

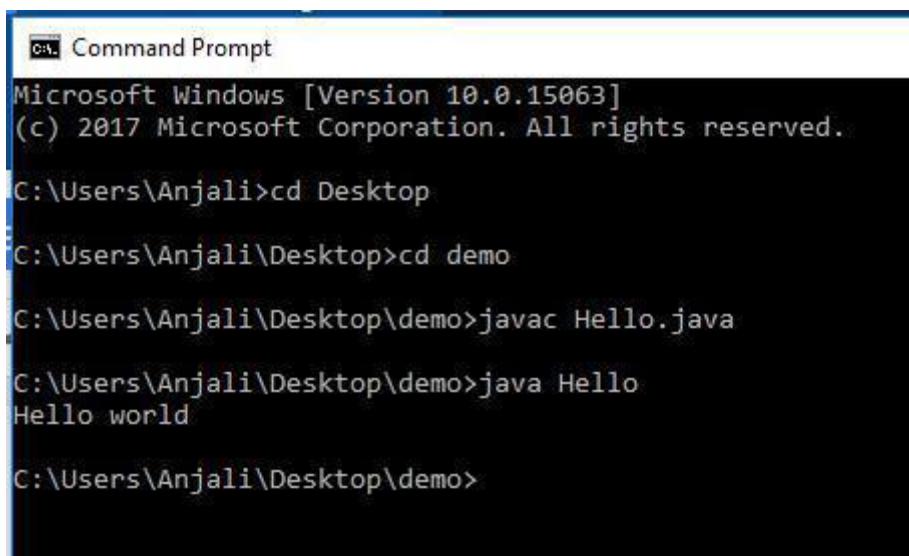
Week-I

Write a Java program print “Hello World”

Program:

```
public class Hello{  
  
    public static void main(String[] args) {  
        System.out.println("Hello world");  
  
    }  
}
```

Output:



The screenshot shows a Microsoft Windows Command Prompt window titled "Command Prompt". The window displays the following text:
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.
C:\Users\Anjali>cd Desktop
C:\Users\Anjali\Desktop>cd demo
C:\Users\Anjali\Desktop\demo>javac Hello.java
C:\Users\Anjali\Desktop\demo>java Hello
Hello world
C:\Users\Anjali\Desktop\demo>

2. Write a Java program that prints all real and imaginary solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a , b , c and use the quadratic formula

Program:

```
import java.util.Scanner;  
public class Quadratic{  
    public static void main(String[] args) {  
        Scanner sc =new Scanner(System.in);  
        System.out.println("enter a value:");  
        double a=sc.nextDouble();  
        System.out.print("enter b value:");
```

```
double b=sc.nextDouble();
System.out.print("enter c value");
double c=sc.nextDouble();
double root1;
double root2;
double d=b*b-4*a*c;
if (d==0)
{
    System.out.println("roots are equal");
    System.out.println("root1:"+(-b/(2*a)));
    System.out.println("root2:"+(-b/(2*a)));
}

else if(d<0)
{
    System.out.println("roots are imaginary");
}
else
{
    System.out.println("roots are unequal");
    System.out.println("root1: "+(-b+Math.sqrt(d)/2*a));
    System.out.println("root2: "+(-b-Math.sqrt(d)/2*a));
}}
```

Output:

```
Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Anjali>cd Desktop

C:\Users\Anjali\Desktop>cd demo

C:\Users\Anjali\Desktop\demo>javac Quadratic.java

C:\Users\Anjali\Desktop\demo>java Quadratic
enter a value:
2
enter b value:4
enter c value2
roots are equal
root1:-1.0
root2:-1.0

C:\Users\Anjali\Desktop\demo>java Quadratic
enter a value:
2
enter b value:6
enter c value8
roots are imaginary

C:\Users\Anjali\Desktop\demo>
```

3. Write a Java program to implement calculator operations Program:

```
import java.util.Scanner;
class Pro3{
    static void add(double a, double b){
        System.out.println(a+b);
    }

    static void sub(double a,double b){
        System.out.println(a-b);
    }

    public static void main(String[] args){
```

```

        double a,b;
        Scanner sc = new Scanner(System.in);

        System.out.println("Enter a,b values:");
        a = sc.nextDouble();
        b = sc.nextDouble();

        System.out.println("Enter 1 for add 2 for sub:");
        int ch = sc.nextInt();
        switch(ch){
            case 1: add(a,b);
            break;
            case 2: sub(a,b);
            break;
            default: System.out.println("Only 1 and 2 values....");
        }

    }
}

```

Output:

```

Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Anjali>cd Desktop

C:\Users\Anjali\Desktop>cd demo

C:\Users\Anjali\Desktop\demo>javac Pro3.java

C:\Users\Anjali\Desktop\demo>java Pro3
Enter a,b values:
2
3
Enter 1 for add 2 for sub:
1
5.0

C:\Users\Anjali\Desktop\demo>

```

4. Write a java program to find prime factors of given number

Program:

```
import java.util.Scanner;
```

```

class Pro4{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number: ");
        int a = sc.nextInt();
        int flag,i,j=0;
        int[] arr= new int[10];
        for(i=2;i<a;i++){
            if(a%i==0){
                arr[j] = i;
                j++;
            }
        for(i=0;i<j;i++)
        {
            flag=0;
            for(int k=2;k<arr[i];k++){
                if(arr[i]%k==0){
                    flag=1;
                    //System.out.print(arr[i]+ " ..");
                }
            if(flag==0){
                System.out.print(arr[i]+ " ");
            }
        }
    }
}

```

Output:

```

C:\Users\Anjali\Desktop\demo>javac Pro4.java
C:\Users\Anjali\Desktop\demo>java Pro4
Enter number: 7
C:\Users\Anjali\Desktop\demo>java Pro4
Enter number: 2
C:\Users\Anjali\Desktop\demo>_

```

5. Write a java program to find whether given number is Palindrome or not

Program:

```

import java.util.Scanner;
class Pro5{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int n = sc.nextInt();
        int temp=n, sum=0,k;

```

```

        while(temp>0){
            k = temp%10;
            temp=temp/10;
            sum = (sum*10)+k;
        if(sum == n){
            System.out.print("YES PAL");
        }else{
            System.out.print("NO PAL");
        }
    }
}

```

Output:

```

C:\Users\Anjali\Desktop\demo>javac Pro5.java
C:\Users\Anjali\Desktop\demo>java Pro5
121
YES PAL
C:\Users\Anjali\Desktop\demo>

```

6. Write an application that declares 5 integers, determines and prints the largest and smallest in the group.

Program:

```

import java.util.Scanner;
class Pro6{
    public static void main(String[] args) {
        int[] arr = {8,2,3,4,5};
        int min=999,max=0;
        for(int i=0;i<5;i++){
            if(min>arr[i])
                min=arr[i];
            if(max<arr[i])
                max=arr[i];
        }
        System.out.println("min="+min);
        System.out.print("max="+max);
    }
}

```

Output:

```

C:\Users\Anjali\Desktop\demo>javac Pro6.java
C:\Users\Anjali\Desktop\demo>java Pro6
min=2
max=8
C:\Users\Anjali\Desktop\demo>

```

Week-II

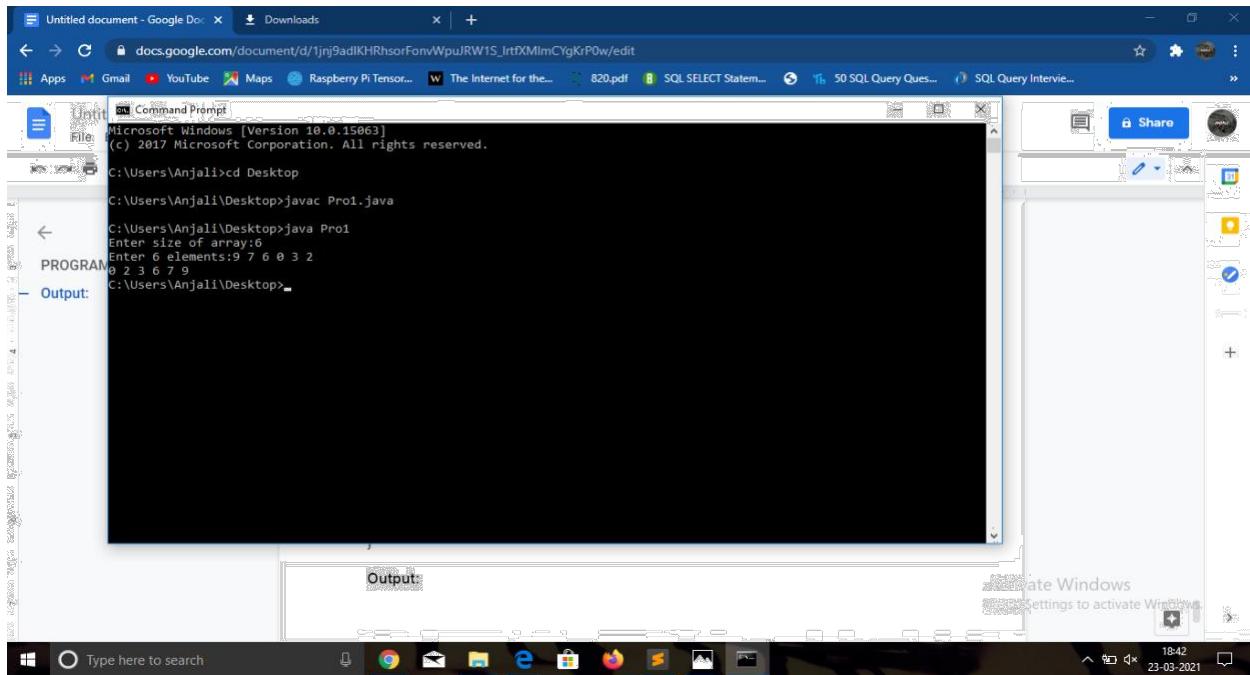
1. Write a Java program to sort given list of numbers. Program:

```
import java.util.Scanner;
class Pro1 {
    public static void main(String[] args) { int[]
        arr = new int[10];
        Scanner sc = new Scanner(System.in);

        int i,j,temp;
        System.out.print("Enter size of array:");
        int n= sc.nextInt();
        System.out.printf("Enter %d elements:",n);
        for(i=0;i<n;i++)
            arr[i] = sc.nextInt();

        for(i=0;i<n;i++){
            for(j=0;j<n-i-1;j++){
                if(arr[j]>arr[j+1]){
                    temp = arr[j];
                    arr[j] = arr[j+1];
                    arr[j+1] = temp;
                }
            }
        }
        for(i=0;i<n;i++)
            System.out.print(arr[i]+" ");
    }
}
```

Output:



2. Write a Java program to implement linear search. Program:

```
import java.util.Scanner;
class Pro2{
    public static void main(String[] args) {
        int[] arr = new int[10];
        Scanner sc = new Scanner(System.in);

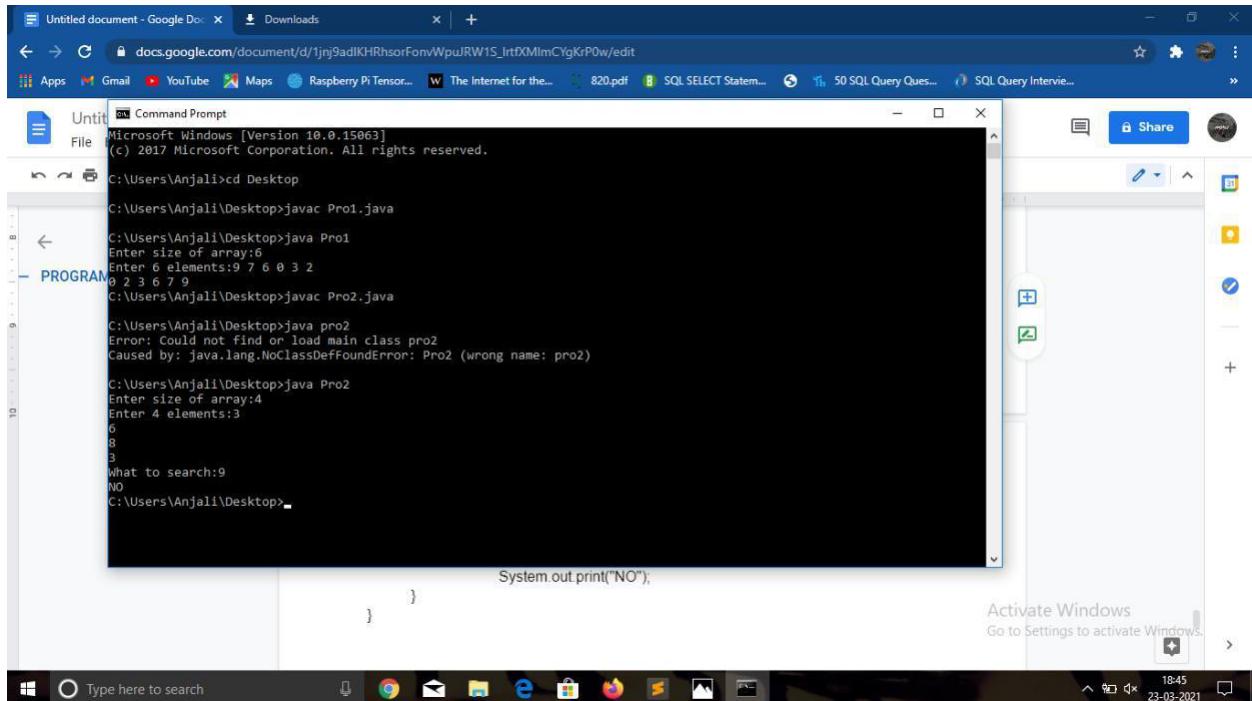
        int i,j,temp,key,flag=0;
        System.out.print("Enter size of array:");
        int n= sc.nextInt();
        System.out.printf("Enter %d elements:",n);
        for(i=0;i<n;i++)
            arr[i] = sc.nextInt();
        System.out.print("What to search:");
        key= sc.nextInt();
        for(i=0;i<n;i++){
            if(key == arr[i]){
                flag=1;
                break;
            }
        }
    }
}
```

```

        if(flag==1)
            System.out.print("FOUND");
        else
            System.out.print("NO");
    }
}

```

}Output:



The screenshot shows a Microsoft Windows Command Prompt window titled "Untitled - Command Prompt". The window displays the following Java program execution and its output:

```

Microsoft Windows [Version 10.0.15063]
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C:\Users\Anjali>cd Desktop
C:\Users\Anjali\Desktop>javac Pro1.java
C:\Users\Anjali\Desktop>java Pro1
Enter size of array:6
Enter 6 elements:9 7 6 0 3 2
0 2 3 6 7 9
C:\Users\Anjali\Desktop>javac Pro2.java
C:\Users\Anjali\Desktop>java pro2
Error: Could not find or load main class pro2
Caused by: java.lang.NoClassDefFoundError: Pro2 (wrong name: pro2)

C:\Users\Anjali\Desktop>java Pro2
Enter size of array:4
Enter 4 elements:3
6
8
3
What to search:9
NO
C:\Users\Anjali\Desktop>

```

The output shows the program prompting for array size and elements, then searching for a value (9) which is not found, resulting in the "NO" output.

3. Write a Java program to implement binary search. Program:

```

import java.util.Scanner;
class Pro3{
    public static void main(String[] args) {
        int[] arr = new int[10];
        Scanner sc = new Scanner(System.in);

        int i,j,temp,key,flag=0,mid=0,st=0,end;
        System.out.print("Enter size of array:");
        int n= sc.nextInt();
        System.out.printf("Enter %d elements:",n);
        end=n;
        for(i=0;i<n;i++)
            arr[i] = sc.nextInt();
    }
}

```

```

System.out.print("What to search:");
key= sc.nextInt();
mid=st+end/2;
while(mid>0 && mid<n){
    mid=st+end/2;
    if(mid==key){
        flag=1;
        break;
    }else if(mid<key){
        st=mid;
    }else{
        end=mid;
    }
}
if(flag==1)
    System.out.print("FOUND");
else
    System.out.print("NO");
}

```

}Output:

```

Command Prompt
Microsoft Windows [Version 10.0.15063]
(c) 2017 Microsoft Corporation. All rights reserved.

C:\Users\Anjali>cd Desktop
C:\Users\Anjali\Desktop>javac Pro1.java
C:\Users\Anjali\Desktop>java Pro1
Enter size of array:6
Enter 6 elements:9 7 6 0 3 2
9 2 3 6 7 9
C:\Users\Anjali\Desktop>javac Pro2.java
C:\Users\Anjali\Desktop>java pro2
Error: Could not find or load main class pro2
Caused by: java.lang.NoClassDefFoundError: Pro2 (wrong name: pro2)

C:\Users\Anjali\Desktop>java Pro2
Enter size of array:4
Enter 4 elements:5
5
8
3
What to search:9
NO
C:\Users\Anjali\Desktop>javac Pro3.java
C:\Users\Anjali\Desktop>java Pro3
Enter size of array:4
Enter 4 elements:7
7
3
4
What to search:9
NO
C:\Users\Anjali\Desktop>

```

Activate Windows
Go to Settings to activate Windows.

18:47 23-03-2021

4. Write a java program to add two given matrices.

Program:

```
import java.util.Scanner;
class Pro4{
    public static void main(String[] args) {
        int[][] m1,m2,m3;
        m1 = new int[10][10];
        m2 = new int[10][10];
        m3 = new int[10][10];
        Scanner sc = new Scanner(System.in);
        int i,j,k,r,c;
        System.out.println("Enter rounum and colnum: ");
        r = sc.nextInt();
        c = sc.nextInt();
        System.out.printf("Enter %d elements for matrix1:",r*c);
        for(i=0;i<r;i++){
            for(j=0;j<c;j++){
                m1[i][j] = sc.nextInt();
            }
        }
        System.out.printf("Enter %d elements for matrix2:",r*c);
        for(i=0;i<r;i++){
            for(j=0;j<c;j++){
                m2[i][j] = sc.nextInt();
            }
        }
        System.out.println("Added matrix is: ");
        for(i=0;i<r;i++){
            for(j=0;j<c;j++){
                m3[i][j] = m1[i][j]+m2[i][j];
                System.out.print(m3[i][j]+" ");
            }
        }
        System.out.println("");
    }
}
```

Output:



```
C:\ Command Prompt
C:\Users\Anjali\Desktop>java Pro1
Enter size of array:6
Enter 6 elements:9 7 6 0 3 2
C:\Users\Anjali\Desktop>javac Pro2.java
C:\Users\Anjali\Desktop>java pro2
Error: Could not find or load main class pro2
Caused by: java.lang.NoClassDefFoundError: Pro2 (wrong name: pro2)

C:\Users\Anjali\Desktop>java Pro2
Enter size of array:4
Enter 4 elements:5
8
3
What to search:9
NO
C:\Users\Anjali\Desktop>javac Pro3.java
C:\Users\Anjali\Desktop>java Pro3
Enter size of array:4
Enter 4 elements:5
7
3
4
What to search:9
NO
C:\Users\Anjali\Desktop>javac Pro4.java
C:\Users\Anjali\Desktop>java Pro4
Enter rounum and colnum:
2
2
Enter 4 elements for matrix1:1 0
1 0
Enter 4 elements for matrix2:1 0
1 0
```

5. Write a java program to multiply two given matrices.

Program:

```
import java.util.Scanner;
class Pro5{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[][] m1,m2,m3;
        int i,j,r1,c1,r2,c2,k,sum=0;
        m1 = new int[10][10];
        m2 = new int[10][10];
        m3 = new int[10][10];
        System.out.print("Enter row and cols of matrix1:");
        r1 = sc.nextInt();
        c1 = sc.nextInt();
        System.out.print("Enter row and cols of matrix2:");
        r2 = sc.nextInt();
        c2 = sc.nextInt();
        if(c1==r2){
            System.out.printf("Enter %d elements for matrix1:",r1*c1);
            for(i=0;i<r1;i++){
                for(j=0;j<c1;j++){
                    m1[i][j] = sc.nextInt();}
            System.out.printf("Enter %d elements for matrix2:",r2*c2);
            for(i=0;i<r2;i++){
                for(j=0;j<c2;j++){
                    m2[i][j] = sc.nextInt();}}
            for(i=0;i<r1;i++){
                for(j=0;j<c2;j++){
                    for(k=0;k<c1;k++){
                        sum=sum+(m1[i][k]*m2[k][j]);}
                    m3[i][j]=sum;
                    sum=0;}}
            System.out.println("Multiplied matrix is:");
            for(i=0;i<r1;i++){
                for(j=0;j<c2;j++){
                    System.out.print(m3[i][j]+" ");}
            System.out.println("");}}}}
```

Output:



```
C:\Users\Anjali\Desktop>javac Pro5.java
C:\Users\Anjali\Desktop>java Pro5
Enter rownum and colnum:
2 2
Enter 4 elements for matrix1:1 2
1 2
Enter 4 elements for matrix2:1 2
1 2
Added matrix is:
2 4
2 4
C:\Users\Anjali\Desktop>
```

Week-III

1. Write a program to display details of the required employee based on his Id. The details of employee includes, Emp_name, Emp_age, Emp_gender, Emp_designation, Emp_salary, Emp_Address etc.,

Program:

```
import java.util.Scanner;
class Employe
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("Enter number of Employees:");
        int n=s.nextInt();
        System.out.println("Enter "+n+ " Employees Details");
        int id[]={};
        String name[]={};
        String gender[]={};
        String des[]={};
        String address[]={};
        int age[]={};
        int salary[]={};
        System.out.println("Enter Employee Details \nID
Number\nName\nGender\nDesignation\nAddress\nSalary\nAge\nRespectively");
        for(int i=0;i<n;i++)
        {
            System.out.println("Enter Employee "+(i+1)+" Details ");
            id[i]=s.nextInt();
            name[i]=s.next();
            gender[i]=s.next();
            des[i]=s.next();
            address[i]=s.next();
            salary[i]=s.nextInt();
            age[i]=s.nextInt();
        }
        System.out.println("Enter Employee id whose details you required"); int
        ID=s.nextInt();
        System.out.println("Employee id "+ID+" Details");
        for(int i=0;i<n;i++)
        {
            if(ID==id[i])
            {
                System.out.println("Employee name is:"+name[i]);
            }
        }
    }
}
```

```

System.out.println("Employee age is:"+age[i]);
System.out.println("Employee gender is:"+gender[i]);
System.out.println("Employee designation is:"+des[i]);
System.out.println("Employee salary is:"+salary[i]);
System.out.println("Employee Address is:"+address[i]);
}}}}

```

Output:

```

C:\> Command Prompt
1
Enter 1 Employees Details
Enter Employee Details
ID Number
Name
Gender
Designation
Address
Salary
Age
Respectively
Enter Employee 1 Details
1
Anjali
F
Hr
Khammam
100000
20
Enter Employee id whose details you required
1
Employee id 1 Details
Employee name is:Anjali
Employee age is:20
Employee gender is:F
Employee designation is:Hr
Employee salary is:100000
Employee Address is:Khammam
C:\Users\Anjali\Desktop\demo>

```

Activate Windows
Go to Settings to activate Windows.

A small order house sells five products whose retail prices are as follows : Product 1 : Rs. 99.90 , Product 2 : Rs. 20.20 , Product 3 : Rs. 6.87 , Product 4 : Rs. 45.50 and Product 5 : Rs. 40.49 . Each product has Prdouct_Id, Product_Name, Product_Quantity, Product_Price. Write an application that reads a series of pairs of numbers as follows : a) product Id b) quantity sold your program use a switch statement to determine the retail price for each product. it should calculate and display the total retail value of all products sold.

Program:

```

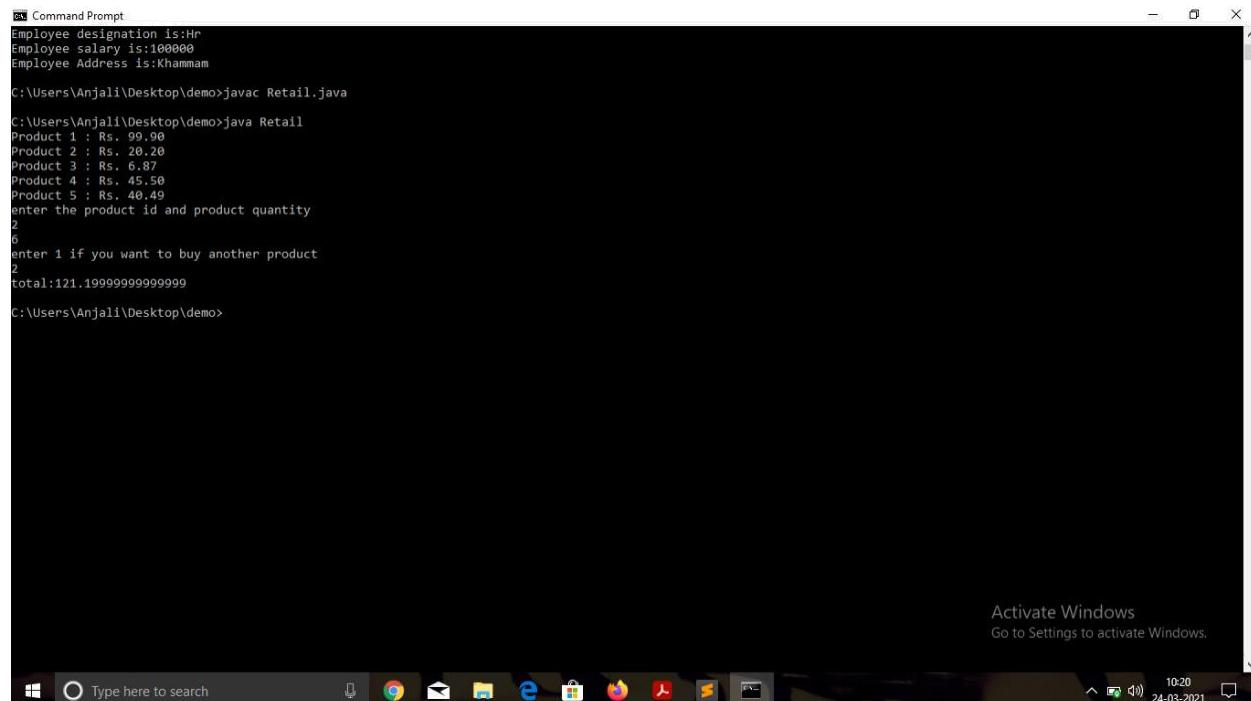
import java.util.Scanner;
import java.io.*; public class
Retail{
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        double retail=0.0;
        System.out.println("Product 1 : Rs. 99.90");
        System.out.println("Product 2 : Rs. 20.20");
        System.out.println("Product 3 : Rs. 6.87");
        System.out.println("Product 4 : Rs. 45.50");
        System.out.println("Product 5 : Rs. 40.49");
    }
}

```

```

while(true){
    System.out.println("enter the product id and product quantity");
    int pr_id=sc.nextInt();
    int pr_qty=sc.nextInt();
    double product_price=0.0;
    switch(pr_id)
    {
        case 1:product_price=pr_qty*99.90;
                  break;
        case 2:product_price=pr_qty*20.20;
                  break;
        case 3:product_price=pr_qty*6.87;
                  break;
        case 4:product_price=pr_qty*45.50;
                  break;
        case 5:product_price=pr_qty*40.49;
                  break;
        default:System.out.println("wrong option");}
    retail=retail+product_price;
    System.out.println("enter 1 if you want to buy another product");
    int temp=sc.nextInt();
    if(temp!=1){
        break;}}
System.out.println("total:"+retail);}}
```

Output:



```

C:\Users\Anjali\Desktop\demo>javac Retail.java
C:\Users\Anjali\Desktop\demo>java Retail
Employee designation is:Hr
Employee salary is:100000
Employee Address is:Khammam
Product 1 : Rs. 99.90
Product 2 : Rs. 20.20
Product 3 : Rs. 6.87
Product 4 : Rs. 45.50
Product 5 : Rs. 40.49
enter the product id and product quantity
2
6
enter 1 if you want to buy another product
2
total:121.1999999999999
C:\Users\Anjali\Desktop\demo>
```

Activate Windows
Go to Settings to activate Windows.

3 .Write java program that inputs 5 numbers, each between 10 and 100 inclusive. As each number is read display it only if it's not a duplicate of any number already read display the complete set of unique values input after the user enters each new value

Program:

```
import java.util.*;
public class Duplicat{
public static void main(String args[]){
Scanner s=new Scanner(System.in); int
arr[]=new int[5];
for(int i=0;i<5;i++){
int count=0;
System.out.println("enter the element");
int e=s.nextInt();
for(int j=0;j<arr.length;j++){
if(e==arr[j]){
count=1;
System.out.println("number already exists,enter another number");
i=i-1;
break;
}
else if(e<10||e>100){
count=1;
System.out.println("number is not in range (10&100)enter a valid number");
i=i-1;
break;
}
if(count!=1){
arr[i]=e;
for (int k=0;k<=i;k++){
System.out.print(arr[k]+" ");
}
}
}
}
}
Output:
```

```
C:\Users\Anjali\Desktop\demo>java Duplicat
enter the element
7
number is not in range (10&100)enter a valid number
enter the element
14
14 enter the element
19
14 19 enter the element
20
14 19 20 enter the element
21
14 19 20 21 enter the element
20
number already exists,enter another number
enter the element
25
14 19 20 21 25
C:\Users\Anjali\Desktop\demo>
```

Activate Windows
Go to Settings to activate Windows.

10:30 24-03-2021

4. Write a java program : rolling a pair of dices 10 times [each attempt should be delayed by 10000 ms] and count number Successful attempts. successful attempt : If the pair of Dice results in same values.

```
import java.util.Random;
public class Dice{
    public static void main(String args[]){
        Random random=new Random();
        int freq1=0,freq2=0,freq3=0,freq4=0,freq5=0,freq6=0; for(int roll=1;roll<10000;roll++){
            int dice1=1+random.nextInt(6);
            int dice2=1+random.nextInt(6);
            if(dice1==dice2){
                switch(dice1){
                    case 1:
                        ++freq1;
                        break;
                    case 2:
                        ++freq2;
                        break;
                    case 3:
                        ++freq3;
                        break;
                    case 4:
                        ++freq4;
                        break;
                    case 5:
                        ++freq5;
                        break;
                    case 6:
                        ++freq6;
                        break;
                }
            }
        }
        System.out.println("face\tFrequency:");
        System.out.println("1\t"+freq1+"\n2\t"+freq2+"\n3\t"+freq3+"\n4\t"+freq4+"\n5\t"+freq5+"\n6\t"+freq6);}} Output:
```



The screenshot shows a Windows Command Prompt window with the title 'Command Prompt'. The command 'java Dice' is entered, followed by the output of the program which displays the frequency of faces 1 through 6. The output is as follows:

```
C:\Users\Anjali\Desktop\demo>java Dice
Face      Frequency:
1       258
2       276
3       282
4       268
5       275
6       263
```

5.Implement the following case study using OOP concepts in Java. E-Book stall : Every book has Properties which includes : Book_Name, Book_Author, Book_Count ;Every Customer is having properties as : Customer_Id, Customer_Name, Customer_Address and he can buy Books from E-Book stall. Write a Program which will display the text book name and the remaining count of text books when a customer buys a text book.

Program:

```
import java.io.BufferedReader; import  
java.io.IOException; import  
java.io.InputStreamReader; import  
java.util.ArrayList;  
class Customer { int  
Cust_id; String  
Cust_name; String  
Cust_address;  
Customer( int custid, String custname, String custadd) {  
Cust_id = custid;  
Cust_name=custname;  
Cust_address = custadd;  
}  
class E_Book {  
String Book_name;  
String Book_author;  
int Book_count;  
E_Book(String bookname, String bookauthor, int bookcount) {  
Book_name= bookname;  
Book_author = bookauthor;  
Book_count = bookcount;}  
int reduceCount() {  
if(this.Book_count > 0) {  
(this.Book_count)--;  
System.out.println("book is available");  
}  
else {  
System.out.println("book is out of stock");}  
return this.Book_count; }  
public class p3{  
public static void main(String[] args) throws IOException {  
String booktobuy = null;  
int remainingcount=0;  
ArrayList<E_Book> booklist = new ArrayList<E_Book>();  
E_Book book1 = new E_Book( "HalfGirlfriend", "chetan", 10);  
E_Book book2 = new E_Book( "revolution2020", "chetanbhagat", 5);  
E_Book book3 = new E_Book( "wingsOffire", "abdulKalam", 3);
```

```

booklist.add(book1);
booklist.add(book2);
booklist.add(book3);
ArrayList<Customer> custlist = new ArrayList<Customer>();
Customer cust1 = new Customer( 1, "Sai", "knr");
Customer cust2 = new Customer( 2, "Anjali", "kmm");
Customer cust3 = new Customer( 3, "Navya", "knr");
custlist.add(cust1);
custlist.add(cust2);
custlist.add(cust3);
System.out.println("enter your cust_id:");
BufferedReader br = new BufferedReader(new InputStreamReader(System.in));
int id = Integer.parseInt(br.readLine());
for (Customer c : custlist) {
if (c.Cust_id == id) {
System.out.println("enter the book name you want to buy:");
booktobuy = br.readLine();
for ( E_Book b : booklist) {
if( b.Book_name.equalsIgnoreCase(booktobuy)) {
remainingcount = b.reduceCount();
System.out.println("the remaining count of book:"+booktobuy+" is: "+remainingcount+"");
}}}}}

```

Output:

```

p3 x
C:\Users\Anjali\jdks\openjdk-15\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2020.2.2\lib\idea_rt.jar=55427:C:\Program
enter your cust_id:
1
enter the book name you want to buy:
HalfGirlfriend
book is available
the remaining count of book:HalfGirlfriend is: 9

Process finished with exit code 0

```

Week-4

1. Write an application that uses String method compareTo to compare two strings defined by the user.

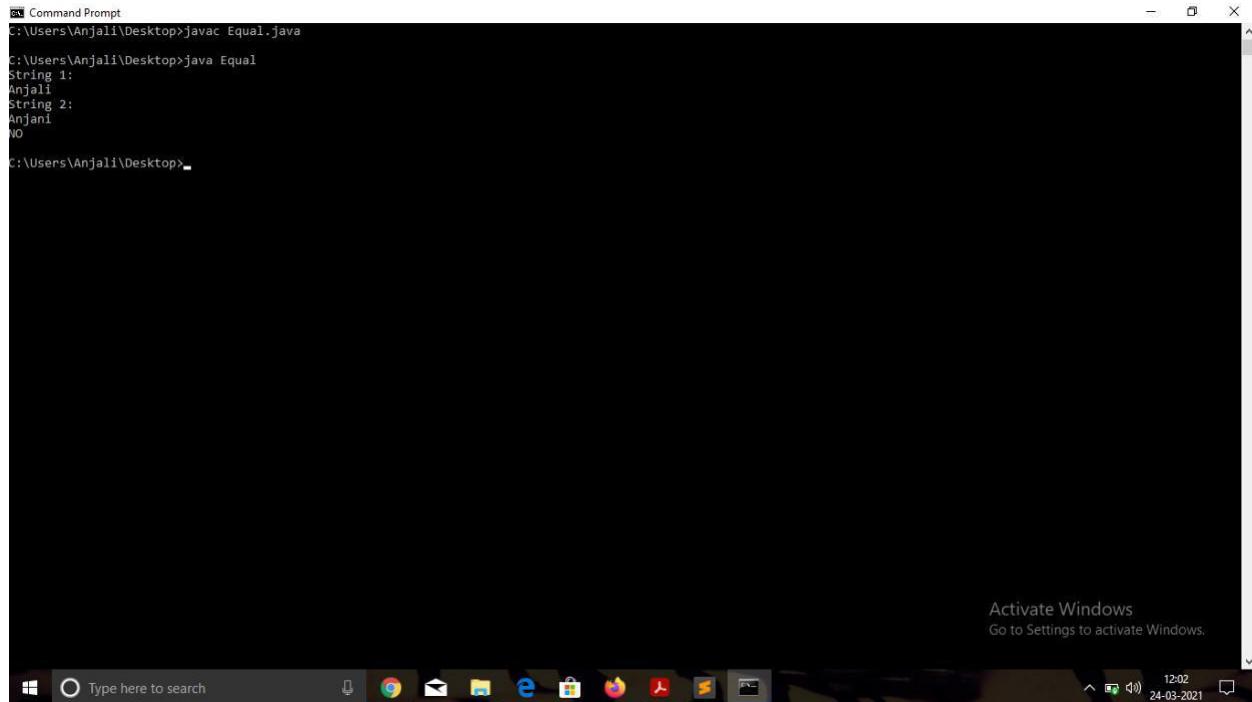
Program:

```
import java.util.Scanner;
class Equal{
    public static void main(String[] args) {
        String str1;
        String str2;
        Scanner sc = new Scanner(System.in);
        System.out.println("String 1: ");
        str1 = sc.nextLine();
        System.out.println("String 2: ");
        str2 = sc.nextLine();

        System.out.println(str1.compareTo(str2));

        if(str1.compareTo(str2)==0)
            System.out.println("EQUAL");
        else
            System.out.println("NO");
    }
}
```

Output:



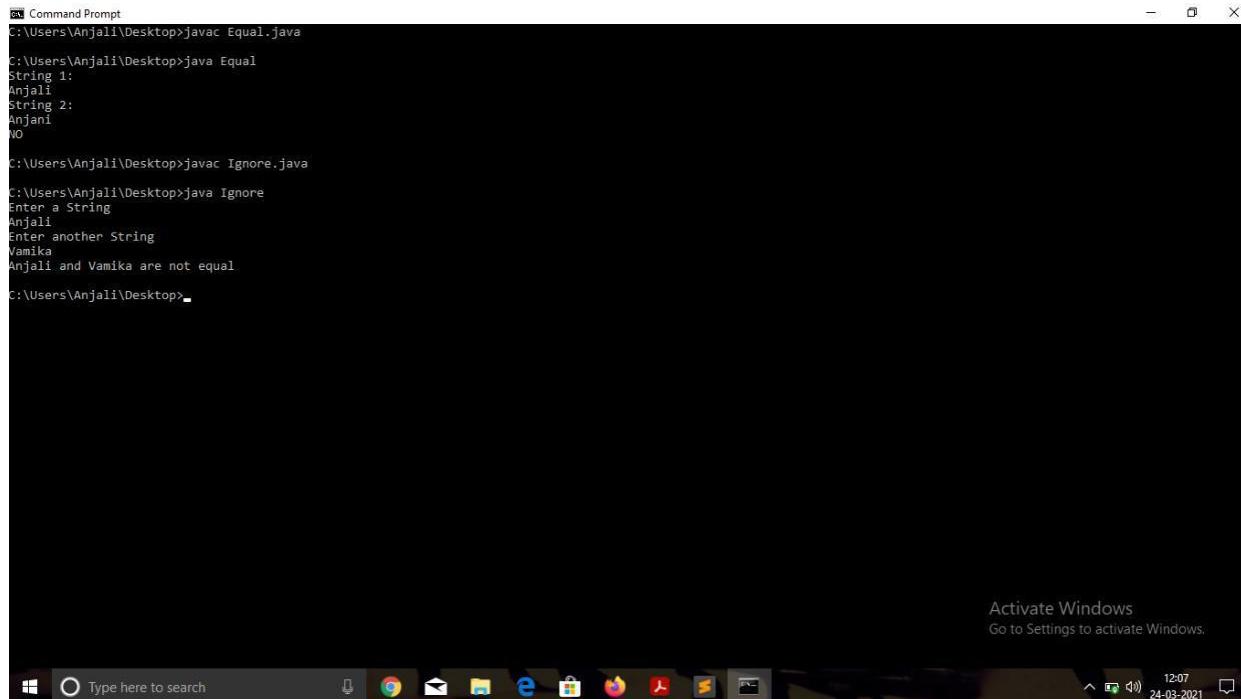
```
Command Prompt
C:\Users\Anjali\Desktop>javac Equal.java
C:\Users\Anjali\Desktop>java Equal
String 1:
Anjali
String 2:
Anjani
NO
C:\Users\Anjali\Desktop>
```

Activate Windows
Go to Settings to activate Windows.

2. Write an application that uses String method equals and equalsIgnoreCase to tests any two string objects for equality.

```
import java.util.Scanner;
class Ignore
{
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        System.out.println("Enter another String");
        String s1=sc.nextLine();
        if(s.equals(s1))
        {
            System.out.println(s+" and "+s1+" are equal");
        }
        else if(s.equalsIgnoreCase(s1))
        {
            System.out.println(s+" and "+s1+" are equal by Ignoring the case of acharacters");
        }
        else
        {
            System.out.println(s+" and "+s1+" are not equal");
        }
    }
}
```

Output:



The screenshot shows a Windows Command Prompt window with the following session:

```
C:\Command Prompt>javac Equal.java
C:\Users\Anjali\Desktop>java Equal
String 1:
Anjali
String 2:
Anjali
NO

C:\Users\Anjali\Desktop>javac Ignore.java
C:\Users\Anjali\Desktop>java Ignore
Enter a String
Anjali
Enter another String
Vamika
Anjali and Vamika are not equal
C:\users\Anjali\Desktop>
```

In the bottom right corner of the window, there is a watermark that reads "Activate Windows Go to Settings to activate Windows."

3. Write an application that uses String method indexOf to determine the total number of occurrences of any given alphabet in a defined text.

```
import java.util.Scanner;
class Index{
    public static void main(String args[]){
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a sentence");
        String sen = sc.nextLine();
        System.out.println("Enter a Character");
        char ch = sc.next().charAt(0);
        int count=0;
        for(int i=0;i<sen.length();i++)
        {
            if(sen.charAt(sen.indexOf(ch))==sen.charAt(i))
            {
                count++;
            }
        }
        System.out.println(ch+" is present "+count+ " times in given string");
    }
}
```

Output:

The screenshot shows a Windows Command Prompt window. The command `javac Index.java` is run, followed by `java Index`. The user is prompted to enter a sentence ('Enter a sentence') and a character ('Enter a Character'). The character 'a' is entered. The output shows that 'a' is present 2 times in the sentence 'anjali'. The window includes standard Windows taskbar icons at the bottom.

```
C:\Users\Anjali\Desktop>javac Index.java
C:\Users\Anjali\Desktop>java Index
Enter a sentence
anjali
Enter a Character
a
a is present 2 times in given string
C:\Users\Anjali\Desktop>
```

4. Write an application that uses String method concat to concatenate two defined strings.

```
import java.util.Scanner;
class Concat{
    public static void main(String args[]){

```

```

Scanner sc = new Scanner(System.in);
System.out.println("Enter a String");
String s=sc.nextLine();
System.out.println("Enter another String");
String s1=sc.nextLine();
System.out.println("concatenation of given strings is: "+s+s1);
String s2=s.concat(s1);
System.out.println("concatenation of given strings by using string concat method is:
"+s2);}}
```

Output:

The screenshot shows a Windows Command Prompt window. The command `javac Index.java` is run, followed by `java Index`. The user enters "Anjali" and "Naidu". The output shows the concatenated string "AnjaliNaidu" and the result of using the `concat` method, which also outputs "AnjaliNaidu". The taskbar at the bottom includes icons for File Explorer, Mail, Edge, and others.

```

C:\Users\Anjali\Desktop>javac Index.java
C:\Users\Anjali\Desktop>java Index
Enter a sentence
Anjali
Enter another String
Naidu
Concatenation of given strings is: AnjaliNaidu
concatenation of given strings by using string concat method is: AnjaliNaidu
C:\Users\Anjali\Desktop>
```

5. Write a Java program to print all vowels in given string and count number of vowels and consonants present in given string

```

import java.util.Scanner;
class Vowels{
    public static void main(String args[]){
        Scanner sc = new Scanner(System.in);
        System.out.println("enter your sentence");
        String sen = sc.nextLine();
        int vowels=0,con=0;
        char ch;
        sen=sen.toLowerCase();
        for(int i=0;i<sen.length();++i){
            ch=sen.charAt(i);
            if(ch=='a'||ch=='e'||ch=='i'||ch=='o'||ch=='u'||ch=='A'||ch=='E'||ch=='O'||ch=='I'||ch=='U') {++vowels;
                System.out.println(ch+" is vowel");}
            else {
```

```

++con;

System.out.println(ch+" is consonant");
}
}

System.out.println("Number of vowels present in given sentence is "+vowels);
System.out.println("Number of Consonants present in given sentence is "+con); }

}

```

```

C:\Users\Anjali\Desktop>java Vowels
enter your sentence
Anjali is a smart student
a is vowel
n is consonant
j is consonant
i is vowel
s is vowel
m is consonant
a is vowel
t is consonant
r is consonant
i is vowel
s is consonant
t is consonant
s is consonant
t is consonant
u is vowel
d is consonant
e is vowel
n is consonant
t is consonant
Number of vowels present in given sentence is 8
Number of Consonants present in given sentence is 17
C:\Users\Anjali\Desktop>

```

Activate Windows
Go to Settings to activate Windows.

6. Write an application that finds the length of a given string.

Program:

```

import java.util.Scanner;
class Length{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter a String");
String s=sc.nextLine();
int a=s.length();
System.out.println("length of given String is:"+a); } }

```

Output:

```

C:\Users\Anjali\Desktop>javac Length.java
C:\Users\Anjali\Desktop>java Length
Enter a String
Anjali
length of given String is:6
C:\Users\Anjali\Desktop>

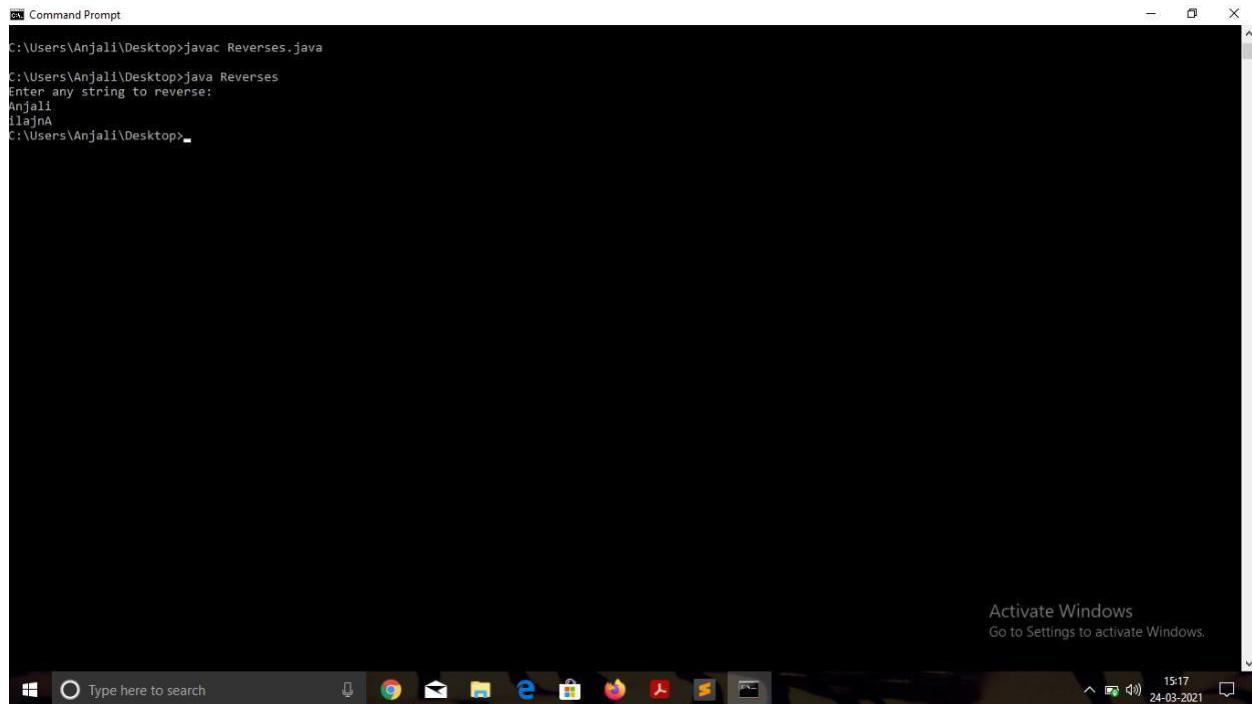
```

```

class Reverse{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter a String");
String s=sc.nextLine();
int n=s.length();
System.out.print("Reverse of given string is: ");
for(int i=n-1;i>=0;i-- ){
char rev=s.charAt(i);
System.out.print(rev);}
System.out.println(" ");
}

```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `javac Reverses.java` is run, followed by `java Reverses`. The user enters the string "Anjali" and the program outputs "ilajnA". The taskbar at the bottom shows various pinned icons and the date/time as 15:17 24-03-2021.

```

C:\Users\Anjali\Desktop>javac Reverses.java
C:\Users\Anjali\Desktop>java Reverses
Enter any string to reverse:
Anjali
ilajnA
C:\Users\Anjali\Desktop>

```

8. Write an application that finds the substring from any given string using substring method and startsWith & endsWith methods.

Program:

```

import java.util.Scanner;
class Week4{
public static void main(String args[]){
Scanner sc = new Scanner(System.in);
System.out.println("Enter a String");
String s=sc.nextLine();
System.out.println("Enter a number for substring starts from it: "+(s.length()));
int n=sc.nextInt();
String s1=s.substring(n);
System.out.println(s1);
}

```

```

System.out.println("Enter an interval below: "+(s.length()));
int a=sc.nextInt();
int b=sc.nextInt();
String s2=s.substring(a,b);
System.out.println("Substring in given interval is:");
System.out.println(s2);
}

```

Output:

```

C:\Users\Anjali>java SubString.java
error: file not found: SubString.java
Usage: javac <options> <source files>
use --help for a list of possible options

C:\Users\Anjali>cd Desktop
C:\Users\Anjali\Desktop>javac SubString.java
C:\Users\Anjali\Desktop>java SubString
Enter a String
Anjali
Enter a number for substring starts from it: 6
6
ali
Enter an interval below: 6
6
6
Substring in given interval is:
ali

C:\Users\Anjali\Desktop>

```

Activate Windows
Go to Settings to activate Windows.

9. Write an application that changes any given string with uppercase letters, displays it, changes it back to lowercase letters and displays it.

Program:

```

import java.util.Scanner;
class Uppercase{
    public static void main(String args[]){
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a String");
        String s=sc.nextLine();
        String s1=s.toLowerCase();
        System.out.print("Lowercase string is:"+s1);
        System.out.println(" ");
    }
}

```

Output:

```

C:\Users\Anjali\Desktop>java Uppercase
Enter a String
Anjali
Lowercase string is:anjali

C:\Users\Anjali\Desktop>

```

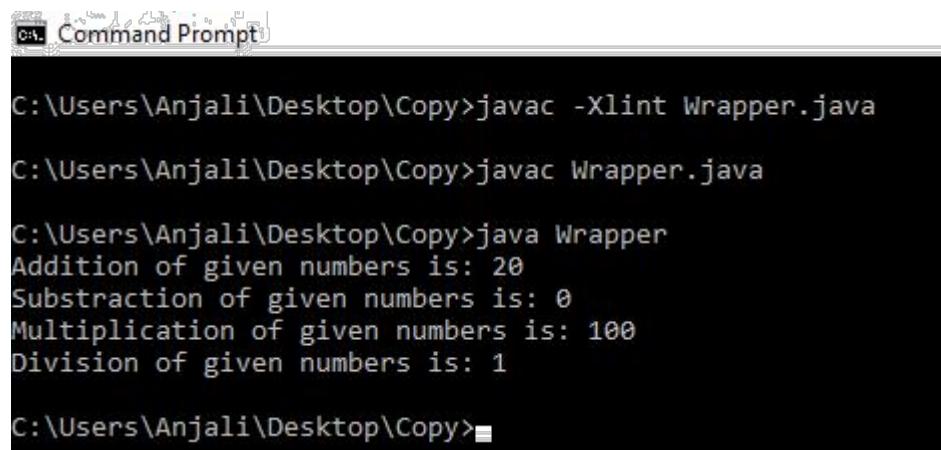
Week-5

1. Write a Java Program to implement Wrapper classes and their methods.

Program:

```
import java.util.Scanner;
class Wrapper{
    public static void main(String args[]){
        Scanner s=new Scanner(System.in);
        int a=10;
        Integer c=a ;
        int b=10;
        Integer d= b;
        System.out.println("Addition of given numbers is: "+(c+d));
        System.out.println("Subtraction of given numbers is: "+(c-d));
        System.out.println("Multiplication of given numbers is: "+(c*d));
        System.out.println("Division of given numbers is: "+(c/d));}}
```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command line shows the user navigating to a directory on the C:\Users\Anjali\Desktop\Copy folder and then executing the command "javac Wrapper.java". After compilation, the user runs the program by typing "java Wrapper". The output of the program is displayed, showing the results of addition, subtraction, multiplication, and division of the integers 10 and 20. The output is as follows:

```
C:\Users\Anjali\Desktop\Copy>javac -Xlint Wrapper.java
C:\Users\Anjali\Desktop\Copy>javac Wrapper.java
C:\Users\Anjali\Desktop\Copy>java Wrapper
Addition of given numbers is: 20
Substraction of given numbers is: 0
Multiplication of given numbers is: 100
Division of given numbers is: 1
```

2. Write an application that prompts the user for the radius of a circle and uses a method called circleArea to calculate the area of the circle and uses a method circlePerimeter to calculate the perimeter of the circle

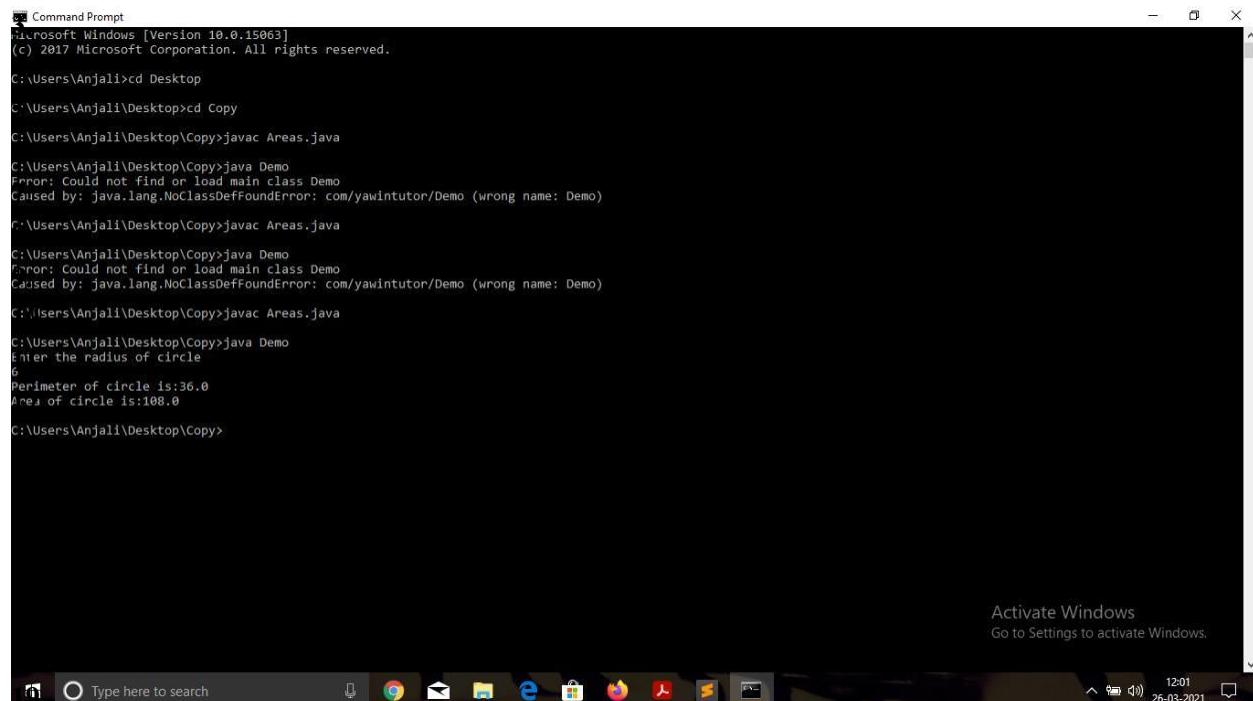
Program:

```
import java.util.Scanner;
class Areas{
    double r;
    double Area(){
        return (22/7)*r*r;
    }
    double Perimeter(){
        return 2*(22/7)*r;
    }
}
class Demo{
    public static void main(String args[]){}
```

```

Scanner s=new Scanner(System.in);
Areas c=new Areas();
System.out.println("Enter the radius of circle");
double R=s.nextDouble();
c.r=R;
System.out.println("Perimeter of circle is:"+c.Perimeter());
System.out.println("Area of circle is:"+c.Area()); }}
```

Output:



The screenshot shows a Microsoft Windows Command Prompt window. The command history includes:

- cd Desktop
- cd Copy
- javac Areas.java
- java Demo (This step results in an error: "Error: Could not find or load main class Demo Caused by: java.lang.NoClassDefFoundError: com/yawintutor/Demo (wrong name: Demo)")
- javac Areas.java (This step successfully compiles the code)
- java Demo (This step successfully runs the program, outputting "Perimeter of circle is:36.0" and "Area of circle is:108.0")

The window also displays a watermark for "Activate Windows" and the date "26-03-2021".

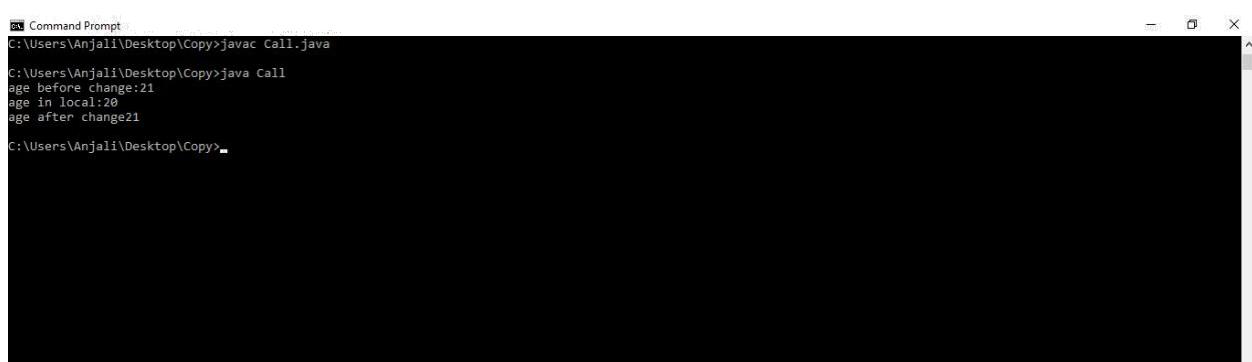
3. Write a JAVA program for the following

a. Call by value

```

class Call{
    int age=21;
    void change_age(int age){
        age=age+10;
    }
    System.out.println("age in local:"+age);
}
public static void main(String aa[]){
    Call c1=new Call();
    System.out.println("age before change:"+c1.age);
    c1.change_age(10); System.out.println("age after change"+c1.age);}}
```

Output:



The screenshot shows a Microsoft Windows Command Prompt window. The command history includes:

- javac Call.java
- java Call

The output of the program is displayed, showing the initial age (21), the age after changing it (31), and the final age (31) after printing the local variable.

b. Call by object

```
class Object{  
    int age=21;  
    void change_age(Object c1){  
        age=age+10;  
        System.out.println("age in local:"+age);}  
    public static void main(String aa []){  
        Object c1=new Object();  
        System.out.println("age before change:"+c1.age);  
        c1.change_age(c1);  
        System.out.println("age after change"+c1.age);}}}
```

Output:

```
Command Prompt  
C:\Users\Anjali\Desktop\Copy>javac Call.java  
C:\Users\Anjali\Desktop\Copy>java Call  
age before change:21  
age in local:20  
age after change21  
C:\Users\Anjali\Desktop\Copy>
```

4.Create a class Account with an instance variable balance (double). It should contain a constructor that initializes the balance, ensure that the initial balance is greater than 0.0. Acct details : Acct_Name, Acct_acctno, Acct_Bal, Acct_Address.

Create two methods namely credit and debit, getBalance.

The Credit adds the amount (passed as parameter) to balance and does not return any data. Debit method withdraws money from an Account. GetBalance displays the amount. Ensure that the debit amount does not exceed the Account's balance. In that case the balance should be left unchanged and the method should print a message indicating "Debit amount exceeded account balance".

Program:

```
import java.util.Scanner;
class Bank{
String Accountant_name;
int Account_number;
double ammount,withdraw,deposit;
Bank(String s,double a,int i,double w,double d){
Accountant_name=s;
ammount=a;
Account_number=i;
withdraw=w;
deposit=d;
void debit(double w){
if(ammount>w){
ammount=(ammount-w);
System.out.println("Total ammount after withdrawed "+withdraw+"is:"+ammount);
double M=(ammount-withdraw)+deposit;
System.out.println("Current Balance in Account:"+M); }
else{
System.out.println("Insufficent account balance");
System.out.println("Enter amount below:"+ammount); }
void credit(double d){
ammount=(ammount+d);
System.out.println("Accountant Name:"+Accountant_name);
System.out.println("Account Number:"+Account_number);
System.out.println("Total ammount after deposited "+deposit+"is:"+ammount); }
class Banking
{
public static void main(String args[])
{
Scanner s=new Scanner(System.in);
System.out.println("Enter accountant name:");
String name=s.nextLine();
System.out.println("Enter Account Number:");
int i=s.nextInt();
System.out.println("Enter amount"); double
a=s.nextDouble(); System.out.println("Enter withdraw
ammount"); double w=s.nextDouble();
System.out.println("Enter deposit ammount");
double d=s.nextDouble();
System.out.println("Account Details:");
Bank Ac=new Bank(name,a,i,w,d);
Ac.credit(d);
```

```
Ac.debit(w);}}
```

Output:

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `javac Bank.java` is run, followed by `java Banking`. The application prompts for account name ("Enter account name: Anjali"), account number ("Enter Account Number: 2039953552"), amount ("Enter amount 100000"), withdraw amount ("Enter withdraw ammount 5000"), and deposit amount ("Enter deposit ammount 20000"). It then displays account details ("Account Details: Accountant Name:Anjali Account Number:2039953552 Total ammount after deposited 20000.0is:120000.0 Total ammount after withdrewd 5000.0is:115000.0 Current Balance in Account:130000.0"). The taskbar at the bottom shows various pinned icons and the date/time (26-03-2021, 12:21). A watermark for "Activate Windows" is visible in the center of the screen.

```
C:\Users\Anjali\Desktop\Copy>javac Bank.java
C:\Users\Anjali\Desktop\Copy>java Banking
Enter account name:
Enter Account Number:
2039953552
Enter amount
100000
Enter withdraw ammount
5000
Enter deposit ammount
20000
Account Details:
Accountant Name:Anjali
Account Number:2039953552
Total ammount after deposited 20000.0is:120000.0
Total ammount after withdrewd 5000.0is:115000.0
Current Balance in Account:130000.0
C:\Users\Anjali\Desktop\Copy>
```

5. Write Java program for the following

a. Example for this operator and the use of this keyword.

```
class Operator{
Operator(int x,int y,int z){
this(x,y);
System.out.println("Value of z:"+z);
Operator(int x,int y){
this(x);
System.out.println("Value of y:"+y);
Operator(int x){
System.out.println("Value of z:"+x);
}
class Week5{
public static void main(String aa[]){
Operator e=new Operator(20,30,15);
}
```

Output:

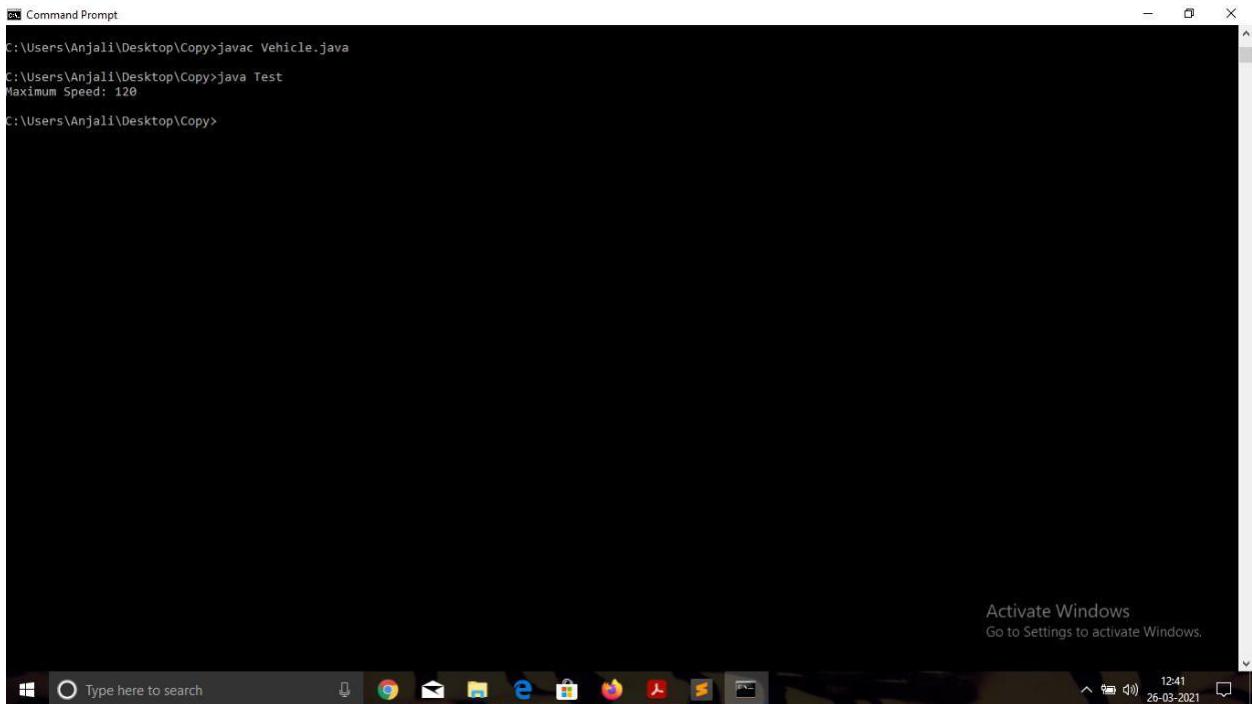
The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `javac Operator.java` is run, followed by `java Week5`. The application outputs the values of variables z, y, and x. The taskbar at the bottom shows pinned icons and the date/time (26-03-2021, 12:21).

```
C:\Users\Anjali\Desktop\Copy>javac Operator.java
C:\Users\Anjali\Desktop\Copy>java Week5
Value of z:20
Value of y:30
Value of z:15
C:\Users\Anjali\Desktop\Copy>
```

b. Example for super keyword.

```
class Vehicle{  
    int maxSpeed = 120;  
}  
class Car extends Vehicle{  
    int maxSpeed = 180;  
    void display(){  
        System.out.println("Maximum Speed: " + super.maxSpeed);  
    }  
}  
class Test{  
    public static void main(String[] args){  
        Car small = new Car();  
        small.display();  
    }  
}
```

Output:



```
Command Prompt  
C:\Users\Anjali\Desktop\Copy>javac Vehicle.java  
C:\Users\Anjali\Desktop\Copy>java Test  
Maximum Speed: 120  
C:\Users\Anjali\Desktop\Copy>
```

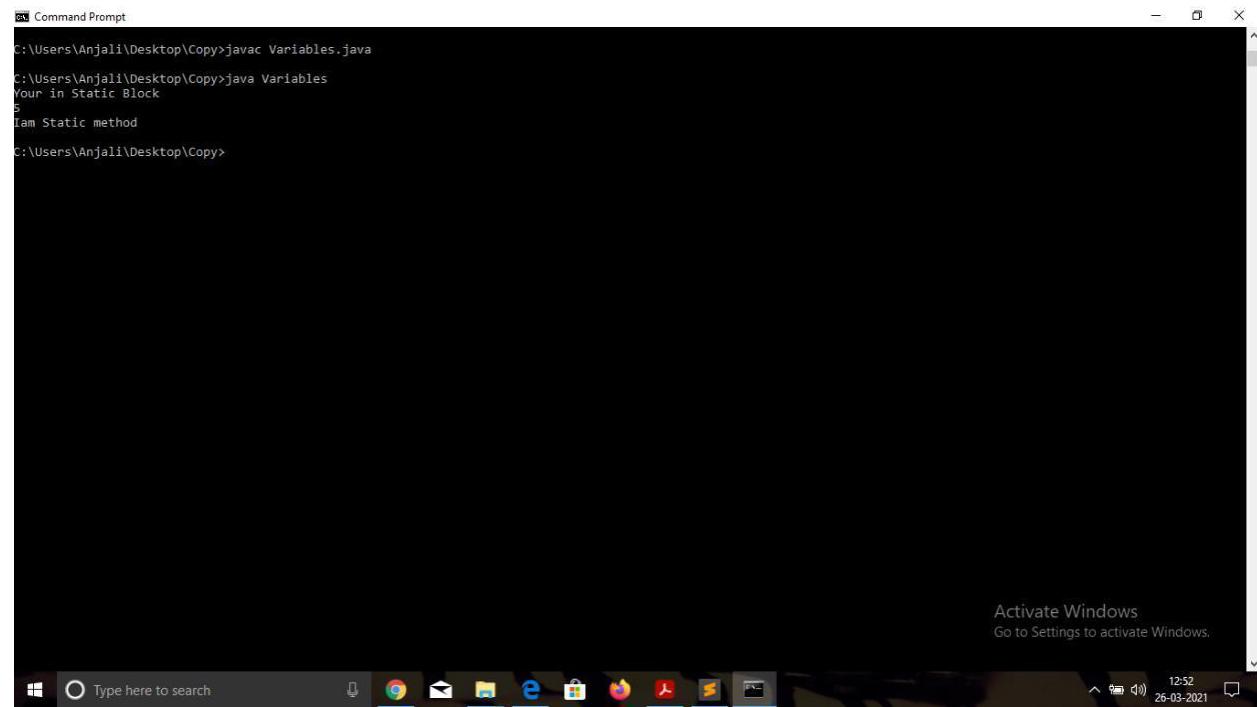
c. Example for static variables and methods.

```
class Variables{  
    static{  
        System.out.println("Your in Static Block");  
    }  
    static void display(){  
        System.out.println("Iam Static method");  
    }  
    static int a=5;  
    public static void main(String args[]){  
        System.out.println(Variables.a);  
        Variables.display();  
    }  
}
```

```
}
```

```
}
```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command entered is "javac Variables.java", followed by "java Variables". The output of the program is displayed, showing the static variable "s" being printed and the static method "printStatic" being called. The desktop background is visible behind the window, along with the taskbar at the bottom.

```
C:\Users\Anjali\Desktop\Copy>javac Variables.java
C:\Users\Anjali\Desktop\Copy>java Variables
Your in Static Block
5
Iam Static method
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

Type here to search

12:52 26-03-2021

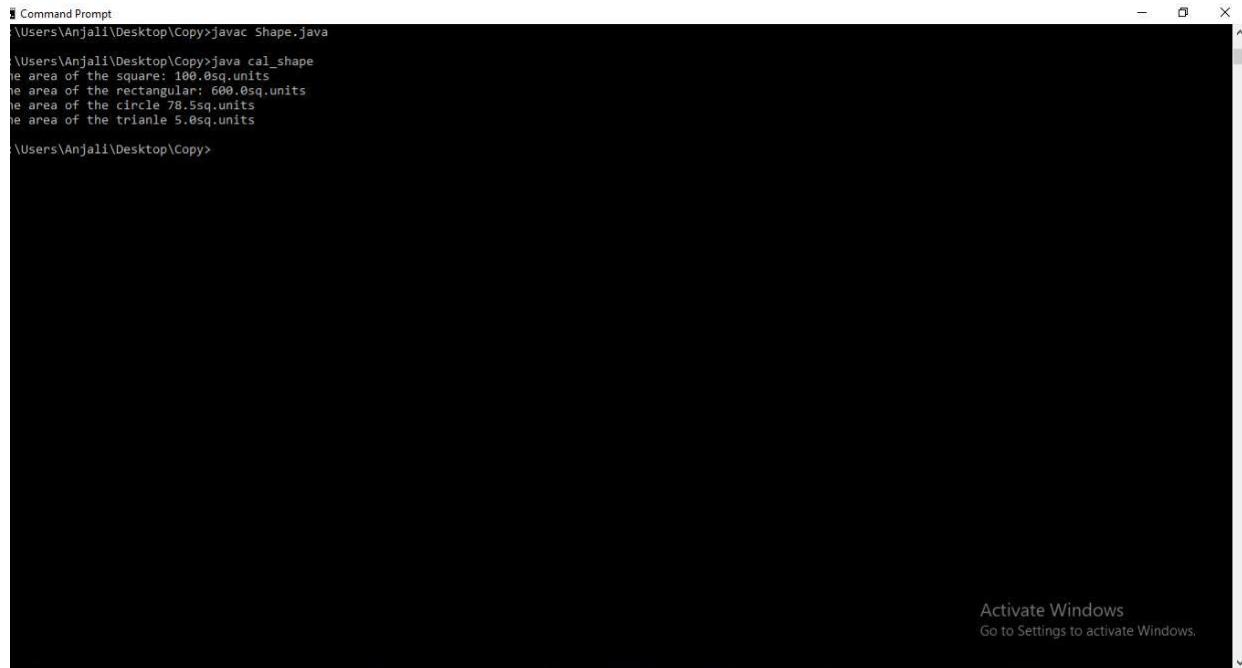
WEEK-6

1. Write a Java program to find Area and Circle of different shapes using polymorphism concept

Program:

```
class Shape{  
void area(float x){  
System.out.println("The area of the square: "+x*x+"sq.units");}  
void area(float x,float y){  
System.out.println("The area of the rectangular: "+x*y+"sq.units");}  
void Area(double x){  
double z=3.14*x*x;  
System.out.println("The area of the circle "+z+"sq.units");}  
}  
void Area(int x,int y){  
float r=(x*y)/2;  
System.out.println("The area of the trianle "+r+"sq.units");}  
class cal_shape{  
public static void main(String a[]){  
Shape s=new Shape();  
s.area(10);  
s.area(20,30);  
s.Area(5);  
s.Area(2,5);}}}
```

Output:



```
Command Prompt  
\Users\Anjali\Desktop\Copy>javac Shape.java  
\Users\Anjali\Desktop\Copy>java cal_shape  
The area of the square: 100.0sq.units  
The area of the rectangular: 600.0sq.units  
The area of the circle 78.5sq.units  
The area of the trianle 5.0sq.units  
\Users\Anjali\Desktop\Copy>
```

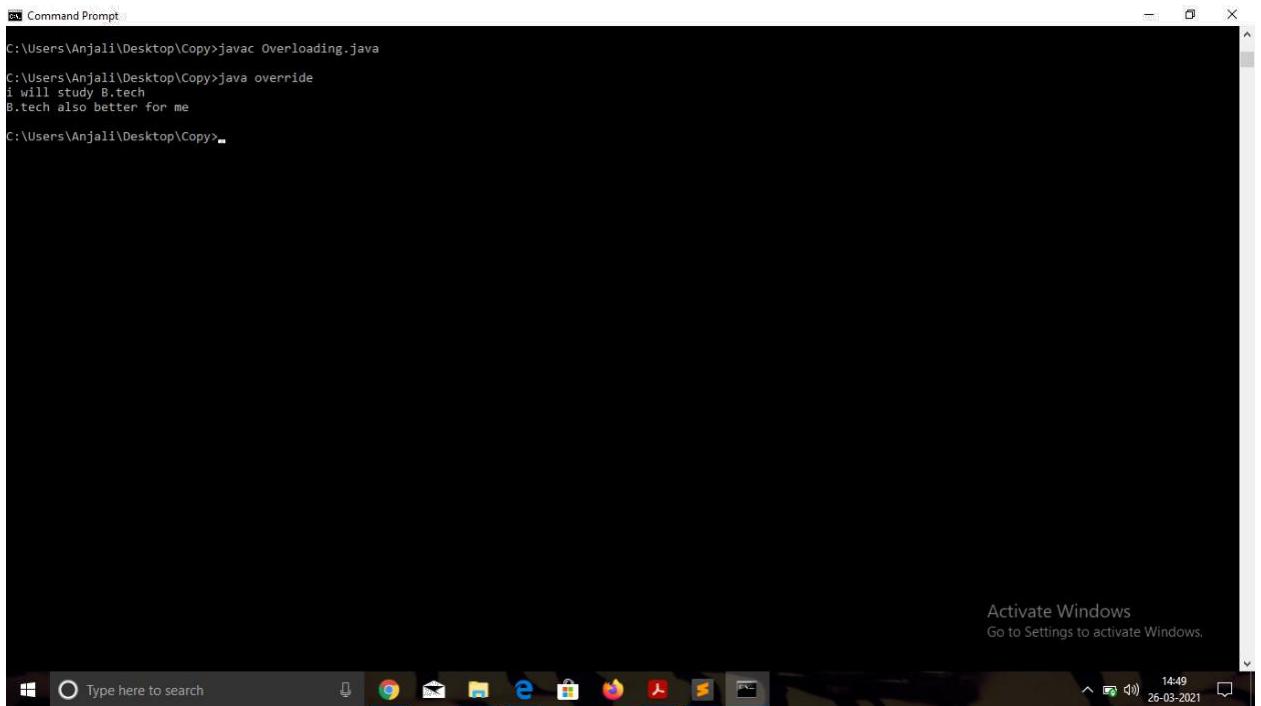
Activate Windows
Go to Settings to activate Windows.

2. Write a Java program which can give example of Method overloading and Overriding.

Program:

```
class Overloading{  
void m1(){  
System.out.println("you must study MBA");}  
void m2(){  
System.out.println("MBA is better to you");}  
class override extends Overloading{  
void m1(){  
System.out.println("i will study B.tech");}  
void m2(){  
System.out.println("B.tech also better for me");}  
public static void main(String args[]){  
override c1= new override();  
c1.m1();  
c1.m2();  
}}
```

Output:



```
Command Prompt  
C:\Users\Anjali\Desktop\Copy>javac Overloading.java  
C:\Users\Anjali\Desktop\Copy>java override  
i will study B.tech  
B.tech also better for me  
C:\Users\Anjali\Desktop\Copy>
```

3. Write an application to create a super class Employee with information first name & last name and methods getFirstName(), getLastNAme() derive the subclasses ContractEmployee and RegularEmployee with the information about department, designation & method displayFullName() , getDepartment(), getDesig() to print the salary and to set department name & designation of the corresponding sub-class objects respectively.

```
class Employee{
```

```
String first_name;
String last_name;
void getfirstname(String g){
first_name =g;
System.out.println("first name is:" +g);}
void getLastname(String h){
last_name =h;
System.out.println("last name is :" +h);}}}
class contractemp extends Employee{
String department ;
String designation;
String fullname;
void displayfullname(String a){
fullname = a;
System.out.println("full name of contract employ is :" +a);}
void department(String b){
department = b;
System.out.println("department of contract employ is :" +b);}
void designation(String c){
designation = c;
System.out.println("designation of contract employ is :" +c);}}}
class regularemp extends Employee{
String department ;
String designation;
String fullname;
void displayfullname(String d){
fullname = d;
System.out.println("regular employ full name is:" +d);}
void department(String e){
department = e;
System.out.println("department of regular employ is:" +e);}
void designation(String f){
designation =f;
System.out.println("designation of regular employ is:" +f);}}}
class employ{
public static void main(String args[]){
Employee e1= new Employee();
e1.getFirstname("Reddy");
e1.getLastname("Naidu");
contractemp c1= new contractemp();
c1.displayfullname("Anjali");
c1.department("management");
```

```

c1.designation("software");
regularemp r1= new regularemp();
r1.displayfullname("Arjun");
r1.department("web_dept");
r1.designation("software");}}
```

Output:

```

C:\Users\Anjali\Desktop\Copy>javac Employee.java
C:\Users\Anjali\Desktop\Copy>java employ
first name is:Reddy
last name is :Naidu
full name of contract employ is :Anjali
department of contract employ is :management
designation of contract employ is :software
regular employ full name is:Arjun
department of regular employ is:web_dept
designation of regular employ is:software
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

4. Derive sub-classes of ContractEmployee namely HourlyEmployee & WeeklyEmployee with information number of hours & wages per hour, number of weeks & wages per week respectively & method calculateWages() to calculate their monthly salary. Also override getDesig () method depending on the type of contract employee.

Program:

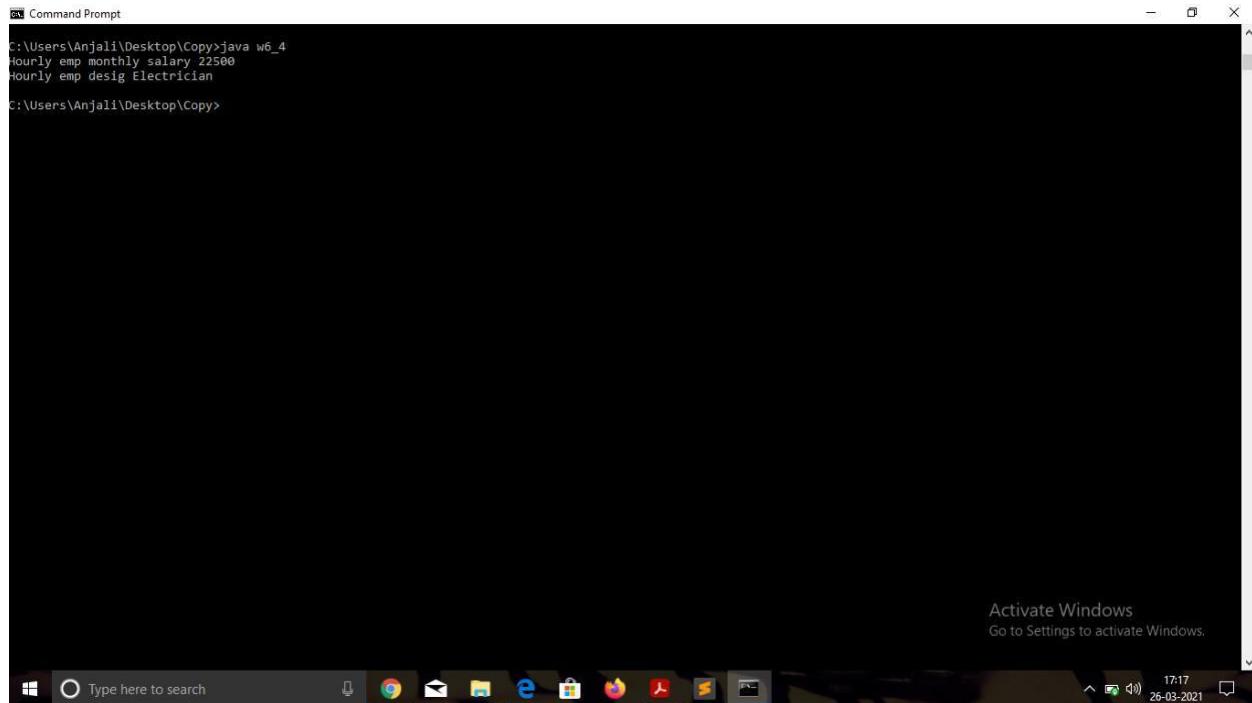
```

class contractemployee{
String desig;
double salary;
public void setDesignation(String desig){
this.desig=desig;}
public String getdesignation(){
return desig;
}}
class hourlyemp extends contractemployee{
int hours,wageph;
hourlyemp(String design,int hours,int wageph){
super.setDesignation(design);
this.hours=hours;
this.wageph=wageph;}
int calwages(){
```

```

return hours*wageph*30;
}
public String getDesignation(){
return super.desig;
}}
class Weeklyemp extends contractemployee{
int weeks,wagespwk;
Weeklyemp(String design,int weeks,int wagepwk){
super.setDesignation(design);
this.weeks=weeks;
this.wagespwk=wagespwk;
int calwages(){
return weeks*wagespwk*30;}
public String getDesignation(){
return super.desig;
}}
class w6_4{
public static void main(String a[]){
hourlyemp he=new hourlyemp("Electrician",10,75);
System.out.println("Hourly emp monthly salary "+he.calwages());
System.out.println("Hourly emp desig "+he.getdesignation());}}
```

Output:



5. Write an application to create a super class Vehicle with information vehicle number, insurance number, color and methods getConsumption() displayConsumption(). Derive the sub-classes TwoWheeler and FourWheeler with method maintenance() and average() to print the maintenance And average of vehicle.

Program:

```
class Vehicles{  
    int vno;  
    int ino;  
    String color;  
    double fuel;  
    void setinfo(int vno,int ino,String color){  
        this.vno=vno;  
        this.ino=ino;  
        this.color=color;}  
    void getconsumption(double fuel){  
        this.fuel=fuel;}  
    void displayconsumption(){  
        System.out.println("fuel consumption:"+fuel);}  
    void displayinfo(){  
        System.out.println("Vehicle "+vno);  
        System.out.println("Insurance no: "+ino);  
        System.out.println("color "+color);  
    }  
    class twowheeler extends Vehicles{  
        double avg;  
        double mt;  
        void setspecs(double avg,double mt){  
            this.avg=avg;  
            this.mt=mt;  
        }  
        double getmaintenance(){  
            return mt;  
        }  
        double getaverage(){  
            return avg;  
        }  
    }  
    class fourwheeler extends Vehicles{  
        double avg;  
        double mt;  
        void setspecs(double avg,double mt){  
            this.avg=avg;  
            this.mt=mt;  
        }  
    }
```

```

double getmaintenance(){
return mt;
}
double getaverage(){
return avg;
}
}
class vehiclemain{
public static void main(String args[]){
twowheeler tw=new twowheeler();
tw.setinfo(1490,123432,"Blue");
tw.getconsumption(5);
tw.setspecs(55,1200);
double m=tw.getmaintenance();
double av=tw.getaverage();
System.out.println("for two wheelers");
tw.displayinfo();
tw.displayconsumption();
System.out.println("maintenance: "+m);
System.out.println("average "+av);
fourwheeler fw=new fourwheeler();
fw.setinfo(9000,876646,"Silver");
fw.getconsumption(10);
fw.setspecs(20,5000);
m=fw.getmaintenance();
av=fw.getaverage();
System.out.println("for four wheelers");
fw.displayinfo();
fw.displayconsumption();
System.out.println("maintenance: "+m);
System.out.println("average "+av);
}}

```

Output:

```

C:\Users\Anjali\Desktop\Copy>javac Vehicles.java
C:\Users\Anjali\Desktop\Copy>java vehiclemain
For two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0
maintenance: 1200.0
average 55.0
for four wheelers
Vehicle 9000
Insurance no: 876646
color Silver
fuel consumption:10.0
maintenance: 5000.0
average 20.0
C:\Users\Anjali\Desktop\Copy>

```

6.Extend the above TwoWheeler class with methods getType() and getName() which gives the information about the type and the name of the company.Create sub-classes Geared and NonGeared with method average() to print the average of a geared and nongeared two wheeler.

```
class vehi{  
    int vno; int  
    ino; String  
    color; double  
    fuel;  
    void setinfo(int vno,int ino,String color){  
        this.vno=vno;  
        this.ino=ino;  
        this.color=color;  
    }  
    void getconsumption(double fuel){  
        this.fuel=fuel;}  
    void displayconsumption(){  
        System.out.println("fuel consumption:"+fuel);  
    }  
    void displayinfo(){  
        System.out.println("Vehicle "+vno);  
        System.out.println("Insurance no: "+ino);  
        System.out.println("color "+color);  
    }  
}  
class twowheeler extends vehi{  
    double avg;  
    double mt;  
    void setspecs(double avg,double mt){  
        this.avg=avg;  
        this.mt=mt;  
    }  
    double getmaintenance(){  
        return mt;}  
    double getaverage(){  
        return avg;  
    }  
}  
class geared extends twowheeler{  
    String type;  
    String name;  
    geared(String type,String name){  
        this.type=type;  
        this.name=name;}  
    String gettype(){
```

```

return type; }

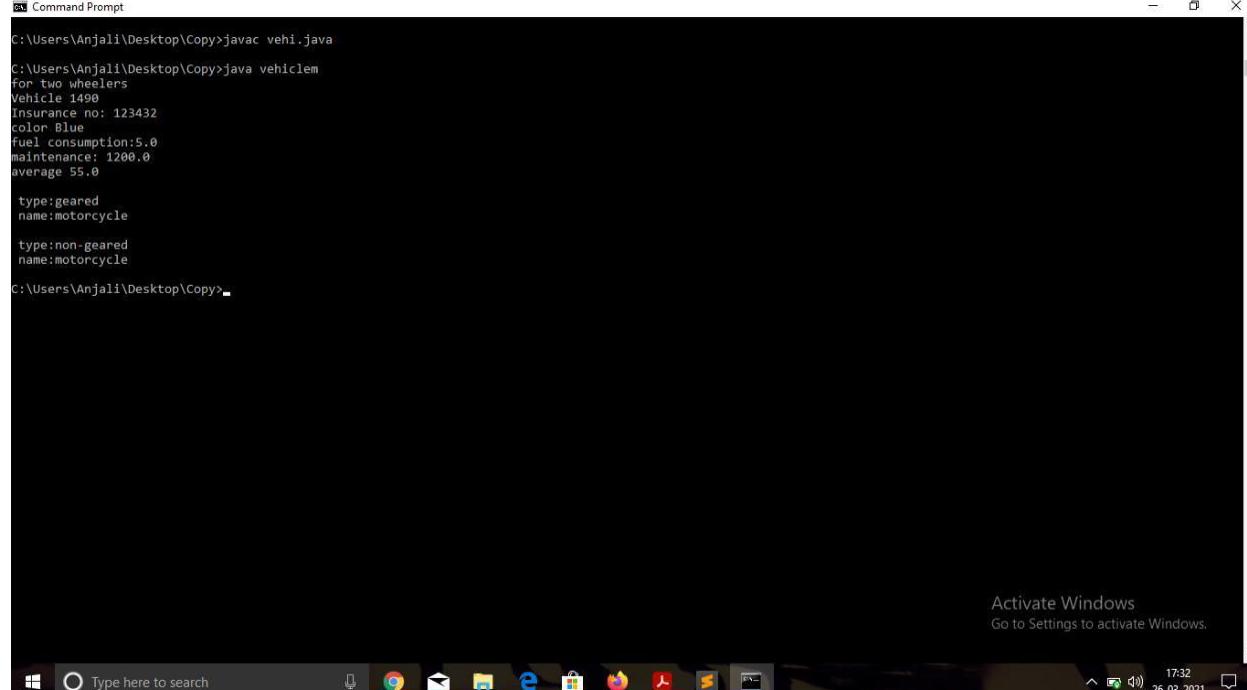
String getname(){
return name;
}

class nongeared extends twowheeler{
String type;
String name;
nongeared(String type,String name){
this.type=type;
this.name=name;
}
String gettype(){
return type;
}
String getname(){
return name;
}
}

class vehiclem{
public static void main(String args[]){
twowheeler tw=new twowheeler();
tw.setinfo(1490,123432,"Blue");
tw.getconsumption(5);
tw.setspecs(55,1200);
double m=tw.getmaintenance();
double av=tw.getaverage();
System.out.println("for two wheelers");
tw.displayinfo();

```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `java vehiclem` is run, and the output displays information about a vehicle. The output is as follows:

```

C:\Users\Anjali\Desktop\Copy>java vehiclem
for two wheelers
Vehicle 1490
Insurance no: 123432
color Blue
fuel consumption:5.0
maintenance: 1200.0
average 55.0

type:geared
name:motorcycle

type:non-geared
name:motorcycle

```

The window has a standard Windows title bar and taskbar at the bottom. The taskbar includes icons for File Explorer, Edge browser, Mail, and others. The system tray shows the date and time as 26-03-2021 17:32.

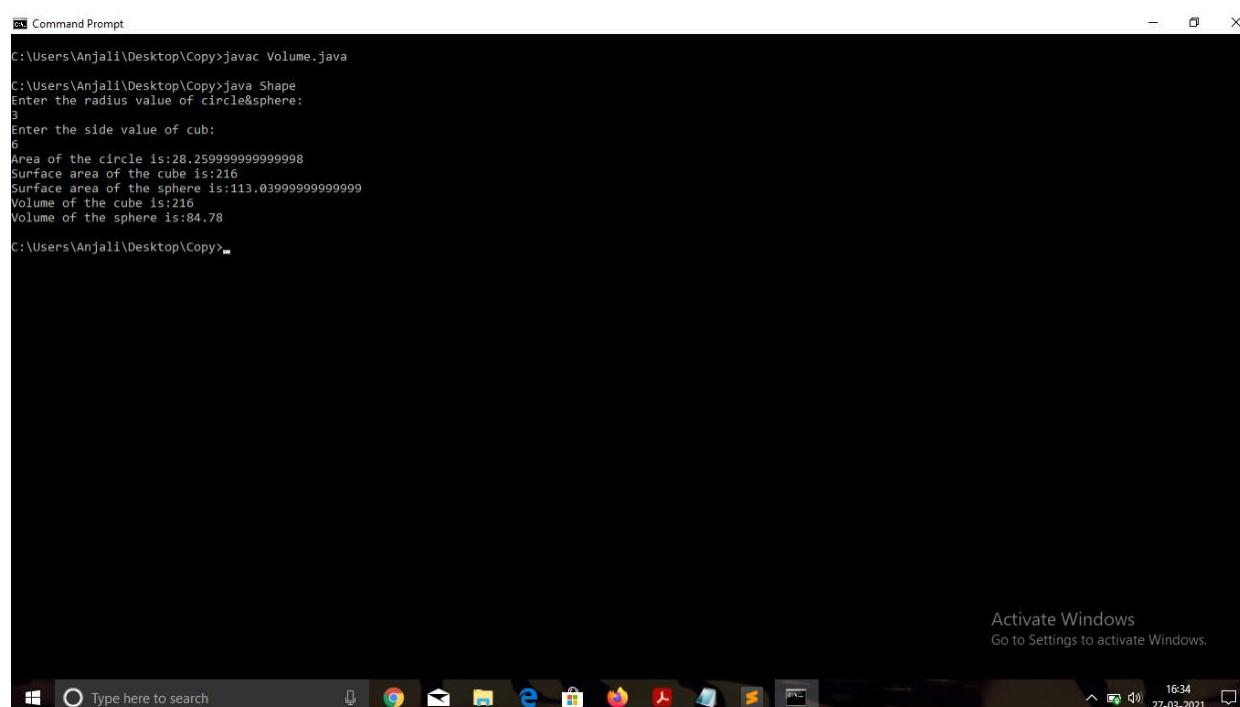
Week-VII

1.Create an abstract class Shape which calculates the area and volume of 2-d and 3-d shapes with methods getArea() and getVolume(). Reuse this class to calculate the area and volume of square ,circle ,cube and sphere.

Program:

```
import java.util.Scanner;
abstract class Volume{
    abstract void getArea(int r,int a);
    abstract void getVolume(int r,int a);
}
class Calculations extends Volume{
    public void getArea(int r,int a){
        System.out.println("Area of the circle is:" +(3.14*r*r));
        System.out.println("Surface area of the cube is:" +(6*a*a));
        System.out.println("Surface area of the sphere is:" +(4*3.14*r*r));
    }
    public void getVolume(int r,int a){
        System.out.println("Volume of the cube is:" +(a*a*a));
        System.out.println("Volume of the sphere is:" +((4/3)*3.14*r*r*r)); {}
    }
}
class Shape{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in); System.out.println("Enter the
        radius value of circle&sphere:"); int R=sc.nextInt();
        System.out.println("Enter the side value of cub."); int
        A=sc.nextInt();
        Volume sh=new Calculations();
        sh.getArea(R,A);
        sh.getVolume(R,A);
    }
}
```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `javac Volume.java` is run, followed by `java Shape`. The user is prompted to enter the radius for circle/sphere and the side for cube. Input values 3 and 6 are provided. The output displays the calculated area and volume for both shapes.

```
C:\Users\Anjali\Desktop\Copy>javac Volume.java
C:\Users\Anjali\Desktop\Copy>java Shape
Enter the radius value of circle&sphere:
3
Enter the side value of cub:
6
Area of the circle is:28.25999999999998
Surface area of the cube is:216
Surface area of the sphere is:113.0399999999999
Volume of the cube is:216
Volume of the sphere is:84.78
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

2.Create an abstract class Employee with methods getAmount() which displays the amount paid to employees. Reuse this class to calculate the amount to be paid to Weekly Employees and HourlyEmployee according to no. of hours and total hours for HourlyEmployee and no. of weeks and total weeks for WeeklyEmployee.

Program:

```
import java.util.Scanner;
abstract class Amount{
    abstract void getAmount(int m,int n);
}
class HE extends Amount{
    public void getAmount(int m,int wage){
        System.out.println("Amount paid to hourly employee:"+ (m*wage));
    }
}
class WE extends Amount{
    public void getAmount(int p,int Wage){
        System.out.println("Amount paid to Weekly employee:"+ (p*Wage));
    }
}
class Employee{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter no.of hours HourlyEmployee worked: ");
        int a=sc.nextInt();
        System.out.println("Enter Wage value of Hourly Employee:");
        int b=sc.nextInt();
        System.out.println("Enter no.of weeks WeeklyEmployee worked:");
        int c=sc.nextInt();
        System.out.println("Enter Wage value of Weekly Employee:");
        int d=sc.nextInt();
        Amount sc1= new HE();
        Amount sc2= new WE();
        sc1.getAmount(a,b);
        sc2.getAmount(c,d);
    }
}
```

Output:



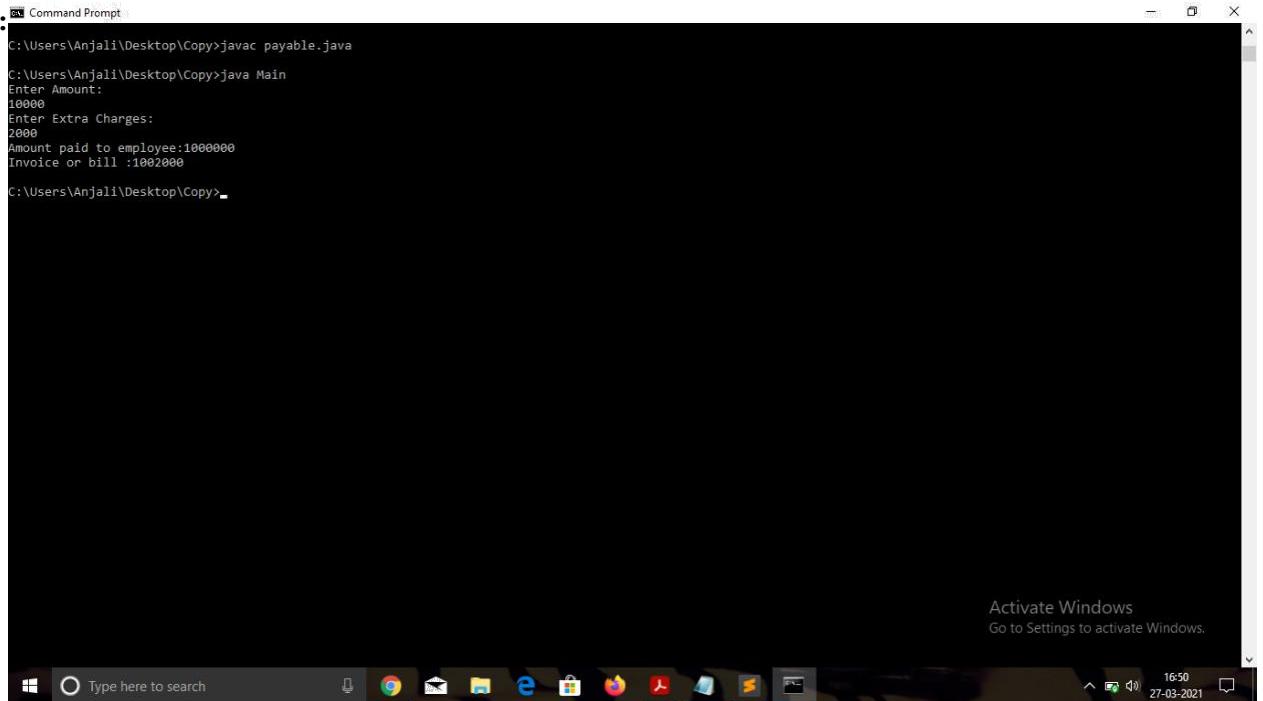
```
C:\Users\Anjali\Desktop\Copy>javac Amount.java
C:\Users\Anjali\Desktop\Copy>java Employee
Enter no.of hours HourlyEmployee worked:
5
Enter Wage value of Hourly Employee:
70
Enter no.of weeks WeeklyEmployee worked:
6
Enter Wage value of Weekly Employee:
140
Amount paid to hourly employee:350
Amount paid to Weekly employee:840
C:\Users\Anjali\Desktop\Copy>
```

3.Create an Interface payable with method getAmount ().Calculate the amount to be paid to Invoice and Employee by implementing Interface.

Program:

```
import java.util.Scanner;
interface payable{
void getAmount(int m,int n);
}
class cal implements payable{
public void getAmount(int m,int n){
System.out.println("Amount paid to employee:"+ (m*100));
System.out.println("Invoice or bill :" +((m*100)+n));}}
class Main{
public static void main(String args[]){
Scanner sc=new Scanner(System.in);
System.out.println("Enter Amount: ");
int a=sc.nextInt();
System.out.println("Enter Extra Charges: ");
int b=sc.nextInt();
payable pb=new cal();
pb.getAmount(a,b);
}}}
```

Output:



```
C:\Users\Anjali\Desktop\Copy>javac payable.java
C:\Users\Anjali\Desktop\Copy>java Main
Enter Amount:
10000
Enter Extra Charges:
2000
Amount paid to employee:1000000
Invoice or bill :1002000
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

4.Create an Interface Vehicle with method getColor(),getNumber(), getConsumption() calculate the fuel consumed, name and color for TwoWheeler and Four Wheeler By implementing interface Vehicle.

Program:

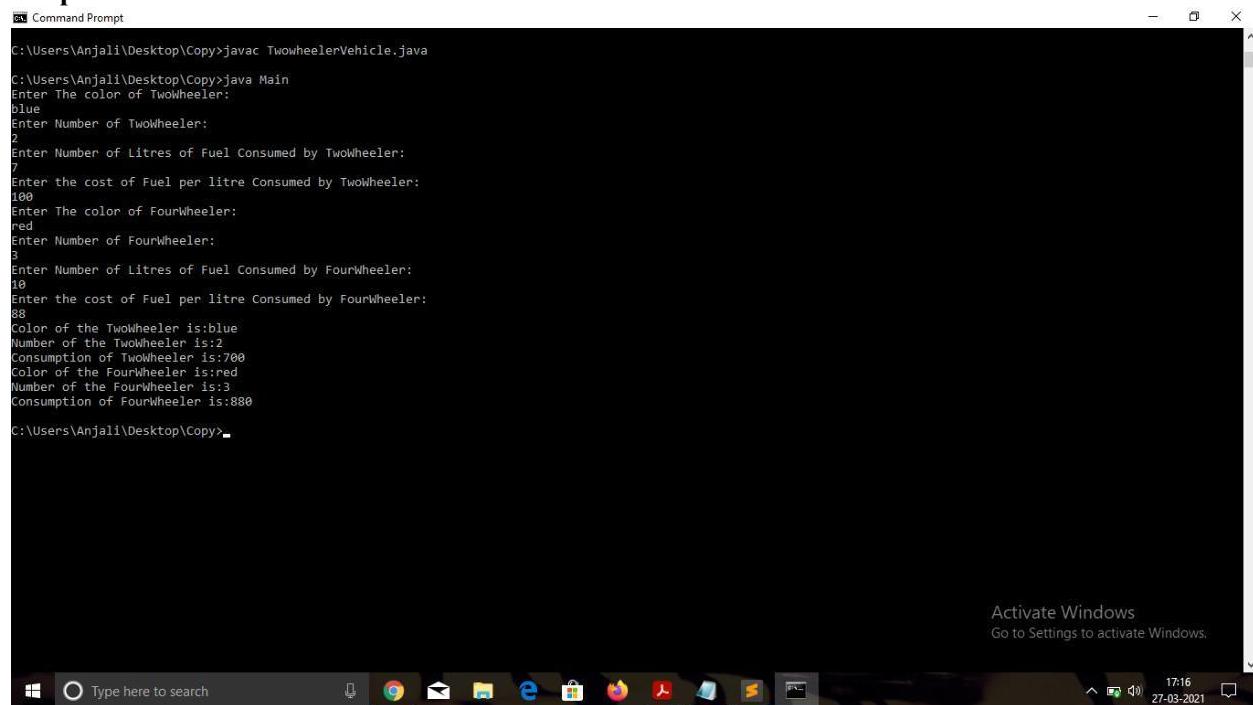
```
import java.util.Scanner; interface  
TwowheelerVehicle{  
    void getColor(String c);  
    void getNumber(int n);  
    void getConsumption(int l,int fuelcost);  
}  
class TwoWheeler implements TwowheelerVehicle{  
    public void getColor(String c){  
        System.out.println("Color of the TwoWheeler is:"+c);  
    }  
    public void getNumber(int n){  
        System.out.println("Number of the TwoWheeler is:"+n);  
    }  
    public void getConsumption(int l,int fuelcost){  
        System.out.println("Consumption of TwoWheeler is:"+ (l*fuelcost));  
    }  
}  
class FourWheeler implements TwowheelerVehicle{  
    public void getColor(String c){  
        System.out.println("Color of the FourWheeler is:"+c);  
    }  
    public void getNumber(int n){  
        System.out.println("Number of the FourWheeler is:"+n);  
    }  
    public void getConsumption(int l,int fuelcost){  
        System.out.println("Consumption of FourWheeler is:"+ (l*fuelcost));  
    }  
}  
class Main{  
    public static void main(String args[]){  
        Scanner sc=new Scanner(System.in);  
        System.out.println("Enter The color of TwoWheeler:");  
        String C=sc.nextLine();  
        System.out.println("Enter Number of TwoWheeler:");  
        int N=sc.nextInt();  
        System.out.println("Enter Number of Litres of Fuel Consumed by TwoWheeler:"); int  
        L=sc.nextInt();  
        System.out.println("Enter the cost of Fuel per litre Consumed by TwoWheeler:"); int  
        FC=sc.nextInt();  
        System.out.println("Enter The color of FourWheeler:"); String  
        C1=sc.next();
```

```

System.out.println("Enter Number of FourWheeler:"); int
N1=sc.nextInt();
System.out.println("Enter Number of Litres of Fuel Consumed by FourWheeler:"); int
L1=sc.nextInt();
System.out.println("Enter the cost of Fuel per litre Consumed by FourWheeler:"); int
FC1=sc.nextInt();
Two WheelerVehicle TW=new TwoWheeler();
Two WheelerVehicle FW=new FourWheeler();
TW.getColor(C);
TW.getNumber(N);
TW.getConsumption(L,FC);
FW.getColor(C1);
FW.getNumber(N1);
FW.getConsumption(L1,FC1);
}}

```

Output:



```

C:\Users\Anjali\Desktop\Copy>javac TwoWheelerVehicle.java
C:\Users\Anjali\Desktop\Copy>java Main
Enter The color of TwoWheeler:
blue
Enter Number of TwoWheeler:
2
Enter Number of Litres of Fuel Consumed by TwoWheeler:
7
Enter the cost of Fuel per litre Consumed by TwoWheeler:
100
Enter The color of FourWheeler:
red
Enter Number of FourWheeler:
3
Enter Number of Litres of Fuel Consumed by FourWheeler:
10
Enter the cost of Fuel per litre Consumed by FourWheeler:
88
Color of the Twowheeler is:blue
Number of the Twowheeler is:2
Consumption of Twowheeler is:700
Color of the Fourwheeler is:red
Number of the Fourwheeler is:3
Consumption of Fourwheeler is:880
C:\Users\Anjali\Desktop\Copy>.

```

**5.Create an Interface Fare with method getAmount() to get the amount paid for fare of travelling.
Calculate the fare paid by bus and train implementing interface Fare.**

Program:

```

import java.util.Scanner;
interface Fare{
    void getAmount(int K,int C);
}
class Bus implements Fare{
    public void getAmount(int K,int C){

```

```

System.out.println("Amount paid for travelling by Bus:"+ (K*C));
}
class Train implements Fare{
public void getAmount(int K,int C){
System.out.println("Amount paid for travelling by Train:"+ (K*C));
}}
class Main{
public static void main(String args[]){
Scanner sc=new Scanner(System.in); System.out.println("Enter No.of
Kilometers travelled by bus:"); int k=sc.nextInt();
System.out.println("Enter No.of Kilometers travelled by Train:"); int
k1=sc.nextInt();
System.out.println("Enter fare for Kilometer travelled by bus:"); int
f=sc.nextInt();
System.out.println("Enter fare for Kilometer travelled by Train:");
int f1=sc.nextInt();
Fare b=new Bus();
Fare t=new Train();
b.getAmount(k,f);
t.getAmount(k1,f1);
}}
class Train implements Fare{
public void getAmount(int K,int C){
System.out.println("Amount paid for travelling by Train:"+ (K*C));
}}
class Main{
public static void main(String args[]){
Scanner sc=new Scanner(System.in); System.out.println("Enter No.of
Kilometers travelled by bus:"); int k=sc.nextInt();
System.out.println("Enter No.of Kilometers travelled by Train:"); int
k1=sc.nextInt();
System.out.println("Enter fare for Kilometer travelled by bus:"); int
f=sc.nextInt();
System.out.println("Enter fare for Kilometer travelled by Train:");
int f1=sc.nextInt();
Fare b=new Bus();
Fare t=new Train();
b.getAmount(k,f);
t.getAmount(k1,f1);
}}

```

Output:

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `javac Fare.java` is run, followed by `java Main`. The program prompts for kilometers travelled by bus (43) and train (100), and fare per kilometer (5 and 10 respectively). It then calculates and prints the total amount paid for each mode of transport.

```
C:\Users\Anjali\Desktop\Copy>javac Fare.java
C:\Users\Anjali\Desktop\Copy>java Main
Enter No.of Kilometers travelled by bus:
43
Enter No.of Kilometers travelled by Train:
100
Enter fare for Kilometer travelled by bus:
5
Enter fare for Kilometer travelled by Train:
10
Amount paid for travelling by Bus:215
Amount paid for travelling by Train:1000
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

6.Create an Interface StudentFee with method getAmount(),getFirstName(),getLastname(), getAddress(), getContact(). Calculate the amount paid by the Hostler and NonHostler student by implementing interface Student Fee

Program:

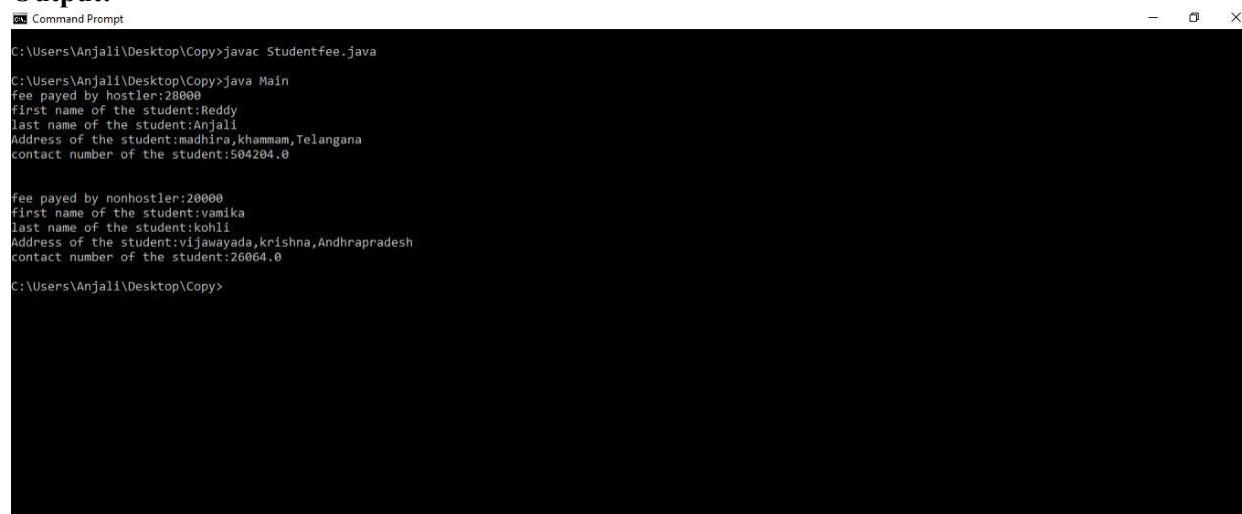
```
interface Studentfee{
    void getAmount(int clgfee);
    void getFirstname(String fname);
    void getLastname(String lname);
    void getAddress(String address);
    void getContact(double contact);
}

class Hostler implements Studentfee{
    public void getAmount(int clgfee){
        int hostelfee=5000;
        System.out.println("fee payed by hostler:"+ (clgfee+hostelfee));
    }
    public void getFirstname(String fname){
        System.out.println("first name of the student:"+fname);
    }
    public void getLastname(String lname){
        System.out.println("last name of the student:"+lname);
    }
    public void getAddress(String address){
        System.out.println("Address of the student:"+address);
    }
}
```

```

public void getContact(double contact){
System.out.println("contact number of the student:"+contact);
}}
class NonHostler implements Studentfee{
public void getAmount(int clgfee){
System.out.println("fee payed by nonhostler:"+clgfee));
}
public void getFirstname(String fname){
System.out.println("first name of the student:"+fname);
}
public void getLastname(String lname){
System.out.println("last name of the student:"+lname);
}
public void getAddress(String address){
System.out.println("Address of the student:"+address);
}
public void getContact(double contact){
System.out.println("contact number of the student:"+contact);
}}
class Main{
public static void main(String args[]){
Studentfee h= new Hostler();
h.getAmount(23000);
h.getFirstname("Reddy");
h.getLastname("Anjali");
h.getAddress("madhira,khammam,Telangana");
h.getContact(504204);
System.out.println("\n");
Studentfee h1= new NonHostler();
h1.getAmount(20000);
h1.getFirstname("vamika");
h1.getLastname("kohli");
h1.getAddress("vijawayada,krishna,Andhrapradesh");
h1.getContact(26064);}}
```

Output:



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command "javac Studentfee.java" is entered, followed by "java Main". The output displays the details for two students: one from the Hostler class and one from the NonHostler class.

```

C:\Users\Anjali\Desktop\Copy>javac Studentfee.java
C:\Users\Anjali\Desktop\Copy>java Main
fee payed by hostler:28000
first name of the student:Reddy
last name of the student:Anjali
Address of the student:madhira,khammam,Telangana
contact number of the student:504204.0

fee payed by nonhostler:20000
first name of the student:vamika
last name of the student:kohli
Address of the student:vijawayada,krishna,Andhrapradesh
contact number of the student:26064.0

C:\Users\Anjali\Desktop\Copy>
```

Week8

1. Write a Program to create your own package. Package should have more than two classes.
write a Program that uses the classes from the package.

Program:

The image consists of three vertically stacked screenshots of the Eclipse IDE interface, each showing a different Java package structure within a project named 'Week8'.

Screenshot 1 (Top): eclipse-workspace - Week8/src/A/First.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

Sample Week1 Week8 JRE System Library [JavaSE-15] src (default package) Both.java Second.java A First.java package-info.java B package-info.java Second.java C Both.java package-info.java

First.java

```
1 package A;
2
3 public class First {
4
5     public void displayFirst(String[] args) {
6         System.out.println("First Class");
7     }
8
9 }
10
11
```

Screenshot 2 (Middle): eclipse-workspace - Week8/src/B/Second.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

Sample Week1 Week8 JRE System Library [JavaSE-15] src (default package) Both.java Second.java A First.java package-info.java B package-info.java Second.java C Both.java package-info.java

Second.java

```
1 package B;
2
3 public class Second {
4     public void displaySecond(String[] args) {
5         System.out.println("Second Class");
6     }
7
8 }
9
10
```

Screenshot 3 (Bottom): eclipse-workspace - Week8/src/C/Both.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

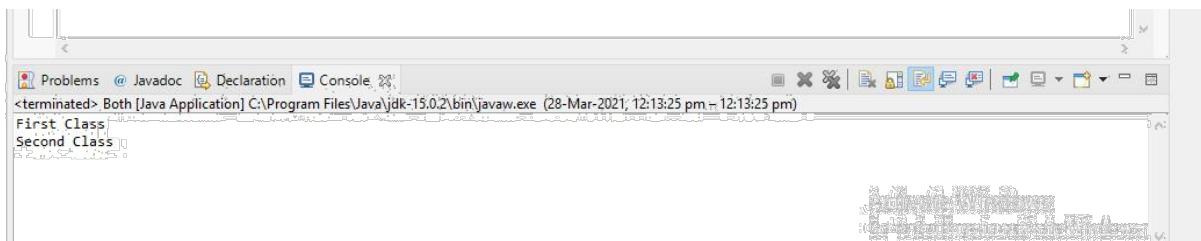
Package Explorer

Sample Week1 Week8 JRE System Library [JavaSE-15] src (default package) Both.java Second.java A First.java package-info.java B package-info.java Second.java C Both.java package-info.java

Both.java

```
1 package C;
2 import A.First;
3 import B.Second;
4
5 public class Both {
6
7     public static void main(String[] args) {
8         First f=new First();
9         f.displayFirst(args);
10        Second s=new Second();
11        s.displaySecond(args);
12    }
13
14 }
15
16
17 }
```

Output:



2.Create a package named org.shapes. Create some classes in the package representing some common geometric shapes like Square, Triangle, Circle and so on. write a Program that uses the classes from the package.

Program:

```
1 package org.shapes;
2
3 public class Triangle {
4
5     public static void istriangle() {
6         System.out.println("This is Triangle");
7     }
8 }
9
10
11 }
```

The screenshot shows the Eclipse IDE interface with the 'Package Explorer' view on the left and the 'Triangle.java' file in the center. The 'Package Explorer' shows a project structure with packages 'Week1', 'Week8', and 'src' containing various Java files like 'Circle.java', 'Classes.java', 'Classess.java', 'package-info.java', 'Square.java', and 'Triangle.java'. The 'Triangle.java' file is open in the editor, displaying the provided Java code. The code defines a package 'org.shapes' and a class 'Triangle' with a static method 'istriangle()' that prints 'This is Triangle' to the console.

eclipse-workspace - Week8/src/org/shapes/Circle.java - Eclipse IDE

```
File Edit Source Refactor Navigate Search Project Run Window Help  
Package Explorer X package-info.java Square.java Triangle.java Circle.java Classes.java  
1 package org.shapes;  
2  
3 public class Circle {  
4  
5     public static void iscircle() {  
6         System.out.println("This is circle");  
7     }  
8  
9 }  
10  
11
```

eclipse-workspace - Week8/src/org/shapes/Classess.java - Eclipse IDE

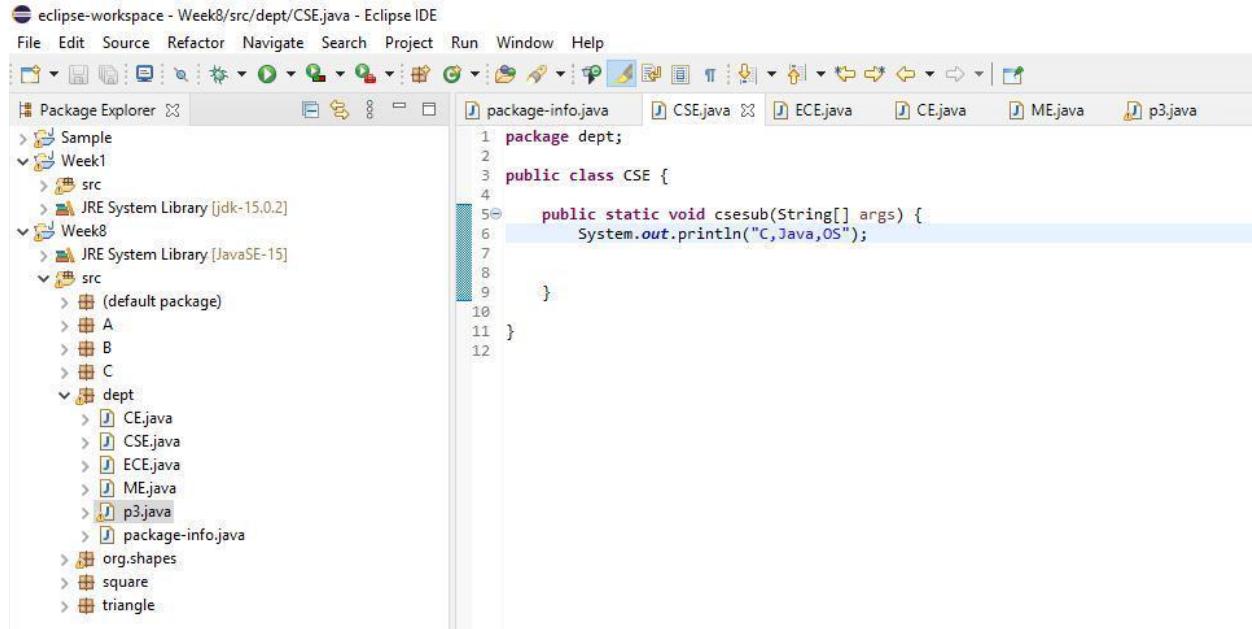
```
File Edit Source Refactor Navigate Search Project Run Window Help  
Package Explorer X package-info.java Square.java Triangle.java Circle.java Classes.java  
1 package org.shapes;  
2  
3 import org.shapes.Square;  
4 import org.shapes.Triangle;  
5 import org.shapes.Circle;  
6 public class Classess {  
7  
8     public static void main(String[] args) {  
9         Square s=new Square();  
10        s.issquare();  
11        Triangle t=new Triangle();  
12        t.istriangle();  
13        Circle c=new Circle();  
14        c.iscircle();  
15    }  
16  
17 }  
18  
19 }
```

Output:

```
Problems @ Javadoc Declaration Console X  
<terminated> Classess [Java Application] C:\Program Files\Java\jdk-15.0.2\bin\javaw.exe (28-Mar-2021, 1:45:04 pm – 1:45:05 pm)  
This is square.  
This is Triangle.  
This is circle.
```

3. Write a Java program to create a package called dept. Create four classes as CSE, ECE, ME and CE add methods in each class which can display subject names of your respect year. access this package classes from main class

Program:



The screenshot shows the Eclipse IDE interface. The left side features the Package Explorer view, which displays a project structure. The 'src' folder under 'Week8' contains packages 'dept' (which further contains 'CE.java', 'CSE.java', 'ECE.java', 'ME.java', 'p3.java', and 'package-info.java') and other packages like 'org.shapes', 'square', and 'triangle'. The right side shows the code editor with the 'CSE.java' file open. The code defines a package 'dept' and a class 'CSE' with a static method 'csesub' that prints 'C,Java,OS'.

```
1 package dept;
2
3 public class CSE {
4
5     public static void csesub(String[] args) {
6         System.out.println("C,Java,OS");
7     }
8
9 }
10
11 }
```

eclipse-workspace - Week8/src/dept/ECE.java - Eclipse IDE

```
File Edit Source Refactor Navigate Search Project Run Window Help  
Package Explorer CSE.java ECE.java CE.java ME.java p3.java  
Sample Week1 src JRE System Library [jdk-15.0.2] Week8 JRE System Library [JavaSE-15]  
Week8 src (default package) A B C dept CE.java CSE.java ECE.java ME.java p3.java package-info.java org.shapes square triangle  
1 package dept;  
2  
3 public class ECE {  
4  
5     public static void ecesub(String[] args) {  
6         System.out.println("Signals,AEC,Networks");  
7     }  
8  
9 }  
10
```

eclipse-workspace - Week8/src/dept/CE.java - Eclipse IDE

```
File Edit Source Refactor Navigate Search Project Run Window Help  
Package Explorer CSE.java ECE.java CE.java ME.java p3.java  
Sample Week1 src JRE System Library [jdk-15.0.2] Week8 JRE System Library [JavaSE-15]  
Week8 src (default package) A B C dept CE.java CSE.java ECE.java ME.java p3.java package-info.java org.shapes square trianqle  
1 package dept;  
2  
3 public class CE {  
4  
5     public static void cesub(String[] args) {  
6         System.out.println("Engineering Drawing,Strength of materials");  
7     }  
8  
9 }  
10
```

eclipse-workspace - Week8/src/dept/ME.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer CSE.java ECE.java CE.java ME.java p3.java

```
1 package dept;
2
3 public class ME {
4
5     public static void mesub(String[] args) {
6         System.out.println("fluid mechanics,workshop");
7     }
8
9 }
10 }
```

eclipse-workspace - Week8/src/dept/p3.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer CSE.java ECE.java CE.java ME.java p3.java

```
1 package dept;
2 import dept.CSE;
3 import dept.ECE;
4 import dept.CE;
5 import dept.ME;
6
7 public class p3 {
8
9     public static void main(String[] args) {
10         CSE c=new CSE();
11         c.csesub(args);
12         ECE e=new ECE();
13         e.ecesub(args);
14         CE ce=new CE();
15         ce.cesub(args);
16         ME me=new ME();
17         me.mesub(args);
18     }
19
20 }
21
22 }
```

Problems @ Javadoc Declaration Console

<terminated> p3 [Java Application] C:\Program Files\Java\jdk-15.0.2\bin\javaw.exe (28-Mar-2021, 3:38:27 pm – 3:38:28 pm)

C,Java,OS
Signals,AEC,Networks
Engineering Drawing,Strength of materials
fluid mechanics,workshop

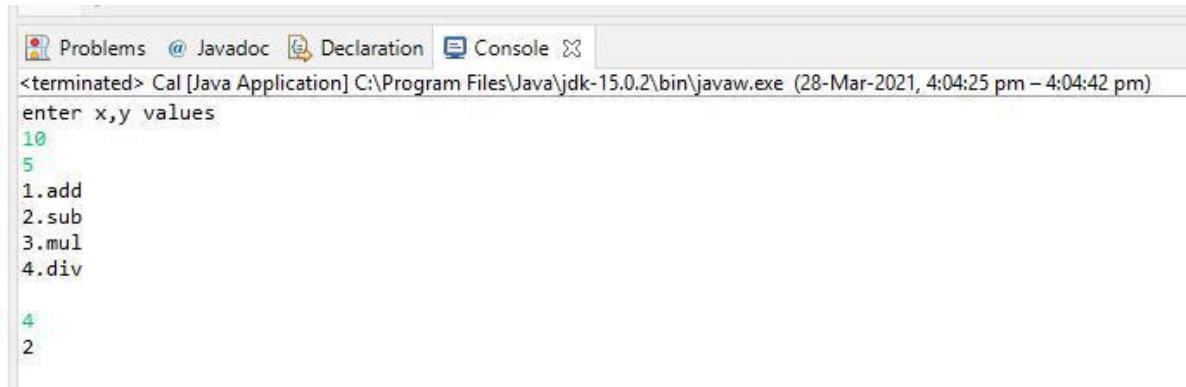
4. Write a Calculator program : Include all calculator operations in as classes in a Package “Calculator” and import in to main class.

Program:

```
import java.util.Scanner;
public class Cal {

    public static void add(int x,int y) {
        System.out.println(x+y);
    }
    public static void sub(int x,int y) {
        System.out.println(x-y);
    }
    public static void mul(int x,int y) {
        System.out.println(x*y);
    }
    public static void div(int x,int y) {
        System.out.println(x/y);
    }
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int x,y;
        System.out.println("enter x,y values");
        x=sc.nextInt();
        y=sc.nextInt();
        System.out.println("1.add\n2.sub\n3.mul\n4.div\n");
        ch=sc.nextInt();
        switch(ch) {
            case 1:
                add(x,y);
                break;
            case 2: sub(x,y);
                break;
            case 3: mul(x,y);
                break;
            case 4: div(x,y);
                break;
            default:System.out.println("press the crct number");
        }
    }
}
```

Output:



The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the following text:

```
<terminated> Cal [Java Application] C:\Program Files\Java\jdk-15.0.2\bin\javaw.exe (28-Mar-2021, 4:04:25 pm – 4:04:42 pm)
enter x,y values
10
5
1.add
2.sub
3.mul
4.div

4
2
```

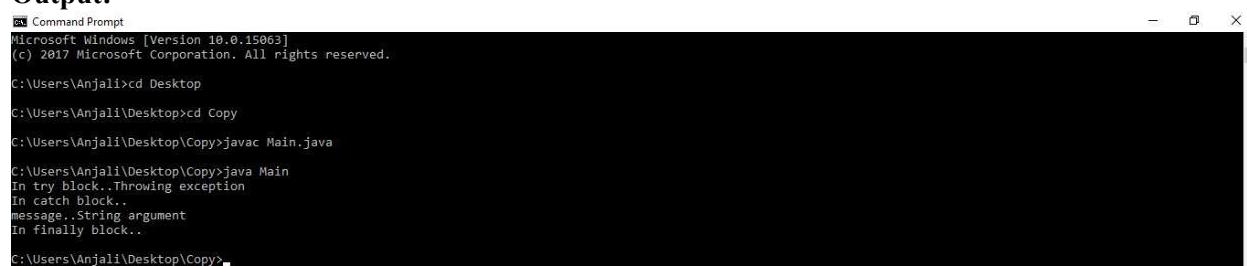
Week-IX

1.Program for demonstrating the use of throw, throws & finally - Create a class with a main() that throws an object of class Exception inside a try block. Give the constructor for Exception a String argument. Catch the exception inside a catch clause and print the String argument. Add a finally clause and print a message to prove you were there.

```
public class Main{
```

```
    public static void main(String[] args) {
        try{
            System.out.println("In try block..Throwing exception");
            throw new Exception("String argument");
        }
        catch(Exception e){
            System.out.println("In catch block..");
            System.out.println("message.." +e.getMessage());
        }
        finally{
            System.out.println("In finally block..");
        }}}
```

Output:



The screenshot shows a Windows Command Prompt window. The command `java Main` is run, and the output is as follows:

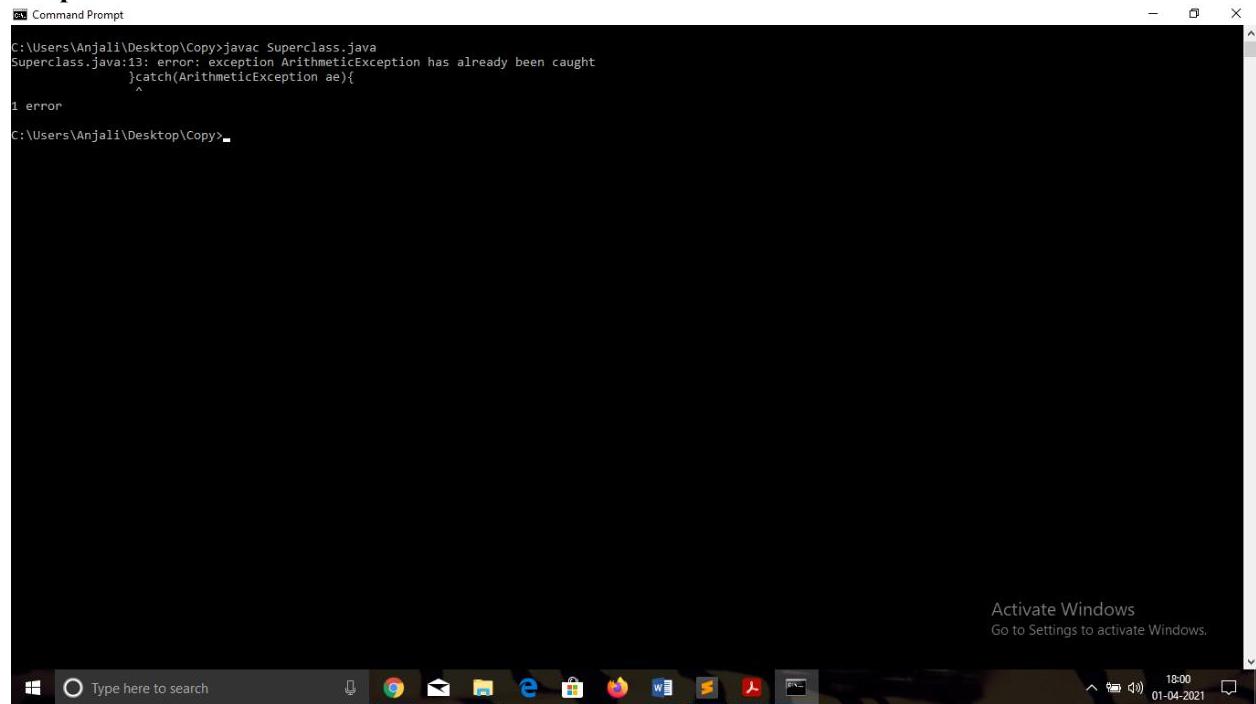
```
C:\Users\Anjali>cd Desktop
C:\Users\Anjali\Desktop\Copy>javac Main.java
C:\Users\Anjali\Desktop\Copy>java Main
In try block..Throwing exception
In catch block..
message..String argument
In finally block..
```

2. Write a program that shows that the order of the catch blocks is important. If you try to catch a superclass exception type before a subclass type, the compiler should generate errors.

Program:

```
import java.util.Scanner;
public class Superclass{
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        try{
            System.out.println("Value of A = ");
            int a = sc.nextInt();
            System.out.println("Value of B = ");
            int b = sc.nextInt();
            System.out.println("Division is = "+a/b);
        }catch(Exception e){
            System.out.println("Catch block..."+e.getMessage());
        }catch(ArithmmeticException ae){
            System.out.println("Arithmetic catch block..."+ae.getMessage());
        }
    }
}
```

Output:



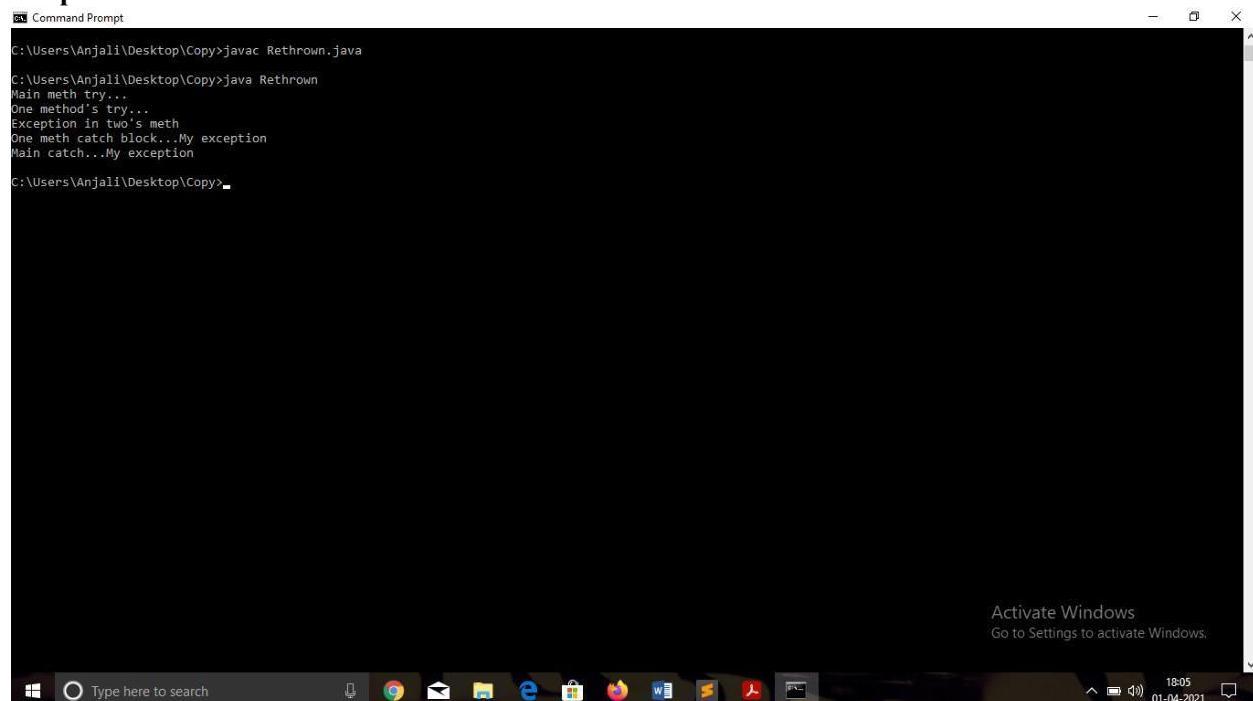
The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command entered is "javac Superclass.java". The output shows a single error message: "Superclass.java:13: error: exception ArithmmeticException has already been caught >catch(ArithmmeticException ae){ ^ 1 error C:\Users\Anjali\Desktop\Copy>". At the bottom right of the window, there is a watermark that says "Activate Windows Go to Settings to activate Windows." The taskbar at the bottom of the screen includes icons for File Explorer, Edge browser, Task View, and others, along with system status icons like battery level and date/time (18:00 01-04-2021).

3. Write a program to rethrow an exception – Define methods one() & two(). Method two() should initially throw an exception. Method one() should call two(), catch the exception and rethrow it. Call one() from main() and catch the rethrown

Program:

```
import java.util.Scanner;
public class Rethrown{
    void one(){
        try{
            System.out.println("One method's try...");
            two();
        }catch(NullPointerException npe){
            System.out.println("One meth catch block..."+npe.getMessage());
            throw npe;
        }
    }
    void two(){
        System.out.println("Exception in two's meth"); throw new
        NullPointerException("My exception");
    }
    public static void main(String[] args) {
        Rethrown week9_3 = new Rethrown();
        try{
            System.out.println("Main meth try...");
            week9_3.one();
        }catch(NullPointerException npe){
            System.out.println("Main catch..."+npe.getMessage());
        }}}
```

Output:



```
C:\Users\Anjali\Desktop\Copy>javac Rethrown.java
C:\Users\Anjali\Desktop\Copy>java Rethrown
Main meth try...
One method's try...
Exception in two's meth
One meth catch block...My exception
Main catch...My exception
```

Activate Windows
Go to Settings to activate Windows.

4.Exception Handling program for ClassNotFoundException--thrown if a program can not find a class it depends at runtime (i.e., the class's ".class" file cannot be found or was removed from the CLASSPATH).

Program:

```
public class ExceptionHa{  
    public static void main(String[] args) { try{  
        Class.forName("Unavailable class!!!");  
    }catch(ClassNotFoundException cnfe){  
        System.out.println("In exception block..."+cnfe.getMessage());  
    }}}
```

Output:

```
C:\Users\Anjali\Desktop\Copy>javac ExceptionHa.java  
C:\Users\Anjali\Desktop\Copy>java ExceptionHa  
In exception block..Unavailable class!!!  
C:\Users\Anjali\Desktop\Copy>
```

Activate Windows
Go to Settings to activate Windows.

Type here to search

18:16 01-04-2021

5.Exception Handling program for NumberFormatException--thrown if a program is attempting to convert a string to a numerical datatype, and the string contains inappropriate characters (i.e. 'z' or 'Q').

Program:

```
import java.util.Scanner;  
public class Characters{  
    public static void main(String[] args) {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter string = ");  
        String str = sc.next();  
        try{  
            int i = Integer.valueOf(str);  
            System.out.println("int value of string = "+i);  
            Integer num = new Integer(str);  
        }
```

```

        System.out.println("Int value of string = "+num);
    }catch(NumberFormatException nfe){
        System.out.println("number format exception
catch.. "+nfe.getMessage());
    }
}

```

Output:

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command `java Characters` is run twice. In the first run, the user enters the string "anjali3453" and the program outputs "number format exception catch..For input string: "anjali3453"" followed by the correct integer conversion. In the second run, the user enters the string "436" and the program outputs "int value of string = 436" followed by "Int value of string = 436". The taskbar at the bottom shows various application icons.

```

C:\Users\Anjali\Desktop\Copy>java Characters
Enter string =
anjali3453
number format exception catch..For input string: "anjali3453"
C:\Users\Anjali\Desktop\Copy>java Characters
Enter string =
436
int value of string = 436
Int value of string = 436
C:\Users\Anjali\Desktop\Copy>

```

6.Create your own exception class using the extends keyword. Write a constructor for this class that takes a String argument and stores it inside the object with a String reference. Write a method that prints out the stored String. Create a try- catch clause to exercise your new exception.

Program:

```

class MyException extends Exception{ String
    message; MyException(String s){
        super(s);
        message = this.getMessage();
    }
    public class Keyword{
        public static void main(String[] args) {
            MyException my = new MyException("USER defined exception...");
            try{
                throw my;
            }catch(MyException me){
                System.out.println("Using getMessage()..."+me.getMessage());
                System.out.println("Using string reference..."+me.message);
            }
        }
    }
}

```

Output:

The screenshot shows a Windows operating system interface. At the top is a black Command Prompt window titled "Command Prompt". The window contains the following text:
C:\Users\Anjali\Desktop\Copy>javac Keyword.java
C:\Users\Anjali\Desktop\Copy>java Keyword
Using getMessage()...USER defined exception...
Using string reference...USER defined exception...
C:\Users\Anjali\Desktop\Copy>
Below the window, the Windows taskbar is visible, featuring the Start button, a search bar with the placeholder "Type here to search", and icons for various applications like Google Chrome, Mail, and File Explorer. On the far right of the taskbar, it shows the date and time as "18:50 01-04-2021". A watermark for "Activate Windows" is present in the center of the screen.

Week-X

1. Write a program to create MyThread class with run() method and then attach a thread to this MyThread class object.

Program:

```
public class MyThread extends Thread{  
    public void run(){  
        int i=0;  
        while(true){  
            System.out.println("Threadclass:"+i++);  
        }  
    }  
    public static void main(String args[]){  
        MyThread m=new MyThread();  
        m.start();  
        int i=0;  
        while(true){  
            System.out.println("Mainclass:"+i++);  
        }  
    }  
}
```

Output:

```
Microsoft Windows [Version 10.0.15063]  
(c) 2017 Microsoft Corporation. All rights reserved.  
C:\Users\Anjali>cd Desktop  
C:\Users\Anjali\Desktop>cd Copy  
C:\Users\Anjali\Desktop\Copy>javac MyThread.java  
C:\Users\Anjali\Desktop\Copy>java MyThread  
Mainclass:0  
Mainclass:1  
Mainclass:2  
Mainclass:3  
Mainclass:4  
Mainclass:5  
Mainclass:6  
Mainclass:7  
Mainclass:8  
Mainclass:9  
Mainclass:10  
Mainclass:11  
Mainclass:12  
Mainclass:13  
Mainclass:14  
Mainclass:15  
Mainclass:16  
Mainclass:17  
Mainclass:18  
Mainclass:19  
Mainclass:20  
Threadclass:0  
Threadclass:1  
Threadclass:2  
Threadclass:3  
Threadclass:4  
Threadclass:5  
Threadclass:6  
Threadclass:7  
Threadclass:8  
Threadclass:9  
Threadclass:10  
Threadclass:11  
Threadclass:12  
Threadclass:13  
Threadclass:14  
Threadclass:15  
Threadclass:16  
Threadclass:17  
Threadclass:18  
Threadclass:19  
Threadclass:20
```

2. Write a program where the consume thread checks the data production status [is over or not] for every 10 ms.

Program:

```
import java.util.Scanner;
public class ConsumerThread extends Thread{ Scanner
sc=new Scanner(System.in);
public void checkprostatus(){
System.out.println("Production status:not over:");
}
public void run(){
int i=0;
while(true){
checkprostatus();
try{
Thread.sleep(10);
}
catch(Exception e){
System.out.println(e);
}}}
public static void main(String args[]){
ConsumerThread c=new ConsumerThread(); c.start();
}}
```

Output:

3. Write a Program using Threads to simulate a traffic light. The Signal lights should glow after each 10 second, one by one. For example: Firstly Red, then after 10 seconds, red will be put to off and yellow will start glowing and then accordingly green.

Program:

```
public class TrafficLightsThread extends Thread{ public  
void wait(int x){  
try{  
Thread.sleep(x);  
}  
catch(Exception e){  
System.out.println(e);  
}  
}  
public void run(){  
System.out.println("Red light glows");  
wait(100);  
System.out.println("Red light off");  
System.out.println("Orange light glows");  
wait(100);  
System.out.println("Orange light off");  
System.out.println("Green light glows");  
wait(100);  
System.out.println("Green light off");  
wait(300);  
}  
public static void main(String[] args){  
TrafficLightsThread t=new TrafficLightsThread();  
t.start();  
}}
```

Outputs:

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The window displays the following text:

```
Microsoft Windows [Version 10.0.15063]  
(c) 2017 Microsoft Corporation. All rights reserved.  
C:\Users\Anjali>cd Desktop  
C:\Users\Anjali\Desktop>cd Copy  
C:\Users\Anjali\Desktop\Copy>javac TrafficLightsThread.java  
C:\Users\Anjali\Desktop\Copy>java TrafficLightsThread  
Red light glows  
Red light off  
Orange light glows  
Orange light off  
Green light glows  
Green light off
```

The window has standard Windows UI elements like minimize, maximize, and close buttons at the top right. At the bottom, there's a taskbar with icons for various applications like File Explorer, Edge, and others. A status bar at the bottom right shows the date and time: "19:33 01-04-2021".

4. Write a Program using Threads for the following case study: Movie Theatre To watch a movie the following process is to be followed, at first get the ticket then show the ticket. Assume that N persons are trying to enter the Theatre hall all at once, display their sequence of entry into theater.

Note: The person should enter only after getting a ticket and showing it to the boy.

Program:

```
import java.util.Scanner;
class entrance{
    synchronized public void enter(int y){
        System.out.println("Person"+y+"showed the ticket to the boy");
        System.out.println("Person"+y+"ente red the Theatre");
    }
}
class person extends Thread{
    int y;
    entrance s;
    person(int x,entrance e){
        s=e;
        y=x;
    }
    public void buyticket(){
        System.out.println("Person"+y+"bought the ticket");
    }
    public void run(){
        buyticket();
        s.enter(y);
    }
}
public class TheaterThread{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter the no of persons:");
        int n=sc.nextInt();
        person p[]=new person[n+1];
        entrance e=new entrance();
        for(int i=1;i<=n;i++)
            p[i]=new person(i,e);
        for(int i=1;i<=n;i++)
            p[i].start();
    }
}
```

Output:



```
Command Prompt
C:\Users\Anjali\Desktop\Copy>javac TheaterThread.java
C:\Users\Anjali\Desktop\Copy>java TheaterThread
Enter the no of persons:3
Person1bought the ticket
Person1showed the ticket to the boy
Person1ente red the Theatre
Person2bought the ticket
Person2showed the ticket to the boy
Person2ente red the Theatre
Person3bought the ticket
Person3showed the ticket to the boy
Person3ente red the Theatre
```

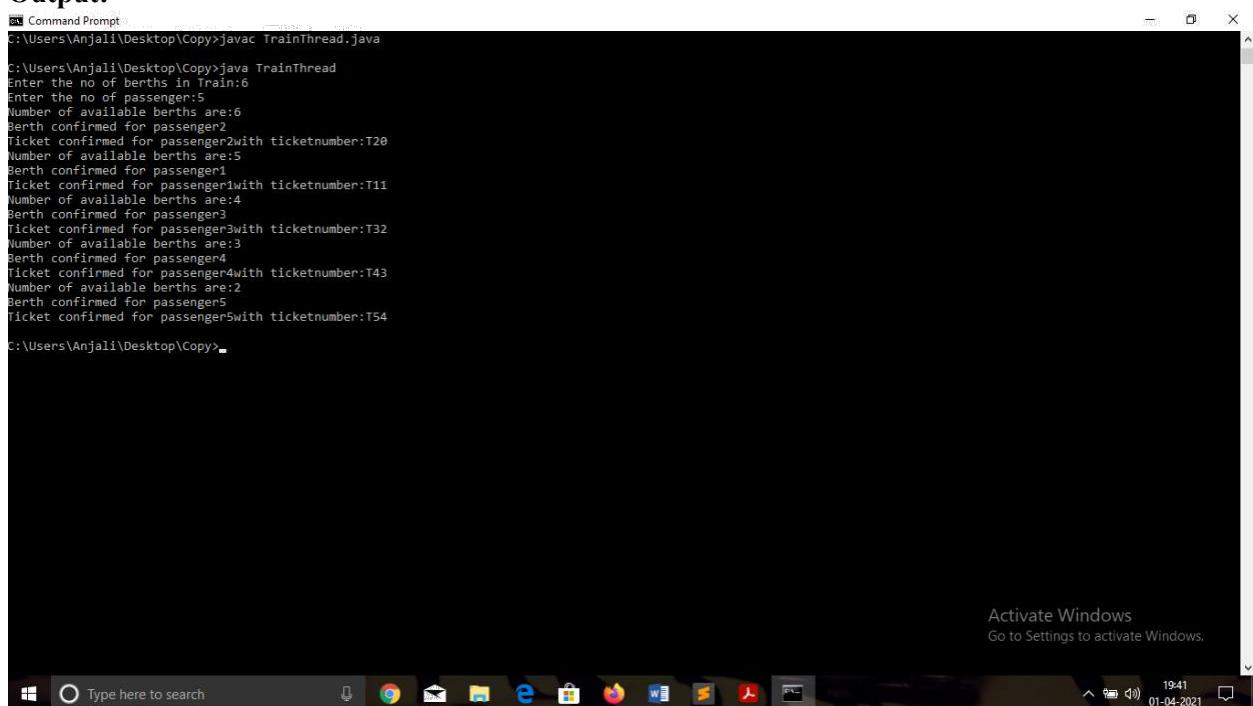
5. Write a Program using Threads for the following case study: Train Reservation system To reserve a berth the following process need to be followed, at first check the number of available berths with the requested berths, if the number of requested berths are less than or equal to available berths then allot berth and print ticket or else display no berths are available. Assume that N persons are trying to reserve the berth, display their sequence of reservation status along with the number of available berths. Note : The person can print ticket only if berth is confirmed.

Program:

```
import java.util.Scanner;
class bookticket{
    static int totalberths;
    bookticket(int x){
        totalberths=x;
    }
    static int confirmedberths=0;
    synchronized public void confirm(int y){
        System.out.println("Number of available berths are:"+ (totalberths-confirmedberths));
        if(confirmedberths<=totalberths&&(totalberths-confirmedberths)!=0)
        {
            System.out.println("Berth confirmed for passenger"+y);
            System.out.println("Ticket confirmed for passenger"+y+"with
ticketnumber:"+ "T"+y+confirmedberths);
        }
        else{
            System.out.println("Berth not confirmed for passenger"+y+",berths completely filled");
        }
        if(confirmedberths==totalberths) ;
        else
            confirmedberths++;
    }
}
class passenger extends Thread{
    int y;
    bookticket s;
    public passenger(int x,bookticket e){
        s=e;
        y=x;
    }
    public void run(){
        s.confirm(y);
    }
}
public class TrainThread{
    public static void main(String args[]){
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter the no of berths in Train:");
        int t=sc.nextInt();
    }
}
```

```
System.out.print("Enter the no of passenger:");
int n=sc.nextInt();
passenger p[]=new passenger[n+1];
bookticket b=new bookticket(t);
for(int i=1;i<=n;i++)
p[i]=new passenger(i,b);
for(int i=1;i<=n;i++)
p[i].start();
}}
```

Output:



```
Command Prompt
C:\Users\Anjali\Desktop\Copy>javac TrainThread.java
C:\Users\Anjali\Desktop\Copy>java TrainThread
Enter the no of berths in Train:6
Enter the no of passenger:5
Number of available berths are:6
Berth confirmed for passenger2
Ticket confirmed for passenger2with ticketnumber:T20
Number of available berths are:5
Berth confirmed for passenger1
Ticket confirmed for passenger1with ticketnumber:T11
Number of available berths are:4
Berth confirmed for passenger3
Ticket confirmed for passenger3with ticketnumber:T32
Number of available berths are:3
Berth confirmed for passenger4
Ticket confirmed for passenger4with ticketnumber:T43
Number of available berths are:2
Berth confirmed for passenger5
Ticket confirmed for passenger5with ticketnumber:T54
C:\Users\Anjali\Desktop\Copy>
```

The screenshot shows a Windows Command Prompt window with the title 'Command Prompt'. The window displays the execution of a Java program named 'TrainThread'. The user enters '6' for the number of berths and '5' for the number of passengers. The program outputs the number of available berths (6), followed by confirmation messages for each passenger's berth assignment, including the ticket number assigned (T20, T11, T32, T43, T54). The Java command 'javac TrainThread.java' and the execution command 'java TrainThread' are also visible at the top of the window. The taskbar at the bottom of the screen shows various application icons, and the system tray indicates the date and time as '01-04-2021 19:41'.