VISVESVARAYA TECHNOLOGICAL UNIVERSITY "JnanaSangama", Belgaum -590014, Karnataka.



LAB REPORT on

OBJECT ORIENTED JAVA PROGRAMMING

Submitted by

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in partial fulfillment for the award of the degree of BACHELOR OF ENGINEERING in COMPUTER SCIENCE AND ENGINEERING



B.M.S. COLLEGE OF ENGINEERING (Autonomous Institution under VTU) BENGALURU-560019 Oct 2022-Feb 2023

B. M. S. College of Engineering, Bull Temple Road, Bangalore 560019

(Affiliated To Visvesvaraya Technological University, Belgaum) **Department of Computer Science and Engineering**



CERTIFICATE

This is to certify that the Lab work entitled "Object oriented java programming lab" carried out by Prajwal Dhage(1BM21CS133), who is bonafide student of B. M. S. College of Engineering. It is in partial fulfillment for the award of Bachelor of Engineering in Computer Science and Engineering of the Visvesvaraya Technological University, Belgaum during the year 2022-23. The Lab report has been approved as it satisfies the academic requirements in respect of Data structures Lab - (21CS3PCOOJ) work prescribed for the said degree.

Name of the Vikrant BM Assistant Professor Department of CSE BMSCE, Bengaluru **Dr. Jyothi S Nayak**Professor and Head
Department of CSE
BMSCE, Bengaluru

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Course Outcome

CO1	Apply the knowledge of Java concepts to find the solution for a given problem.
001	Analyze the given Java application for
CO2	correctness/functionalities.
CO3	Develop Java programs / applications for a given requirement.
	Conduct practical experiments for demonstrating features of
CO4	Java.

LAB PROGRAM 1: QUADRATIC EQUATIONS

CODE:

```
import java.util.Scanner;
import java.lang.Math;
public class Trial
  public static void main(String[] args)
     {
       Scanner s = new Scanner(System.in);
       System.out.println("Enter the coefficients: ");
       float a = s.nextFloat();
       float b = s.nextFloat();
       float c = s.nextFloat();
       double r1,r2;
       float d = (b*b)-(4.0f*a*c);
       if(d>0)
          r1=(-b+Math.sqrt(d))/(2*a);
          r2=(-b-Math.sqrt(d))/(2*a);
          System.out.println("Roots are Real");
          System.out.println("Root 1: "+r1+" Root 2: "+r2);
        else if(d==0)
          r1=(-b)/(2*a);
          System.out.println("Roots are Equal");
          System.out.println("Root is: "+r1);
     else
```

```
double e =(-b)/(2.0f*a);
    double f =(Math.sqrt(-d))/(2*a);
    System.out.println("Roots are imaginary");
    System.out.println("Root 1: "+e+"i+"+f);
    System.out.println("Root 2: "+e+"i-"+f);
}
}
```

Select Command Prompt

```
C:\Users\student\Desktop>java Quad.java
enter the coefficients a,b,c:
1 1 1
Imaginary roots
Root 1: -0.5i+0.8660254037844386
Root 2: -0.5i-0.8660254037844386
C:\Users\student\Desktop> 1 4 2
1' is not recognized as an internal or external command,
operable program or batch file.
C:\Users\student\Desktop> java Quad.java
enter the coefficients a,b,c:
1 4 2
Roots are real and distinct
Root 1:-3.414213562373095 root 2:-0.5857864376269049
C:\Users\student\Desktop>java Quad.java
enter the coefficients a,b,c:
169
Roots are equal and real
Roots are:-3.0
C:\Users\student\Desktop>_
```

R. Program 1: guadralre son 11. Inport Java. Otil. Samer; class main E. Public static void main (string(7 am) Scanner Sc= new Scanner (system.in); System. Out. println (vents the value of a,b, c): flood a= sc. next flood (); float b = sc. next float (); float C = Sc. next float (); that de by b - 4 + a + c; clouble n, n2; if (a = = 0) System, out. printly (" not a graduate (9"); else. y (d = 20) 71= 72 - -b/(2+a); System . Out. poshelin (" of +" "+ or). System . Out . pointline ("Roots au");

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8, = (-b - Math. Sq st (d)/(2+a));

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LAB PROGRAM 2: SGPA CALCULATION

```
import java.util.Scanner;
class Student
      String USN;
      String name;
      int[] credits = new int[20];
      int[] marks = new int[20];
      void input(int n)
      Scanner s = new Scanner(System.in);
      System.out.print("Enter Student USN: ");
      USN = s.nextLine();
      System.out.print("Enter Student Name: ");
      name = s.nextLine();
      for(int i=0;i<n;i++)
      System.out.print("Enter the Subject "+(i+1)+" marks and credits
respectively: ");
      marks[i] = s.nextInt();
```

```
credits[i] = s.nextInt();
float calculate(int n)
int sum_of_credits = 0;
float result=0.0f;
for(int i=0;i<n;i++)
{
sum_of_credits+=credits[i];
if(calculate_grade_point(marks[i])==-1)
      return -1.0f;
else
      result = result +(float) (calculate_grade_point(marks[i])*credits[i]);
return (result/sum_of_credits);
}
int calculate_grade_point(int marks)
```

```
{
if(marks > = 90)
return 10;
else if ((marks>=80)&&(marks<90))
return 9;
else if ((marks>=70)&&(marks<80))
return 8;
else if ((marks>=60)&&(marks<70))
return 7;
else if ((marks>=50)&&(marks<60))
return 6;
else if ((marks>=40)&&(marks<50))
return 5;
return -1;
}
void display(int n,float result)
{
System.out.println("\n");
System.out.println("Student Details");
System.out.println();
```

```
System.out.println("Student USN: "+USN);
      System.out.println("Student Name: "+name);
      System.out.println("Student Marks and Credits");
      for(int i=0;i<n;i++)
      System.out.println("Subject 1 -->\tMarks: "+marks[i]+" Credits:
"+credits[i]);
      }
      System.out.println("SGPA: "+result);
      }
public class Lab_02_SGPA
      public static void main(String[] args)
      Scanner s = new Scanner(System.in);
      Student s1 = new Student();
      System.out.print("Enter the number of subjects: ");
      int n = s.nextInt();
      s1.input(n);
      float result = s1.calculate(n);
      if(result == -1.0f)
```

```
{
    System.out.println();
    System.out.println("The Student has failed in a subject. SGPA cannot be calculated!");
    System.exit(0);
}
s1.display(n,result);
}
```

```
Microsoft Windows [Version 10.0.19045.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\bmscccse\CD DESKTOP

C:\Users\bmscccse\Desktop>java GPA.java

C:\Users\bmscccse\Desktop>java SGPA
Enter the number of subjects: 5
Enter Student VSN: 1BM2ICS180
Enter Student Wan: ABCXYZ
Enter the Subject 1 marks and credits respectively: 99 4
Enter the Subject 2 marks and credits respectively: 91 3
Enter the Subject 3 marks and credits respectively: 92 2
Enter the Subject 3 marks and credits respectively: 81 1
Enter the Subject 5 marks and credits respectively: 78 1

Student Details

Student USN: 1BM2ICS180

Student Name: ABCXYZ
Student Manks and Credits
Subject 1 -> Marks: 90 Credits: 4
Subject 1 -> Marks: 91 Credits: 3
Subject 1 -> Marks: 91 Credits: 2
Subject 1 -> Marks: 81 Credits: 1
```

To calculate SGPA empion Java. Util. Scanner. dan Student (. Scanner Scanner (System in); int marks (] = new int [so]; int credits [] = now int [50); int msums o; int eacsum so; void entermarke (in) x). for (int i=1 ; i <= x ; i++) [mark CiJ. Sc. nort Int 15: System. and printly ("Enter Subject" + i + "rack"). marked i] = Sconext Int (): System out . Print in (" Enter Subject," + i' + " Credit, Credits (1) = Sc. next Int (); En mo Su C Sum += credits (i); if (narky (i') 7 = 90) else if (mark [1] > -80 f f mark [1] < > 90) Olse if (mark (i) 7 7 70 44 marks (i) <= 80) marke(i]= 8: · else of (marks(i) 7-60 ff marks(i) <= 50]. else if (marks (i) 7 - 50 49 marks (i) < 60)

else if (marks (i) 7 7 2 40 49 marks (i) < 10) mark(i)= r

elu. nach Cij-o; double cale (int 2) to (int fee; fet; (++) 50 Sun 2 + - sun marks (of] * credits (of); relien (Sun 2/ Sum!). Public Clay SGPAS. public static visid main (string (7 angs) student stud = new student (); Scanner SC= new scanner (): int n'= cc. next Int (); . Stud. marketer (n). System out. Double ("SGPA is"+ Stud. Calc(n) autout. Enter the no of subjects Syster the marke, credity of top Subject 89 Superlively Enter marks and credits of Subject +00 2 Enter marker & credit in subject there 3 90

LAB PROGRAM 3: IMPLEMENTING ARRAY OF OBJECTS

```
import java.util.*;
import java.io.*;
class Book
String title, author;
float price;
int num_pages;
Book()
title = "Default Value";
author = "Default Value";
price = 0.0f;
num_pages = 0;
void setTitle(String title)
```

```
this.title=title;
}
void setAuthor(String author)
{
this.author=author;
}
void setPrice(float price)
{
this.price=price;
}
void setPages(int num_pages)
this.num_pages = num_pages;
}
public String toString()
return\ title+"\t\t"+author+"\t\t"+price+"\t\t"+num\_pages+"\n";
```

```
}
public class BookDetails
public static void main(String args[])
{
String t, a;
float p;
int np,n;
Scanner s = new Scanner(System.in);
System.out.print("Enter the number of Books: ");
n = s.nextInt();
Book[] b = new Book[n];
for(int i=0;i<n;i++)
System.out.println();
System.out.print("Enter the book name: ");
```

```
t = s.next();
System.out.print("Enter the author name: ");
a = s.next();
System.out.print("Enter the book price: ");
p = s.nextFloat();
System.out.print("Enter the number of pages: ");
np = s.nextInt();
b[i] = new Book();
b[i].setTitle(t);
b[i].setAuthor(a);
b[i].setPrice(p);
b[i].setPages(np);
System.out.println("Title \t\t Author \t\t Price \t\t Pages\n");
for(int i=0; i<n;i++)
System.out.println(b[i]);
```

```
Microsoft Windows [Version 10 0 10045, 2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\bmscecse\Cd desktop

C:\Users\bmscecse\Desktop>javac BookDetails.java

C:\Users\bmscecse\Desktop>javac BookDetails
Enter the number of Books: 3

Enter the book name: Eldest
Enter the author name: Christopher_Paolini
Enter the book price: 330

Enter the book name: Brising
Enter the author name: Christopher_Paolini
Enter the book price: 400
Enter the number of pages: 440
Enter the number of pages: 440
Enter the book name: Inheritance
Enter the book name: Christopher_Paolini
Enter the book price: 430
Enter the book price: 430
Enter the Journal of pages: 440
Enter the mumber of pages: 490
Iitle Author Pages: 490
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Eldest Christopher_Paolini 350.0 350

Brisingr Christopher_Paolini 460.0 440

Inheritance Christopher_Paolini 450.0 499
```

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title z t void set thather (string a) & autro -a: vard set prize (indouble p) s.
prize : p;
3. 'void set numpages (int n.) s. nom pages = n; public String to string!) {.

Teturn title + "It" + author + "t" + prize +

"It" + numpages + "In";

Public clan Book Delads & S. public statu void nain (Strong [] angs): stringt, a: double p: int np, n; Scanner Scanner (System. in). System Out. Privalla (" Enter no of node "); n- Sc. next Int(); Book b(] = new Book (n); tal int iso; ixn; it) & "System out printh (" Enter the +itle "); t= superit(); System. out. probable ("Enter Author"); az sc. next U; System. Out. println (" Siter Prize"); P = Sc. next Double(); System. Out. protestly ("Enter no of pages") npz sc.next Int (): b(i) = new Book (); b(i). Set title(t); b(i). set outhor (a); bsij. Set prinj (p); b(i) . set pagus(np); System. out. postal "title It : Author It Dodge It Pages In"): \$0(i=0; i<n; i+1) { System out printle (b(i))

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PROGRAM 4: CALCULATING AREA OF SHAPES (ABSTRACT CLASS)

```
import java.util.Scanner;
public class Shape1
      public static void main(String args[])
      {
      int choice;
      Scanner s = new Scanner(System.in);
      do
      System.out.println("1. Calculate Area of Rectangle\n2. Calculate Area of
Triangle\n3. Calculate Area of " +
            "Circle\n4. Exit the Program\n\nEnter the choice: ");
      choice = s.nextInt();
      switch(choice)
      {
            case 1: Rectangle r = new Rectangle();
            r.printArea();
            break;
            case 2: Triangle t = new Triangle();
```

```
t.printArea();
             break;
             case 3: Circle c = new Circle();
             c.printArea();
             break;
             case 4: System.out.println("Exiting the program!");
             System.exit(0);
             break;
             default: System.out.println("\nInvalid Choice!\n");
      }
      }while(true);
}
abstract class Shape
      int a,b;
      abstract void printArea();
}
class Rectangle extends Shape
{
```

```
void printArea()
      int area;
      Scanner s = new Scanner(System.in);
      System.out.println("Enter the length and breadth of rectangle: ");
      a = s.nextInt();
      b = s.nextInt();
      area = a*b;
      System.out.println("\nArea of Rectangle: "+area+"\n");
      }
}
class Triangle extends Shape
      void printArea()
      float area;
      Scanner s = new Scanner(System.in);
      System.out.println("Enter the base and height of triangle: ");
      a = s.nextInt();
      b = s.nextInt();
      area = 0.5f*a*b;
```

```
System.out.println("\nArea of triangle: "+area+"\n");
                                                                                                     }
class Circle extends Shape
                                                                                                 void printArea()
                                                                                                 double area;
                                                                                                   Scanner s = new Scanner(System.in);
                                                                                                 System.out.println("Enter the radius of circle: ");
                                                                                                   a = s.nextInt();
                                                                                                 area = Math.PI*a;
                                                                                                   System.out.println("Area of Circle: "+area+"\n");
                                                                                                     }
                                                                                                                           your choice : 2 bredth and height for area % \left( 1\right) =\left( 1\right) +\left( 1\right)
```

```
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  injust Java util Scanner;
  abstract clan a 2.
       double i, y. double j) E.
     abstract ad double area ();
  clas react extends a l.
     react (double i, double j) {
         3. Super (i, j);
     double area () E.
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```

double area () [Titum 3.14 * n * y; clas Asea E public static Void nair (strig[] gry) & Scanner Sc: new Scanner (System: in). Exten at pently ("Enter leigth & Breath"). dable L= se. next Int (); dable B= S. next Int () System . Out - provident " Ente height & class of triagle". double h = schener Int (); double ba = SC. resut Jut (); System out - peinter ("Exter sadein & cuil"); dable To Sc. next Int (); South geart of - new react (L, B); trait of tri t: new tri (h, ba) cir C= now cir (7) System at println (" Dreag recitage is" + 7. areals)

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LAB PROGRAM 5: BANK PROGRAM

```
import java.util.Scanner;
class Account
  String customer_name;
  long acc_no;
  float bal;
  Scanner s = new Scanner(System.in);
  public void input()
    System.out.print("\nEnter the Customer Name: ");
    customer_name = s.nextLine();
     System.out.print("\nEnter the Account Number: ");
     acc_no = s.nextLong();
    System.out.print("\nEnter the Starting Amount (Minimum Amount = 5000):
");
    bal = s.nextFloat();
    if(bal<5000f)
       System.out.println("\nAccount Balance cannot be less than 5000.0 \n");
       System.exit(0);
```

```
public void display()
    System.out.println("\nCustomer Name: "+customer_name);
    System.out.println("Account Number: "+acc_no);
    System.out.println("Amount: "+bal);
class Savings extends Account
  Scanner s = new Scanner(System.in);
  float deposit, withdraw, interest;
  public void deposit()
    System.out.print("\nEnter the amount to be deposited: ");
    deposit = s.nextFloat();
    bal+=deposit;
    System.out.println("\nBalance: "+bal);
  public void withdraw()
    System.out.print("\nEnter the amount to be withdrawn: ");
    withdraw = s.nextFloat();
    if(bal<5000)
     {
       System.out.println("\nInsufficient Balance");
```

```
}
    else
       bal-=withdraw;
       System.out.println("\nAmount Withdrawn: "+withdraw+"\nBalance:
"+bal);
  public void check_Bal()
    if(bal<5000)
       System.out.println("\nInsufficient Balance!!\nBalance: "+bal);
     }
    else
       System.out.println("\nBalance: "+bal);
     }
  public void interest()
    interest=(bal*6)/100;
    bal+=interest;
    System.out.println("\nInterest Credited: "+interest+"\nBalance:"+bal);
```

```
}
class Current extends Account
  float deposit, withdraw, penalty;
  public void deposit()
    System.out.print("\nEnter Amount to be deposited: ");
    deposit = s.nextFloat();
    bal += deposit;
    System.out.println("Balance: " + bal);
  }
  public void check_Bal()
    if (bal < 5000)
     {
       penalty = (0.1f * bal);
       System.out.println("\nInitial Account Balance: "+bal);
       bal = bal-penalty;
       System.out.println("\nLow balance!\nPenalty Amount: " + penalty +
"\nAccount balance: " + bal);
     else
```

```
{
       System.out.println("\n Balance: " + bal);
  }
  public boolean check_Bal_part_2()
    if (bal < 5000)
    {
       penalty = (0.1f * bal);
       System.out.println("\nInitial Account Balance: "+bal);
       bal = bal-penalty;
       System.out.println("\nLow Balance!\nPenalty Amount: " + penalty +
"\nAccount balance: " + bal);
       return false;
    return true;
  }
  public void withdraw()
    System.out.print("\nEnter Amount to withdraw: ");
    withdraw = s.nextFloat();
    if(check_Bal_part_2())
       bal-=withdraw;
```

```
System.out.println("\nAmount Withdrawn: "+withdraw+"\nBalance:
"+bal);
  }
  public void chequebook()
    System.out.println("\nCheque Book has been Issued!");
public class Bank
  public static void main(String[] args)
    Scanner s = new Scanner(System.in);
    String ch;
    int n;
    Current c = new Current();
    Savings sa = new Savings();
    System.out.print("\nEnter the Account Type (S for Savings, C for Current):
");
    ch = s.next();
    switch(ch.toLowerCase())
```

```
case "s" : sa.input();
               do
                 System.out.print("\n1. Deposit \n2. Withdrawal \n3. Check
Balance \n4. Check Interest"
                      +"\n5. Show Account Details \n6. Exit Transaction\n\nEnter
your choice: ");
                 n = s.nextInt();
                 switch(n)
                    case 1 : sa.deposit();
                          break;
                    case 2 : sa.withdraw();
                          break;
                    case 3 : sa.check_Bal();
                          break;
                    case 4 : sa.interest();
                          break;
                    case 5 : sa.display();
                          break;
                    case 6 : System.out.println("\nExiting Transaction!");
                          System.exit(0);
                          break;
                    default : System.out.println("\nInvalid Operation");
                  }
```

```
}while(true);
       case "c" : c.input();
              do {
                System.out.print("\n1. Deposit \n2. Withdrawal \n3. Check
Balance \n4. Issue Cheque Book"
                     + "\n5. Show Account Details \n6. Exit Transaction\n\nEnter
your choice: ");
                n = s.nextInt();
                switch (n) {
                   case 1:
                     c.deposit();
                     break;
                   case 2:
                     c.withdraw();
                     break;
                   case 3:
                     c.check_Bal();
                      break;
                   case 4:
                     c.chequebook();
                     break;
                   case 5:
                     c.display();
                     break;
                   case 6:
                      System.out.println("\nExiting Transaction!");
```

```
System.exit(0);
break;
default:
System.out.println("\nInvalid Operation");
}
while(true);
default: System.out.println("\nInvalid Choice");
break;
}
}
```

```
Exiting Transaction!

C:\Users\student\Desktop>java Bank.java
Enter the Account Type (5 for Savings , C for Current) : c
Enter the Customer Name: rashtri km
Enter the Account Number: 123456789
Enter the Starting Amount (Minimum Amount - 5000): 6000

1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 1
Enter Amount to be deposited: 6000
Balance: 12000.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 2
Enter Amount to withdraw: 5000
Amount Withdrawn: 5000.0
Balance: 7000.0
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 2
Enter Amount to withdraw: 5000
Amount Withdrawn: 5000.0
Balance: 7000.0
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
```

```
Enter the amount to be deposited: 1000

Balance: 6500.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 2000

Invalid Operation
1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 2

Enter the amount to be withdrawn: 2000

Amount Withdrawn: 2000.0

Balance: 4500.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 3

Insufficient Balance!!
Balance: 4500.0

1. Deposit
2. Withdrawal
```

```
Insufficient Balance!!
Balance: 4500.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction
Enter your choice: 4

Interest Credited: 270.0
Balance: 44770.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction
Enter your choice: 5

Customer Name: Rashtri km
Account Mumber: 12345678
Amount: 4770.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction
Enter your choice: 5

Customer Name: Rashtri km
Account Mumber: 12345678
Amount: 4770.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction
Enter your choice: 6

Exiting Transaction!

C:\Users\student\Desktop>java Bank.java
Enter the Account Type (5 for Savings , C for Current) : c
```

```
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 3
Balance: 7000.0
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 4
Cheque Book has been Issued!
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 5
Customer Name: rashtri km
Account Number: 123456789
Amount: 7000.0
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 5
Customer Name: rashtri km
Account Number: 123456789
Amount: 7000.0
1. Deposit
2. Withdrawal
3. Check Balance
4. Issue Cheque Book
5. Show Account Details
6. Exit Transaction
Enter your choice: 6
```

```
Microsoft Windows [Version 10.0.19044.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student\cd desktop

C:\Users\student\Desktop\javac Bank.java

C:\Users\student\Desktop\javac Bank.java

Enter the Account Type (S for Savings , C for Current) : s

Enter the Customer Name: Rashtri km

Enter the Account Number: 12345678

Enter the Starting Amount (Minimum Amount = 5000): 5500

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 1000

Invalid Operation
1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 1000

Invalid Operation
1. Deposit
2. Withdrawal
3. Check Balance
4. Check Interest
5. Show Account Details
6. Exit Transaction

Enter your choice: 1

Enter the amount to be deposited: 1000

Balance: 6500.0

1. Deposit
2. Withdrawal
3. Check Balance
4. Check Balance
6.000
```

ingat Januald Samer, 12/22 clay Account sting Customb. name: long acc-no scanner Sc= new Scanner (system is). Public void input () system out printly ("In Enter the Caylon rane") Customer - name = S. next (ine (). system out print ("In Ends the are no "). all-no = S. pent long(): Sylem out puit ("in Ents the slaiting anot) bat. S. next plant (); if (Ital < 5000) Eplem out, puth ("In account salari camo lulis than 5000,0 (n'). 2 System. enit (0): public void display () System out println ("Karton name" & Curlon row; System out penth ("Accord-no; " + acc nos: System out penths ("Amor ; "+bal);

class savings extends Acout & Sanner Sc- new Scarrer (System in): flort deposit; un theliane, untest; padly void deposed () system . out - println (suter the amount). deposit = 5 next (but (); bal + - deposit. public void withdraw () system out - printer (" goto the anout i).
coi in diane = s. pert floor (); if (but < .3000). Sylom out print (" Insufficient Rahme bal - = withdraw. System. Out - pent In ("Amost withdrawn", to withdraw + " Dalance" + Bal . "). public void check nal () if (bal<5000) 5 System out - prith ("Insufficial ralance"); else E Syla . unt . printle ("Balon" + Bal);

public void intest () entret - (ml x 6) /100; bal + = intest. Sple out put (" goliest added .. entest + " Balane "+ bal); clay aurent entends decont s. floor deposit, usi indians, penalty; public void deposit () s. System and to be deposed : So nont float (); · bal & dopout; Sylon out - post (" Balane" + bal); guldie vord check - Bal () 4 (bal < 5000) penalty = (0,15 of bal) Sylten and print (Intel dat " pal); Exten and prints (" Cow Balance " + Bal) also. 5 System . Out . printle ("Balance" + Bal):

public boden chek nat put 21) if (bal < 5000) penalty = (0.15 x bil); System at position (" Intead Balan " + Hal! bal = Bal - peralty uplen at pent le (" aslane" Bal + "pealty"),
stein fall; & soleth fru: public void withdraw () System out-print (" Ele the anot "); withdraw - So next flood 11; of (Check - Bal - part - 21) bal - - withdraw: Splin out - printle! Aust withdown half to pully void chefput Book () ? Syltn out printer Cheepe Book weied in Public Class Bank. public static void main (string() angs Scanner Sc: new Scame (Syster -10): String ch: intn.

currer c - year aircont (); Spter and funt (" sale the account type 5 for savings ch = Sc- rent (): Surge San new carry U: Switch (Ch. tolows au ()) Case "s": Sa. input (): do 5 Syster - Out-grint (1. seport \n 2. withdraw 3. the 4. Belly 1n 5. Acros Delate . 6. End .). n-sc. neut Int (); Quer tch (h) Cost 1: Sa. Leford (5; Bereat) Car 2: Sa withdraw 1); Break; can s: Sa. check_ Ralls Break: case 4: Sa. intest (). Break: CON 5, Sa. Desylony (); Break can 6, exit 101. Drew. 3 while (1) can c': l'emput (); Sight out prit (Deposit in 2 an Hodraw 123 cheke

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BALOK	
com 2: c. wi Wdian ():	
areak:	
can 3: C. Chech ral ();	
neak:	
Case 4: C. chegne. Rock ()	-
Break;	-
Care 5- Codisplay ();	
Brek	_
Cax 6: Syster exit (0);	
Bilet;	
I while (True)	
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Break:	
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3. Check Rabase.	
y - check Inlies.	
5 - Bhas Accust colad	
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Enle you choice 2.	

Enter the amount to withdraws: Amas naithdranen: 300.0 Balane : 5700.0 Enter you choice: 1. Enler amost to deposit: 300 Enter you choic: 4. Inlist credited: 360.0 Balanel 6360.0 Ende you choice: 6.

LAB PROGRAM 6: NUMBER OPERATIONS - EXCEPTION HANDLING

CODE

```
import java.util.InputMismatchException;
import java.util.Scanner;
interface Z
  public int calc(int a,int b);
class Y implements Z
  public int calc(int a, int b)
    int c = a/b;
    return c;
public class Try_1
  public static void main(String[] args)
    Scanner s = new Scanner(System.in);
```

```
Y o = new Y();
int num1, num2;
try
  System.out.println("Enter the two numbers: ");
  num1 = s.nextInt();
  num2 = s.nextInt();
  int c = o.calc(num1,num2);
  System.out.println("Quotient: "+c);
catch(ArithmeticException | InputMismatchException e1)
  System.out.println("Exception: "+e1);
```

LAB PROGRAM 7: AGE EVALUATION - EXCEPTION HANDLING

CODE

```
import java.util.Scanner;
public class Age
      public static void main(String[] args) throws WrongAge,InvalidAge
      new Son();
}
class WrongAge extends Exception
      public String getMessage()
      return "Age Cannot Be Negative";
}
class InvalidAge extends Exception
```

```
{
      public String getMessage()
      return "Son's Age cannot be greater than Father's!";
      }
class Father
      Scanner s = new Scanner(System.in);
      int f;
      Father() throws WrongAge
      System.out.print("Enter the Father's Age: ");
      f = s.nextInt();
      try
      if(f<0)
      throw new WrongAge();
      catch(WrongAge e1)
       System.out.println(e1.getMessage());
```

```
System.exit(0);
class Son extends Father
{
      int son;
      Son() throws WrongAge,InvalidAge
      {
      super();
      System.out.print("Enter the Son's Age: ");
      son = s.nextInt();
      try
      if(son<0)
      throw new WrongAge();
      catch(WrongAge e2)
       System.out.println(e2.getMessage());
        System.exit(0);
```

```
try
if(son>f)
throw new InvalidAge();
catch(InvalidAge e3)
 System.out.println(e3.getMessage());
  System.exit(0);
System.out.println("Ages are appropriate");
}
```

```
C:\Users\bmsccse>javac Age.java
error: file not found; Age.java
Usage: javac coptions> csource files>
use --help for a list of possible options

C:\Users\bmsccse>cd Desktop

C:\Users\bmsccse\Desktop>javac Age.java

C:\Users\bmsccse\Desktop>javac Age.java

Enter the Father's Age: 40

Ages are appropriate

C:\Users\bmsccse\Desktop>java Age.java
Enter the Father's Age: 30

Enter the Son's Age: 30

Enter the Father's Age: 30

Enter the Father's Age: 30

Enter the Father's Age: 30

Enter the Son's Age: 50

Son's Age cannot be greater than Father's!

C:\Users\bmsccse\Desktop>java Age.java
Enter the Father's Age: -1

Age Cannot Be Negative

C:\Users\bmsccse\Desktop>java Age.java
Enter the Father's Age: 50

Enter the Bon's Age: -1

Age Cannot Be Negative
```

6/1/2023 Exception. ingest Taia util Scanner; dan wong age extends Exception · 3 · Age Cannot be nogetive";
3. public string get Menage () clan Irrialid Age extends Exception Jublic string get Menage () Hen Folker " cannot be guals Clan Father Scanner Scanner (Syptem in): Father () throws wrong age. System. Out pointh ("Eiler Falkeri Ag" 1. Sc. next Int(): if (1<0) throw new wrong Age ();

Catch (wrong Age e) System out pointly (c). get Menage ();
System exit (0); clas Son enlands father Son 1) through wrong Age, Invalid Age Super (): System. Out. pointln("Ester Son's age"). Son = S. next Int (); try? ij (50n 40) those new Woong Age (): colch (worng Age 22) System. out. println (22 . get unage ()); try ? it (Son 7 1 throw new Invalid Age (); calch [Trualis Age (B) Sylon out printly (e.g. get Manage ());

public class Try-1 public Static void main (String args []) throws wray Age, Fualid age new son(); adeput Enter Fathers Age: 20. Enter Sons Age: 23. Sons age cannot be greater than Fathers. Enter Falker Age: 67
Enter Soni Age: -90
Age Cannot be o Negalive

LAB PROGRAM 8: MULTI-THREADING

CODE

```
class MyThread extends Thread
      long time;
      private volatile boolean running = true;
      MyThread(){
      System.out.println("Default");
MyThread(String name, long time)
      super(name);
      this.time = time;
public void pause()
      running = false;
public void run()
      try
            while(running)
```

```
System.out.println(this.getName());
                  Thread.sleep(time*1000);
            }
      }
      catch(InterruptedException ie)
            System.out.println("Exception caught in method");
      }
class Main
      public static void main(String [] args)
            MyThread mt1 = new MyThread("BMS", 10);
            MyThread mt2 = new MyThread("CSE", 2);
            mt1.start();
            mt2.start();
            Try
                  Thread.sleep(20*1000);
                  mt1.pause();
                  mt2.pause();
```

clas Thusad 1 entereds Iwada 13 1 2025 Public was run () int 1=0 while (iz 10) Thread . Sleep (mother 1000); System and - Printler (BMS164); catch (Inception e) Syler or prith ("Emplies ; +e) 1++; class Thread - 2 extend Thread Public void dun 1) int 1:0. while (ixro) (System as pointer (DE SE"); Calch (Exeption e) {
Systron pritti (" Exeption "+ e) 111

public dan Thread Public states void main (string 7 arp) Thread +1 = new thread :1(); Thread to new thread -2(1); the start(); tz start 1); CSE CSE CSE BMSCE LSE CSE cse CSE OSE BUSLE CSE CSE CSE KMSCE