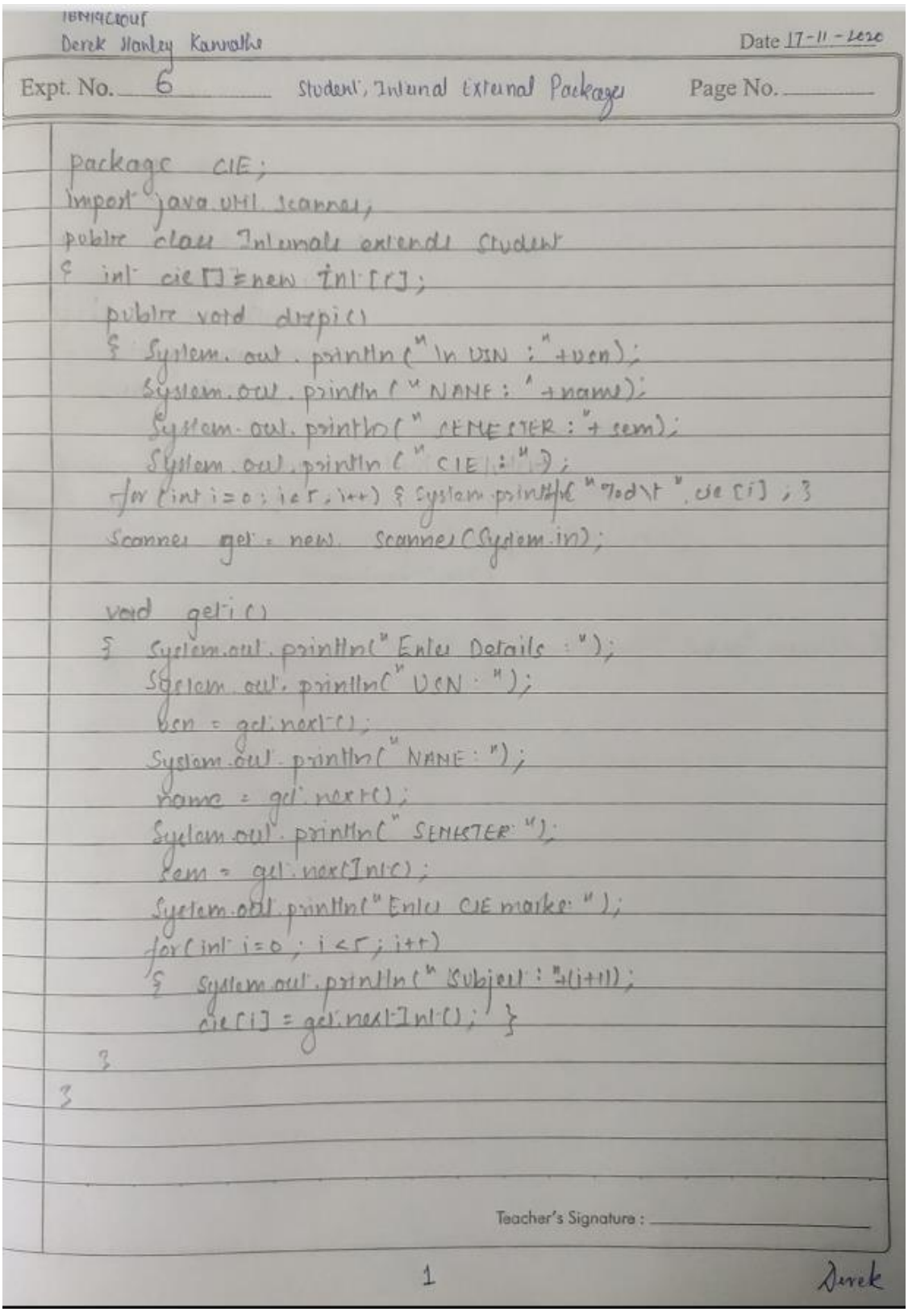
Teacher's Signature :

Derek


Command Prompt - java SolidMain
D:\Java\jdk1.8.0_261\bin\prog>javac SolidMain.java
D:\Java\jdk1.8.0_261\bin\prog>java SolidMain
1. Cylinider
2. Cone
3. Sphere
Enter the no of choice:
1
Enter height and radius:
1
2
Area: 37.698
Volume: 12.566
1. Cylinider
2. Cone
3. Sphere
Enter the no of choice:
2
Enter altitude and radius:
3
5
Area: 170.12717688828258
Volume: 78.53750000000001
1. Cylinider
2. Cone
3. Sphere
Enter the no of choice:
3
Enter the radius :
3
Area: 113.094
Volume: 113.094
1. Cylinider
2. Cone
3. Sphere
ENG
18:54
06-11-2020

Lab Program 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.



Derek Stanley Kanvathe

Date 17-11-2020

Expt. No. 6 Student, Internal External Package Page No.

```
package CIE;
import java.util.Scanner;
public class Internals extends Student
{ int cie[] = new int[5];
  public void display()
  { System.out.println("\n USN : "+usn);
    System.out.println("\n NAME : "+name);
    System.out.println("\n SEMESTER : "+sem);
    System.out.println("\n CIE : ");
  for(int i=0;i<5;i++) { System.out.printf("%d\t",cie[i]);}
  Scanner get = new Scanner(System.in);

  void geti()
  { System.out.println("Enter Details :");
    System.out.println("USN :");
    usn = get.next();
    System.out.println("NAME :");
    name = get.next();
    System.out.println("SEMESTER:");
    sem = get.nextInt();
    System.out.println("Enter CIE marks:");
    for(int i=0; i<5; i++)
    { System.out.println("Subject :"+(i+1));
      cie[i] = get.nextInt(); }
  }
}
```

Teacher's Signature :

1

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```
package SEE;

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

class SEE extends CIE
{public int see[];
   Scanner ge = new Scanner(System.in);
public void getm()
   { for(int i=0;i<5;i++)
      { System.out.printf("\n Subject:"+(i+1));
         see[i] = ge.nextInt(); }
public void dispm()
   { for(int i=0;i<5;i++) { System.out.printf("%d\t",see[i]);}
}
package CIE;

public class Student
{ public String usn,name;
   public int sem;
```

Teacher's Signature :

Derek

```
import java.util.Scanner;
import "CIE";
import "SEE";

class TotalMarks
{ public static void main(String args[])
  { Scanner get = new Scanner(System.in);
    int n;
    System.out.println("Enter the no of students: ");
    n= get.nextInt()
    CIE.Internals ints[] = new CIE.Internals[n];
    SEE.Externals exts[] = new SEE.Externals[n];
    for(int i=0 ;i<n ; i++)
    { ints[i] = new CIE.Internals();
      exts[i] = new SEE.Externals();
      ints[i].getc();
      System.out.println(" SEE MARKS :");
      exts[i].getm();
    }
  for(int i=0; i<n ; i++)
  { ints[i].display();
    int total=0;
    exts[i].displayn();
    for(int j=0; j<5; j++)
    { total = total + ints[i].cie[j] + exts[i].see[j]; }
    System.out.println("\n TOTAL MARKS : "+ total);
  }
 }
}
```

Teacher's Signature :

Derek

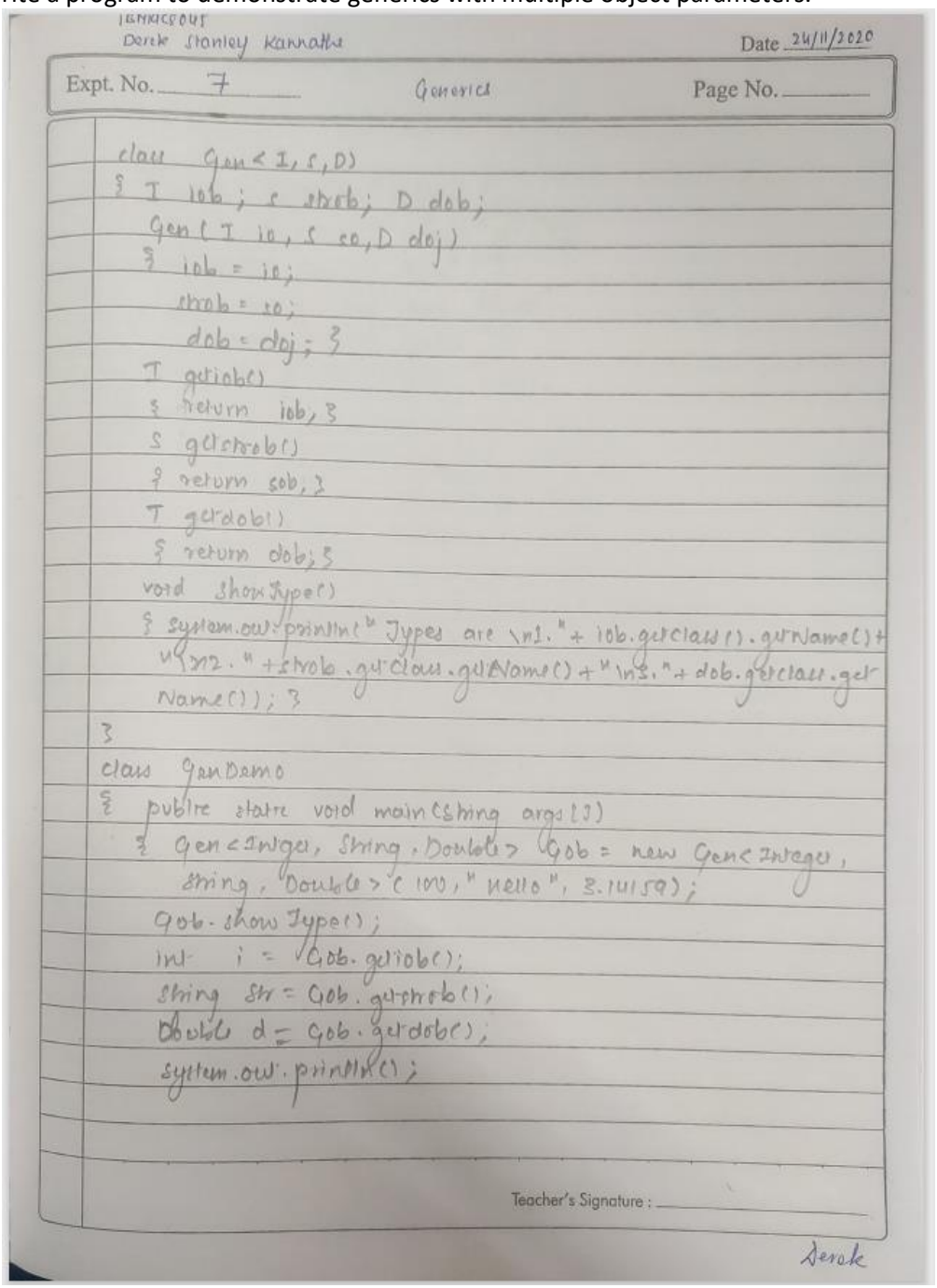
```
D:\Java\jdk1.8.0_261\bin\prog\week9>java TotalMarks
Enetr the no of students:
2
Enter Details:
USN :
1bms1a
NAME :
abhay
SEMESTER :
2
CIE MARKS :
Subject 1
1
Subject 2
2
Subject 3
3
Subject 4
4
Subject 5
5
SEE MARKS :
Subject 1
1
Subject 2
2
Subject 3
3
Subject 4
4
Subject 5
5
Enter Details:
USN :
1bmsb2
NAME :
bhav
SEMESTER :
```

```
Enter Details:
USN :
1bmsb2
NAME :
bhav
SEMESTER :
10
CIE MARKS :
Subject 1
20
Subject 2
30
Subject 3
30
Subject 4
10
Subject 5
40
SEE MARKS :
Subject 1
12
Subject 2
23
Subject 3
34
Subject 4
13
Subject 5
24

USN :1bms1a
NAME :abhay
SEMESTER :2
CIE :
1       2       3       4       5
SEE :
1       2       3       4       5
TOTAL MARKS : 30
```

```
Subject 1
12
Subject 2
23
Subject 3
34
Subject 4
13
Subject 5
24

USN :1bms1a
NAME :abhay
SEMESTER :2
CIE :
1       2       3       4       5
SEE :
1       2       3       4       5
TOTAL MARKS : 30

USN :1bmsb2
NAME :bhav
SEMESTER :10
CIE :
20      30      30      10      40
SEE :
12      23      34      13      24
TOTAL MARKS : 236

D:\Java\jdk1.8.0_261\bin\prog\week9>
```

Lab Program 7:

Write a program to demonstrate generics with multiple object parameters.



```
Derek Stanley Kamattu                                   Date 24/11/2020

Expt. No. 7          Generics                           Page No.

class Gen<I,S,D)
{ I iob; S strob; D dob;
  Gen(I io, S so, D doj)
  { iob = io;
    strob = so;
    dob = doj; }
  I getiob()
  { return iob; }
  S getstrob()
  { return sob; }
  T getdob()
  { return dob; }
  void showType()
  { System.out.println" Types are \n1." + iob.getclass().getName()+
    "\n2." + strob.getclass.getName() + "\n3." + dob.getclass.get
    Name()); }
}
class GenDemo
{ public static void main(String args[])
  { Gen<Integer, String, Double> Gob = new Gen<Integer,
    String, Double>(100, "Hello", 3.141592);
    Gob.showType();
    int i = Gob.getiob();
    String str = Gob.getstrob();
    Double d = Gob.getdob();
    System.out.println();
```

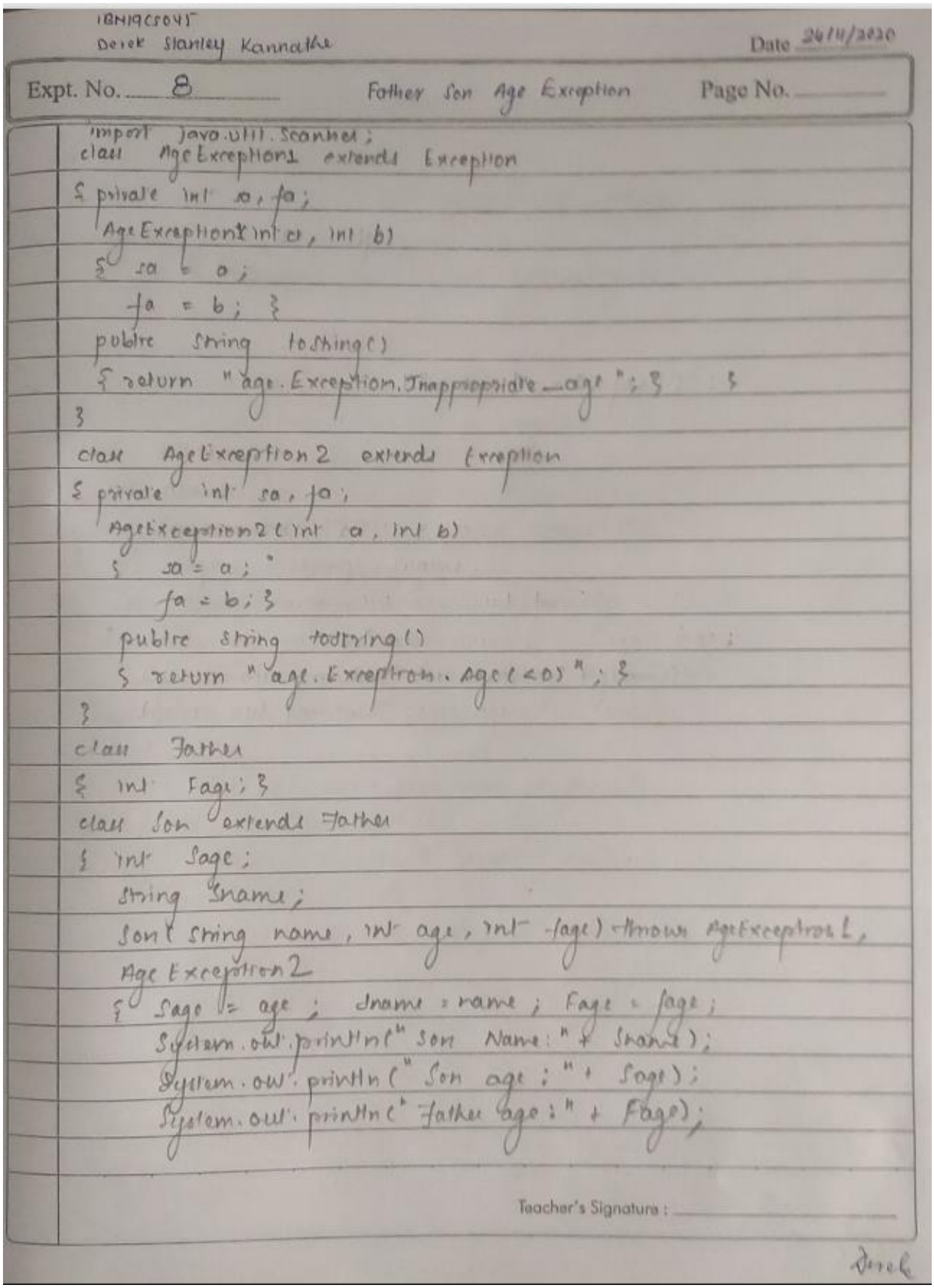
Teacher's Signature :

Derek

```
D:\Java\jdk1.8.0_261\bin\prog>javac GenDemo.java

D:\Java\jdk1.8.0_261\bin\prog>java GenDemo
Types are
1.java.lang.Integer
2.java.lang.String
3.java.lang.Double
Integer:
value: 100
String:
value: Hello
Double:
value: 3.14159

D:\Java\jdk1.8.0_261\bin\prog>
```

Lab Program 8:

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 Wrong Age( ) when the input age=father’s age.



1BN19CS041
Derek Stanley Kannathe
Date 26/11/2020

Expt. No. 8 Father Son Age Exception Page No.

```
import java.util.Scanner;
class AgeException1 extends Exception
{ private int sa, fa;
  AgeException1(int a, int b)
  { sa = a;
    fa = b; }
  public String toString()
  { return "age.Exception.Inappropriate_age"; } }
}
class AgeException2 extends Exception
{ private int sa, fa;
  AgeException2(int a, int b)
  { sa = a;
    fa = b; }
  public String toString()
  { return "age.Exception.Age(<0)"; }
}
class Father
{ int Fage; }
class Son extends Father
{ int Sage;
  String Sname;
  Son(String name, int age, int fage) throws AgeException1,
  AgeException2
  { Sage = age; Sname = name; Fage = fage;
    System.out.println("Son Name:" + Sname);
    System.out.println("Son age:" + Sage);
    System.out.println("Father age:" + Fage);
```

Teacher's Signature :

Derek

```
        if (sage<0 || fage<0)
            throw new AgeException2 (age, fage);
        if (sage >= fage)
            throw new AgeException1 (age, fage);
    }
}
class ageExceptionDemo
{ public static void main (String args[])
    { int so, fo; String name;
        Scanner get = new Scanner (System.in);
        System.out.println (" Enter Son Name: ");
        name = get.next();
        System.out.println (" Enter Son Age : ");
        so = get.nextInt();
        System.out.println (" Enter Father Age: ");
        fo = get.nextInt();
        try
        { Son s = new Son (name, so, fo); }
        catch (AgeException1 e)
        { System.out.println (" caught " + e); }
        catch (AgeException2 e)
        { System.out.println (" caught " + e); }
    }
}
```

Teacher's Signature :

Derek

```
D:\Java\jdk1.8.0_261\bin\prog>javac ageExceptionDemo.java

D:\Java\jdk1.8.0_261\bin\prog>java ageExceptionDemo
Enter Son Name:
Dere
Enter Son age:
-1
Enter Father age
28
Son Name: Dere
Son age: -1
Father age 28
Caught age.Exception.Age(<0)

D:\Java\jdk1.8.0_261\bin\prog>
```

Lab Program 9:

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.

Derek Stanley Kannatte
1BM19CS045

Date 8/12/2020

Expt. No. 9 Factorial Exception Page No.

```
class NewThread implements Runnable
{ String name, print;
  int delay, loop;
  Thread t
  NewThread (String threadname, String toprint, int d, int n)
  { name = threadname,
    print = toprint;
    delay = d;
    loop = n;
    t = new Thread (this, name);
    System.out.println("New Thread: " + t);
    t.start();
  }
public void run()
{ try
  { for(int i = loop; i>0; i--)
    { System.out.println(print);
      Thread.sleep(delay); }
  }
  catch (InterruptException e)
  { System.out.println(name + "Interrupted"); }
  System.out.println(name + "Exiting");
}
class multiThread
{ public static void main(String args[])
  { new NewThread("Thread_1", "BMS College of Engineering", 10000, 3);
    new NewThread("Thread_2", "CSE", 2000, 5);
  }
}
```

Teacher's Signature :

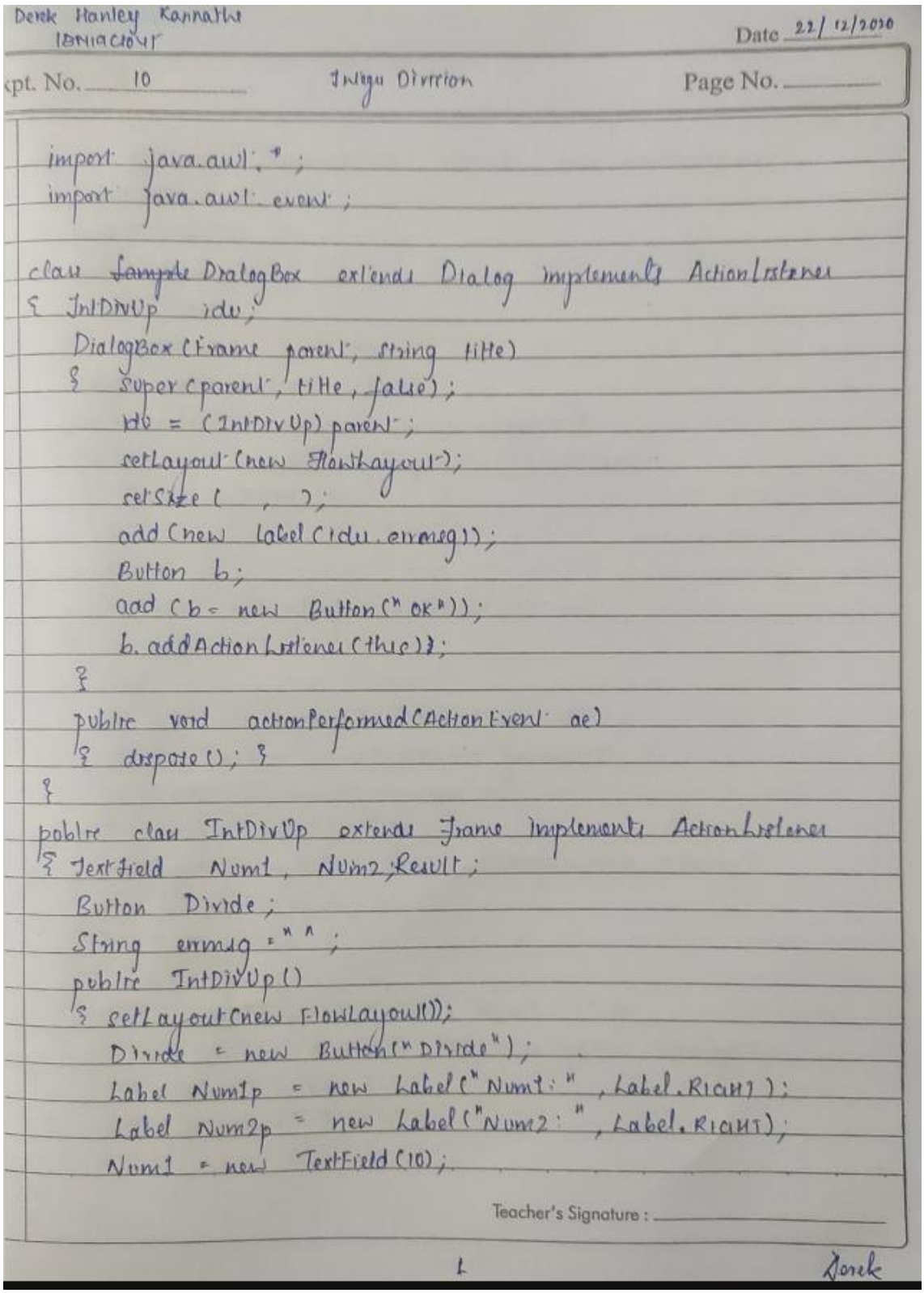
Derek

```
D:\Java\jdk1.8.0_261\bin\prog>javac factorial.java

D:\Java\jdk1.8.0_261\bin\prog>java factorial
Enter the number for factorial:
10
10! = 1410065408

D:\Java\jdk1.8.0_261\bin\prog>java factorial
Enter the number for factorial:
20
Caught:Factorial.Exception:Invalid Input(>15)

D:\Java\jdk1.8.0_261\bin\prog>javac multiThread.java

D:\Java\jdk1.8.0_261\bin\prog>java multiThread
New thread: Thread[Thread_1,5,main]
New thread: Thread[Thread_2,5,main]
BMS College of Engineering
CSE
CSE
CSE
CSE
CSE
BMS College of Engineering
Thread_2 exiting.
BMS College of Engineering
Thread_1 exiting.

D:\Java\jdk1.8.0_261\bin\prog>
```

Lab Program 10:

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

.



Derek Hanley Kannathu
1BM19CS041

Date 22/12/2020

Expt. No. 10 — Integer Division — Page No.

```
import java.awt.*;
import java.awt.event;

class SampleDialogBox extends Dialog implements ActionListener
{ IntDivUp idu;
  DialogBox(Frame parent, String title)
  { super(parent, title, false);
    idu = (IntDivUp) parent;
    setLayout(new FlowLayout);
    setSize( , );
    add(new Label(idu.errmsg));
    Button b;
    add(b = new Button("OK"));
    b.addActionListener(this);}
  }
  public void actionPerformed(ActionEvent ae)
  { dispose(); }
}
public class IntDivUp extends Frame implements ActionListener
{ TextField Num1, Num2, Result;
  Button Divide;
  String errmsg = "";
  public IntDivUp()
  { setLayout(new FlowLayout());
    Divide = new Button("Divide");
    Label Num1p = new Label("Num1:", Label.RIGHT);
    Label Num2p = new Label("Num2:", Label.RIGHT);
    Num1 = new TextField(10);
```

Teacher's Signature :

1

Derek

```
Num2 = new TextField(10); Result = new TextField(10);
add(Num1p);
add(Num1);
add(Num2p);
add(Num2);
add(Divide); add(Result);
Divide.addActionListener(this);
addWindowListener(new WindowAdapter()
pvblic void windowClosing(WindowEvent we)
{ System.exit(0); }
});
}
public void actionPerformed(ActionEvent ae)
{ int a=0, b=1, r=0;
  try
  { a= Integer.parseInt(Num1.getText());
    b= Integer.parseInt(Num2.getText()); }
  catch(NumberFormatException e)
  { errmsg = "Caught: " +e;
    SampleDialogBox d = new DialogBox(this, "Dialog");
    d.setVisible(true); }
  try { r = a/b; }
  catch(ArithmetricException e)
  { errmsg = "Caught: "+e+" Num2= "+b;
    SampleDialog d = new SampleDialog(this, "Dialog");
    d.setVisible(true); }
  Result.setText(" "+r);
}
```

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```
    public static void main(String args[])
    { IntDivUp appwin = new IntDivUp();
      appwin.setSize(new Dimension
      appwin.setTitle("Integer Division");
      appwin.setVisible(true);
    }
}
```

Teacher's Signature :

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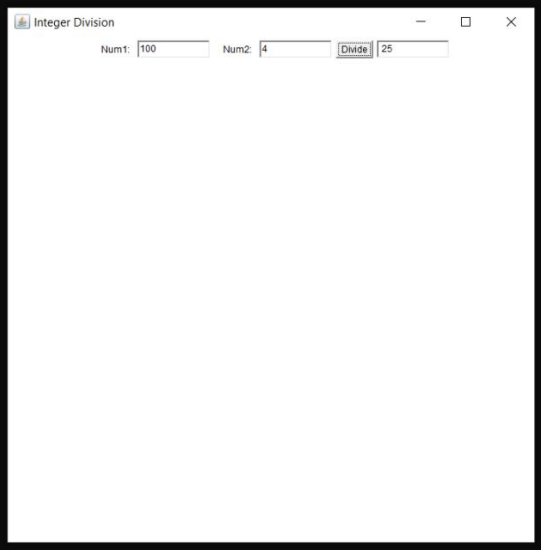
```
D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp

D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp
```

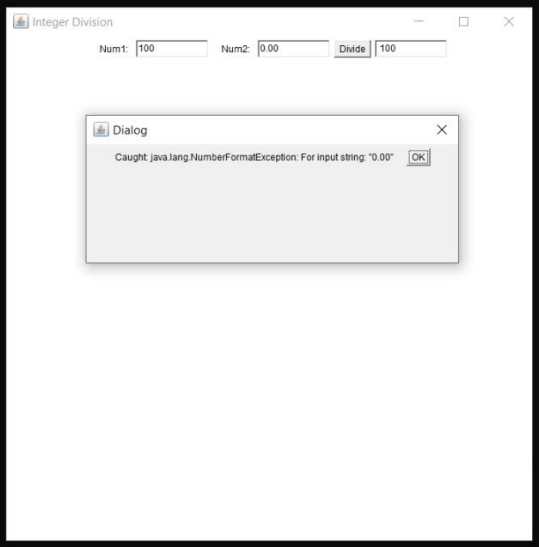



```
D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp

D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp
```



```
D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp

D:\Java\jdk1.8.0_261\bin\prog>javac IntDivUp.java

D:\Java\jdk1.8.0_261\bin\prog>java IntDivUp
```