

Program create by Vivek sharma

Roll no:- 92201703084

Batch :- A 2EC2

## PRACTICAL-1

**Q1).Write the java program to display message WELCOME TO Mefgi**

**Code:-**

```
public class firstjava{  
    public static void main(String[] args) {  
  
        System.out.println(" Welcome to mefgi");  
    }  
}
```

**Output**

Welcome to mefgi

**Q 2). Write the java program to display message HELLO WORLD**

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

**OUTPUT:-**

Hello world

**Q 3). Write a java program to print address with single print statement**

```
public class singleprint {  
    public static void main(String[] args) {  
  
        System.out.println("name:- Vivek kumar \n Distric;- Gopalganj \n  
state:- Bihar \n country:- india \n pin code:- 841428");  
    }  
}
```

**Output:-**

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```
name:- Vivek kumar  
  Distric;- Gopalganj  
  state:- Bihar  
  country:- india  
pin code:- 841428
```

**Q 4). Develop a program in java to display address with multiple print statement**

```
public class multipleprint {  
    public static void main(String[] args) {  
  
        System.out.println("Name:- Vivek kumar");  
        System.out.println(" District :- Gopalganj");  
        System.out.println("state:- Bihar");  
        System.out.println("country:- india");  
        System.out.println("pincode:- 841428");  
    }  
}
```

**Output:-**

```
Name:- Vivek kumar  
  District :- Gopalganj  
state:- Bihar  
country:- india  
pincode:- 841428
```

**Q 5). Write a program in java to swap two number without using third variable**

```
public class swap {  
    public static void main(String[] args) {  
  
        int a=5, b=6;  
        System.out.println("Before swaping A="+a+"\t B="+b);  
        a=a+b;  
        b=a-b;  
        a=a-b;  
        System.out.println("After swaping A="+a+"\t B="+b);  
    }  
}
```

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```
}
```

**Output:-**

```
Before swaping A=5      B=6
After swaping A=6       B=5
```

**Q 6 ). Write a java program in java to swap two number using third variable**

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

        int a=5, b=6 ,c;
        System.out.println("Before swaping A="+a+"\t B="+b);
        c=a;
        a=b;
        b=c;
        System.out.println("After swaping A="+a+"\t B="+b);
    }
}
```

**Output:-**

```
Before swaping A=5      B=6
After swaping A=6       B=5
```

## PRACTICAL-2

**Q 1). Write a program in java to perform addition and subtraction arithmetic operation where variable input taken from using (scanner class)**

```
import java.util.Scanner;
public class arithmetic {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int a,b;
        System.out.print("enter the value of a:-");
        a=sc.nextInt();
        System.out.print("enter the value of b:-");
        b=sc.nextInt();

        int add= a+b;
        int sub=a-b;
```

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```
        System.out.println("addition of the number="+add);
        System.out.println("subtraction of the number="+sub);
    }
}
```

**Output:-**

```
enter the value of b:-5
addition of the number=15
subtraction of the number=5
```

**Q 2).Write a program in java to perform multiplication and division and modulo arithmetic operation where variable input taken from using (scanner class)**

```
import java.util.Scanner;
public class arithmetic {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int a,b;
        System.out.print("enter the value of a:-");
        a=sc.nextInt();
        System.out.print("enter the value of b:-");
        b=sc.nextInt();

        int multi= a*b;
        float div=a/b;
        float mod=a%b;
        System.out.println("addition of the number="+multi);
        System.out.println("subtraction of the number="+div);
        System.out.println("modulo of the number="+mod);
    }
}
```

**Output:-**

```
enter the value of a:-10
enter the value of b:-2

addition of the number=20
subtraction of the number=5.0
modulo of the number=0.0
```

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## PRACTICAL-3

Q.1). write the java program total percentage marks of the student take marks input from the user for 5 subject and also display grade or division using if-else statement

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

        Scanner sc=new Scanner(System.in);
        int cp,cal,beee,phy,va;
        System.out.print("enter the value of cp=");
        cp=sc.nextInt();
        System.out.print("enter the value of cal=");
        cal=sc.nextInt();
        System.out.print("enter the value of beee=");
        beee=sc.nextInt();
        System.out.print("enter the value of phy=");
        phy=sc.nextInt();
        System.out.print("enter the value of va=");
        va=sc.nextInt();

        int total=cp+cal+beee+phy+va;
        System.out.println("total marks of five subject="+total);

        float per=(float)(total/5);
        System.out.println("percentage of five subject="+per);

        if(per>75){
            System.out.println("Greade is honors ");
        }
        else if (per>60 && per<75){
            System.out.println("Greade is 1st ");
        }
        else if(per>45 && per<60){
            System.out.println("Greade is 2nd ");
        }
    }
}
```

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```
    }  
    else if(per>35 && per<45){  
        System.out.println("Greade is 3rd ");  
    }  
    else {  
        System.out.println("Greade is fail ");  
    }  
}  
}
```

**Output:-**

```
enter the value of cp=81  
enter the value of cal=47  
enter the value of beee=79  
enter the value of phy=93  
enter the value of va=60  
total marks of five subject=360  
percentage of five subject=72.0  
Greade is 1st
```

## PRACTICAL-3

**Q 2). Write a program to calculate the gross salary of an employee and also calculate income tax on the basic of annual salary of an employee basic salary input will be taken from users.(Gross salary= Basic salary +DA +HAR). Where DA=60% of basic salary**

**HAR=25% of basic salary**

**For income tax if gross salary between 3 lakhs to 5 lakhs then income tax =10% of annual salary and if gross salary between 5 lakhs to 10 lakhs then income tax=15% annual salary and if gross salary greater than 10 lakhs then income tax =20% of annual salary**

```
import java.util.Scanner;  
public class intx {  
    public static void main(String[] args) {  
        Scanner sc=new Scanner(System.in);  
        int bs;  
        float itax;
```

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```
System.out.print("enter the basic salary :-");
bs=sc.nextInt();
float DA=6*bs;
float HAR=25*bs;
float gs=(float)(bs+DA+HAR);
System.out.print("\n the gross of salary is:"+gs);
float a_salary=gs*12;
System.out.print("\n the annual salary:-"+a_salary);
if(a_salary>300000 && a_salary < 500000)
{
    itax=(float)(a_salary*0.10);
    System.out.print("\n annual income tax is "+itax);
}
else if(a_salary>500000 && a_salary< 1000000){
    itax=(float)(a_salary*0.15);
    System.out.print("\n annual salary of income tax"+itax);
}
else if(a_salary>1000000){
    itax=(float)(a_salary*0.20);
    System.out.print("\n annual salary of income tax  "+itax);
}
else {
    System.out.print(" employee salary is mediaum");
}
}
```

Output:-

```
enter the basic salary :-25000

the gross of salary is:800000.0
the annual salary:-9600000.0
annual salary of income tax 1920000.0
```

## PRACTICAL-4

Q 1). Write a java program to count sum and average of all number enter by using infinite loop if number is divisual is five the loop should continue (if should not be number is 999 the loop should terminated and it will display sum and average both.

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

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```
public class sum {  
    public static void main(String[] args) {  
  
        Scanner v=new Scanner(System.in);  
        float num,sum=0,count=0;  
        System.out.print("Enter the value of n:- ");  
  
        while(true){  
            num=v.nextFloat();  
            if(num==999){  
                break;  
            }  
            if(num%5==0){  
                continue;  
            }  
  
            else{  
                sum+=num;  
                count++;  
            }  
        }  
  
        System.out.print(" total of no s"+sum);  
        float avg=sum/count;  
        System.out.print(" avg is :"+avg);  
    }  
}
```

Output:-

```
Enter the value of n:- 5  
2  
3  
6  
6  
6  
6  
5  
5  
999  
total of no s29.0 avg is :4.8333335
```



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**Q2.) write a java program to print all the number it's sum and average between given range the number should be edit in sum if it is divisual by two**

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

        Scanner v=new Scanner(System.in);
        float num,sum=0,count=0;
        System.out.print("Enter the value of n:- ");

        for(int i=1;i<=4;i++){
            num=v.nextFloat();

            if(num%2==0){
                continue;
            }

            else{
                sum+=num;
                count++;
            }
        }

        System.out.print(" total of no s"+sum);
        float avg=sum/count;
        System.out.print(" avg is :"+avg);
    }
}
```

**Output:-**

```
Enter the value of n:- 5
6
9
8
total of no s:-14.0 avg is :7.0
```

## PRACTICAL-5

**Q 1). Write a java program that will print month name of to given number using switch statement**

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**Ex:-** if be are inserting 1 then if print should be January

```
import java.util.Scanner;
public class month{
    public static void main(String[] args) {
        Scanner v=new Scanner(System.in);
        int n;
        System.out.print("Enter the value of n:-");
        n=v.nextInt();
        switch(n)
        {
            case 1:System.out.print(n+" means January");
                    break;
            case 2:System.out.print(n+ " means February");
                    break;
            case 3:System.out.print(n+ "means march");
                    break;
            case 4:System.out.print(n+ "means april");
                    break;
            case 5:System.out.print(n+ "means may");
                    break;
            case 6:System.out.print(n+ "means June");
                    break;
            case 7:System.out.print(n+ "means July");
                    break;
            case 8:System.out.print(n+ "means august");

            break;
            case 9:System.out.print(n+ "means september");
                    break;
            case 10:System.out.print(n+ "means october");
                    break;
            case 11:System.out.print(n+ "means november");
                    break;
            case 12:System.out.print(n+ "means december");
                    break;
            default : System.out.print(n+ " invalid no");

        }
    }
}
```

**Output:-**

```
Enter the value of n:-7
7means July
```

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## Q 2). Write a java program to multiple to matrix of 3x3

```
import java.util.Scanner;
public class matrixmultiple {
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        //System.out.println("enter the value of matrix");
        int a[][]=new int[3][3];
        int b[][]=new int[3][3];
        int c[][]=new int[3][3];

        System.out.print("enter value of 1st matrix:-");
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                a[i][j]=sc.nextInt();
            }
        }
        System.out.println("enter value of 2nd matrix:-");
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                b[i][j]=sc.nextInt();
            }
        }
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                c[i][j]=0;
                for(int k=0;k<3;k++){
                    c[i][j]+= a[i][k]*b[k][j];
                }
            }
        }
        System.out.println("multiplication of marix is" );
        for(int i=0;i<3;i++){
            for(int j=0;j<3;j++){
                System.out.print(c[i][j]+"\\t");
            }
            System.out.println("");
        }
    }
}
```

Output:-

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enter value of 1st matrix:-

1  
2  
3  
6  
5  
4  
9  
8  
7

enter value of 2nd matrix:-

1  
2  
3  
6  
5  
4  
9  
8  
7

multiplication of matrix is

40	36	32
72	69	66
120	114	108

**Q 3). Write a java program to perform following string operation**

**Operation :-** string.length

String.concatenation

Compare to string

Sub string ,replace string

```
import java.util.Scanner;
public class string {
    public static void main(String[] args) {
        String original;
        Scanner in1=new Scanner(System.in);
```

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```
System.out.print("enter a string/number from user :- ");
original = in1.nextLine();
String str1="vivek";
System.out.println("length of string is "+original.length());

String str2=original.concat(" ").concat(str1);
System.out.println("String concatenation is "+str2);

System.out.println("Compare two string is " +original.equals(str1));
System.out.println("Compare two string is "
+original.equalsIgnoreCase(str1));
System.out.println("Compare two string is " +original.compareTo(str1));

String str3=original.replace('a','e');
System.out.println("String after replaced charcter a by e is "+str3);

System.out.println("String form input string is
"+original.substring(2,6));

}
}
```

output:-

```
Enter a string/number from user :- vivek
length of string is 5
String concatenation is vivek vivek
Compare two string is true
Compare two string is true
Compare two string is 0
String after replaced charcter a by e is vivek
```

## PRACTICAL-6

Q 1). Write a java program that check whether enter alphabet is vowel and consulet using switch statement

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```
import java.util.Scanner;

public class character {
    public static void main(String[] args) {
        Scanner v = new Scanner(System.in);
        char n;
        System.out.print("\nEnter Character: ");
        n= v.next().charAt(0);

        switch (n)
        {
            case 'A':;
            case 'E':;
            case 'I':;
            case 'O':;
            case 'U':;
            case 'a':;
            case 'e':;
            case 'i':;
            case 'o':;
            case 'u':System.out.println(n + " is a Vowel.");
                    break;

            default:
                System.out.println(n + " is a Non-Vowel Character.");
        }
    }
}
```

**Output:-**

Enter Character: A

A is a Vowel.

Enter Character: b

b is a Non-Vowel Character.

**Q 2). Write a java program to find the addition of two matrix of 3x3**

**And transpose the result matrix**

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

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```
public static void main(String args[]){
    Scanner sc=new Scanner(System.in);
    int a[][]=new int[3][3];
    int b[][]=new int[3][3];
    int c[][]=new int[3][3];
    //int transpose[][]=new int[3][3];
    System.out.print("enter the value of 1st matrix :-");
    for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            a[j][i]=sc.nextInt();
        }
    }

    System.out.println("enter value of 2nd matrix:-");
    for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            b[i][j]=sc.nextInt();
        }
    }
    for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            c[i][j]=a[j][i];
        }
    }

    System.out.println("addition of marix is" );
    for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            System.out.print(a[i][j]+b[i][j]+"\\t");
        }
        System.out.println("");
    }
}
}
```

**Output:-**

```
enter the value of 1st matrix :-1
2
3
```

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```
6
5
4
9
8
7
enter value of 2nd matrix:-
1
2
3
6
5
4
9
8
7
addition of marix is
2      8      12
8      10     12
12     12     14
```

**Q 3). Write a java program to check whether input string is palindrome or not**

```
import java.util.Scanner;
public class palindrome{
    public static void main(String[] args) {
        String str,rev="";
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a string :-");
        str=sc.nextLine();
        int length=str.length();
        for(int i =length-1;i>=0;i--)
            rev= rev+str.charAt(i);

        if(str.equals(rev)){
            System.out.println(str+":-is a palindrome ");
        }
        else{
            System.out.println(str+":-is not a palindrome ");
        }
    }
}
```



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```
}  
}
```

**Output:-**

Enter a string :-

vivek

vivek:-is not a palindrome

## PRACTICAL-7

**Q 1). Write a java program to create a class student with data 'name, city and age' along with method printData to display the data. Create the two object s1,s2 to declare and access the value**

```
import java.util.Scanner;  
public class student {  
    String name;  
    String city;  
    int age;  
    public void print(){  
        System.out.println("name:"+name);  
        System.out.println("city:"+city);  
        System.out.println("age:"+age);  
    }  
    public static void main(String[] args)  
    {  
        Scanner Sc =new Scanner(System.in);  
        student S1 =new student();  
        student S2 =new student();  
  
        System.out.println("Enter the first student detils:-");  
        S1.name =Sc.nextLine();  
        S1.city =Sc.nextLine();  
        S1.age =Sc.nextInt();  
  
        System.out.println("Enter the second student detils:-");  
        S2.name =Sc.nextLine();  
        S2.city =Sc.nextLine();  
        S2.age =Sc.nextInt();  
    }  
}
```

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```
        System.out.println("Datil for first student");
        S1.print();
        System.out.println("Datil for second student");
        S2.print();
    }
}
```

## OUTPUT:-

```
Enter the first student detils:-
vivek kumar'
rajkot
18
Enter the second student detils:-
ashish kumar
rajkot
22
Datil for first student
name:vivek kumar'
city:rajkot
age:18
Datil for second student
name:
city:ashish kumar
age:22
```

## PRACTICAL-8

**Q 1). Write a java program to create a class employee with Emp\_name ,Emp\_code and Emp\_sal as a data member .write a method getdata to accept the data of E1 and E2 and display the data of the Employee using printdata method .**

```
import java.util.Scanner;
public class employee{
    String name;
    int code;
    int salary;
    void getdata(){
```

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```
Scanner sc=new Scanner(System.in);
name=sc.nextLine();
code=sc.nextInt();
salary=sc.nextInt();
}
void print(){
    System.out.println(" Employee name:-"+name);
    System.out.println("Employee code:-"+code);
    System.out.println("Employee salary:-"+salary);
}
public static void main(String[] args) {
    employee e1 =new employee();
    employee e2=new employee();
    System.out.println("enter the First employee details:-");
    e1.getdata();
    System.out.println("enter the Second employee datails:-");
    e2.getdata();
    System.out.println("first employee details:-");
    e1.print();
    System.out.println("second employee details :-");
    e2.print();
}
}
```

## OUTPUT:-

```
enter the First employee details:-
vivek kumar
117942
100000
enter the Second employee datails:-
suraj kumar
117946
95000
first employee details:-
Employee name:-vivek kumar
Employee code:-117942
Employee salary:-100000
second employee details :-
Employee name:-suraj kumar
Employee code:-117946
Employee salary:-95000
```

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## PRACTICAL-9

Q 1). Write a java program to create a class employee with employee name, code and salary as a accept the data of 5 employee and display the data of those employee whose salary is greater than 25000 using printdata method

```
import java.util.Scanner;
public class employee {
    String name;
    int code;
    int salary;
    void getdata(String name,int code,int salary){
        this.name=name;
        this.code=code;
        this.salary=salary;
    }
    void printdata(){
        if(salary>25000){
            System.out.println("Employee name:-"+name);
            System.out.println("Employee code:-"+code);
            System.out.println("Employee salary:-"+salary);
        }
    }
    public static void main(String[] args) {
        employee[] arr=new employee[5];
        Scanner sc=new Scanner(System.in);

        for(int i=0;i<5;i++){
            System.out.println("enter the employee name:-");
            String name=sc.next();
            System.out.println("enter the employee code:-");
            int code=sc.nextInt();
            System.out.println("enter the employee salary :-");
            int salary=sc.nextInt();
            arr[i]=new employee();
            arr[i].getdata(name, code, salary);
        }

        for(int i=0;i<5;i++){
            arr[i].printdata();
        }
    }
}
```

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## Output

```
enter the employee name:-vivek
enter the employee code:-1
enter the employee salary :-25300

enter the employee name:-suraj
enter the employee code:-2
enter the employee salary :-26000

enter the employee name:-gulshan
enter the employee code:-6
enter the employee salary :-142563

enter the employee name:-rahul
enter the employee code:-56
enter the employee salary :-14578

enter the employee name:-sudish
enter the employee code:-65
enter the employee salary :-45582

Employee name:-vivek
Employee code:-1
Employee salary:-25300
Employee name:-suraj
Employee code:-2
Employee salary:-26000
Employee name:-gulshan
Employee code:-6
Employee salary:-142563
Employee name:-sudish
Employee code:-65
Employee salary:-45582
```

## PRACTICAL-10

Q 1). Write a java program to create a class student with student name ,city and age as a accept the data of 5 student and display the

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**data of those student whose age is greater than 18 using printdata method**

```
import java.util.Scanner;
public class student {
    String name;
    String city;
    int age;
    void getdata(String name,String city,int age){
        this.name=name;
        this.city=city;
        this.age=age;
    }
    void printdata(){
        if(age>18){
            System.out.println("Employee name:-"+name);
            System.out.println("Employee city:-"+city);
            System.out.println("Employee age:-"+age);
        }
    }
    public static void main(String[] args) {
        student[] arr=new student[5];
        Scanner sc=new Scanner(System.in);

        for(int i=0;i<5;i++){
            System.out.println("enter the student name:-");
            String name=sc.next();
            System.out.println("enter the student city:-");
            String city=sc.next();
            System.out.println("enter the student age :-");
            int age=sc.nextInt();
            arr[i]=new student();
            arr[i].getdata(name, city, age);
        }

        for(int i=0;i<5;i++){
            arr[i].printdata();
        }
    }
}
```

**Output**

```
enter the student name:-vivek
```

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```
enter the student city:-gopalganj
enter the student age :-19

enter the student name:-suraj
enter the student city:-gopalganj
enter the student age :-21

enter the student name:-gulshan
enter the student city:-gopalganj
enter the student age :-23

enter the student name:-rahul
enter the student city:-patna
enter the student age :-17

enter the student name:-sudish
enter the student city:-siwan
enter the student age :-22
```

```
Student name:-vivek
Student city:-gopalganj
Student age:-19
Student name:-suraj
Student city:-gopalganj
Student age:-21
Student name:-gulshan
Student city:-gopalganj
Student age:-23
Student name:-sudish
Student city:-siwan
Student age:-22
```

## PRACTICAL-11

**Q1).Write the java program to create a class called person which has following private instance variable name, age and address the person class should have a constructor that value for each of these variable and sets them accordingly the class should have a finalize method**

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**that print the message of console indicating that the object has been destroyed in the main method**

**Code:-**

```
import java.util.Scanner;
class person{
    String name;
    String address;
    int age;
    person(String name , String address , int age){
        this.name=name;
        this.address=address;
        this.age=age;
    }
    public void finalize(){
        System.out.println("object has been destroyed");
    }

    public static void main(String[] args) {
        String name;
        String address;
        int age;
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the 1st person details:-");
        name=sc.next();
        address=sc.next();
        age=sc.nextInt();
        person p1=new person(name, address, age);

        System.out.println("enter the 2nd person details :-");
        name=sc.next();
        address=sc.next();
        age=sc.nextInt();
        person p2=new person(name, address, age);

        System.out.println("details for the 1st person");
        System.out.println("name:-"+p1.name);
        System.out.println("address :-"+p1.address);
        System.out.println("age:-"+p1.age);

        System.out.println("details for the 2nd person");
        System.out.println("name:-"+p2.name);
```



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```
        System.out.println("address :-"+p2.address);
        System.out.println("age:-"+p2.age);
        p1=null;
        p2=null;
        System.gc();
    }
}
```

## Output:-

```
enter the 1st person details:-
vivek
gopalganj
18
enter the 2nd person details :-
suraj
gopalganj
20
details for the 1st person
name:-vivek
address :-gopalganj
age:-18
details for the 2nd person
name:-suraj
address :-gopalganj
age:-20
object has been destroyee
object has been destroyee
```

## PRACTICAL-12

**Q1).Write the java program to create my class with a private variable count my class should have constructor that text integer as a argument and said count that value my class should have finalized that decrement could by one and print count to the consule window the main method of program to create.**

### Code:-

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```
import java.util.Scanner;
public class count12 {
    private int count;
    count12(int count){
        this.count=count;
    }
    protected void finalize(){
        count -=1;
        System.out.println("after decreament value of count is :- "+count);
    }
    public static void main(String[] args) {
        int count;
        Scanner sc=new Scanner(System.in);
        System.out.println("enter the value from user:-");
        count=sc.nextInt();
        count12 obj1=new count12(count);
        System.out.println("before decreament value of count is:-"+obj1.count);

        System.out.println("enter the value from user:-");
        count=sc.nextInt();
        count12 obj2=new count12(count);
        System.out.println("before decreament value of count is:-"+obj2.count);

        obj1=null;
        obj2=null;

        System.gc();
    }
}
```

**Output:-**

```
enter the value from user:-
15
before decreament value of count is:-15
enter the value from user:-
20
before decreament value of count is:-20
after decreament value of count is :- 14
after decreament value of count is :- 19
```

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## PRACTICAL-13

**Q1).Write the java program using parameters constructor with two parameter id and name while creating the object obj1 and obj2 pass two argument so that this constructor data invoke after creation of obj1 and obj2 create one method print data .**

**Program:-**

```
public class person {  
  
    int id;  
    String name;  
  
    public person(int id, String name) {  
        this.id = id;  
        this.name = name;  
    }  
  
    public void printData() {  
        System.out.println("name:- " + name);  
        System.out.println(" id:- " + id);  
    }  
  
    public static void main(String[] args) {  
        person obj1 = new person(123, "Vivek");  
        person obj2 = new person(456, "Aditya");  
  
        obj1.printData();  
        obj2.printData();  
    }  
}
```

**Output:-**

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```
name:- Vivek  
id:- 123  
name:- Aditya  
id:- 456
```

## PRACTICAL-14

**Q1).Write the java program to create class birds also declare different parameter constructor the display name of birds.**

**Program:-**

```
public class birds{  
  
    birds(){  
        System.out.println("Hen");  
    }  
    birds(String a){  
        System.out.println(a);  
    }  
    birds(String a, String b){  
        System.out.println(a+" "+b);  
    }  
    birds(String a, String b , String c){  
        System.out.println(a+" "+b+" "+c);  
    }  
    public static void main(String[] args) {  
        birds b1=new birds();  
  
        birds b2=new birds("parrot");  
  
        birds b3=new birds("Owl", "duck");  
  
        birds b4=new birds("crow","robin" ,"sown");  
  
    }  
}
```

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```
}
```

## Output:-

```
Hen  
parrot  
Owl duck  
crow robin sown
```

## PRACTICAL-15

Q1). Define an abstract base class Shape that includes protected data members for the (x, y) position of a shape, a public method to move a shape, and a public abstract method show() to output a shape. Derive subclasses for lines, circles, and rectangles. You can represent a line as two points, a circle as a center and a radius, and a rectangle as two points on diagonally opposite corners. Test the classes by objects of the derived classes, and then invoking the show() method.

### Program:-

```
import java.nio.charset.CoderResult;  
  
abstract class shape{  
    protected int x=5,x1=10;  
    protected int y=6,y1=9;  
    abstract void show();  
}  
  
class line extends shape{  
    void show(){  
        System.out.println("Lines coordinates are: (\"+x+\",\"+y+\") and ( \"+x1+\"  
        ,"+y1+\")");  
    }  
}
```

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```
class circle extends shape{
    void show(){
        System.out.println("Circle centre coordinates is: (" +x+", "+y+") and
radius is "+x1);
    }
}
class rectangle extends shape{
    void show(){
        System.out.println("rectangle diagonal coordinates are: (" +x+", "+y+") and
( "+x1+" , "+y1+" )");
    }
}
public class shapes{
    public static void main(String[] args) {
        line l=new line();
        circle c=new circle();
        rectangle r=new rectangle();

        l.show();;
        c.show();
        r.show();
    }
}
```

**Output:-**

```
Lines coordinates are: (5,6) and ( 10 ,9)
Circle centre coordinates is: (5,6) and radius is 10
rectangle diagonal coordinates are: (5,6) and ( 10 ,9)
```

**Q2).** Create a class bank that provides functionality to get the rate of interest. However, the rate of interest varies according to banks. For example, SBI, ICICI and AXIS banks could provide 8%, 7%, and 9% rate of interest. Override the method `getRateOfInterest()` from the parent class to all child classes.

**Program:-**

```
class bank{
    int getRateOfInterest()
    {
```

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```
        return 0;
    }
}

class SBI extends bank{
    int getRateOfInterest()
    {
        return 8;
    }
}

class ICICI extends bank{
    int getRateOfInterest()
    {
        return 7;
    }
}

class AXIS extends bank{
    int getRateOfInterest()
    {
        return 9;
    }
}

class banking{
    public static void main(String[] args) {
        SBI s=new SBI();
        ICICI i=new ICICI();
        AXIS a=new AXIS();
        System.out.println("ROI of SBI is:-"+s.getRateOfInterest()+"%");
        System.out.println("ROI of ICICI is:-"+i.getRateOfInterest()+"%");
        System.out.println("ROI of AXIS is"+a.getRateOfInterest()+"%");
    }
}
```

**Output:-**

```
ROI of SBI is:-8%
ROI of ICICI is:-7%
ROI of AXIS is9%
```

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## PRACTICAL-16

Q1). Write a java program in which you will declare an abstract class Vehicle inherits this class from two classes car and truck using the method engine in both display "car has good engine" and "truck has bad engine"..

### Program:-

```
abstract class vehicle {
    abstract void engine();
}
class car extends vehicle{
    public void engine(){
        System.out.println("car has good engine");
    }
}
class truck extends vehicle{
    public void engine(){
        System.out.println("truck has bad engine");
    }
}
public class vehicles{
    public static void main(String[] args) {

        car c= new car();
        truck t = new truck();

        c.engine();
        t.engine();
    }
}
```

### Output:-

```
car has good engine
truck has bad engine
```



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**Q2).** Create a Parent class called 'Vehicle' with a method name 'drive()'. This method should simply print out the message "Driving the vehicle". Create a child class 'Car' that extends 'Vehicle'. Override the 'drive()' method in 'Car' to print out the message "Driving the car". In the main() method create an instance of Vehicle and an instance of Car class. Call the 'drive()' method on each object. Program should output the message printed by each 'drive()' method.

**Program:-**

```
class vehicle {  
    void drive(){  
        System.out.println("Driving the vehicle");  
    }  
}  
class car extends vehicle{  
    void drive(){  
        System.out.println("Driving the car");  
    }  
}  
public class vehicle2{  
    public static void main(String[] args) {  
        car c= new car();  
        vehicle v=new vehicle();  
  
        c.drive();  
        v.drive();  
    }  
}
```

**Output:-**

```
Driving the car  
Driving the vehicle
```

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## PRACTICAL-17

Q1). Write a java program to create an interface name polygon the interface contains an abstract method get area here the rectangle class implements polygon using this abstract method calculate the area of rectangle.

Code:-

```
import java.util.*;
interface polygon{
    int i=4,b=6;
    abstract void getarea();
}
class rectangle implements polygon{
    public void getarea(){
        System.out.println("area of rectangle is:-"+i*b);
    }
}
public class first {
    public static void main(String[] args) {
        rectangle r=new rectangle();
        r.getarea();
    }
}
```

Output:-

```
area of rectangle is:-24
```

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## PRACTICAL-18

Q1). Write a java program to create an interface name polygon the interface contains an abstract method get volume here the rectangle box class implements polygon using this abstract method calculate the volume of the rectangular box.

Code:-

```
import java.util.*;
interface polygon{
    int i=8, b=5,h=3;
    abstract void getvalume();
}
class rectangle implements polygon{
    public void getvalume(){
        System.out.println("rectangle box valume is :-"+ i * b *h);
    }
}
public class first2 {
    public static void main(String[] args) {
        rectangle r=new rectangle();
        r.getvalume();
    }
}
```

output:-

```
rectangle box valume is :-120
```

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## PRACTICAL-19

**Q1). Write a java program that will generate exception type NullPointerException , NegativeArraySizeException and IndexOutOfBoundsException record the catch of each Exception By displaying the message store in Exception object.**

**Code:-**

```
import java.sql.PseudoColumnUsage;

class Exception{
    void NullPointerException(){
        String s=null;
        try{
            if(s.length()>0){
                System.out.println("yes");
            }
            else{
                System.out.println("no");
            }
        }
        catch(NullPointerException e){
            System.out.println(e);
        }
    }
    void NegativeArraySizeException(){
        try{
            int arr[]=new int[-1];
        }
        catch(NegativeArraySizeException e){
            System.out.println(e);
        }
    }
    void IndexOutOfBoundsException(){
        int arr[]=new int[5];
        try{

            System.out.println(arr[5]);
        }
        catch(IndexOutOfBoundsException e){
```

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```
        System.out.println(e);
    }
}

public class prectical19 {
    public static void main(String[] args) {
        Exception ex=new Exception();

        ex.NullPointerException();
        ex.NegativeArraySizeException();
        ex.IndexOutOfBoundsException();
    }
}
```

**Output:-**

```
java.lang.NullPointerException: Cannot invoke "String.length()" because
"<local1>" is null
java.lang.NegativeArraySizeException: -1
java.lang.ArrayIndexOutOfBoundsException: Index 5 out of bounds for length 5
```

## PRACTICAL-20

**Q 1).**write a java program that calls a method that throws an exception of type `arithmeticException` at a random iteration in for loop . catch the exception in the method and pass the iteration count when the exception occurred to the calling method by using an object of exception class you define

**Code:-**

```
public class throws1 {
    void throwsException(){
        int a= 5;
        try{
            for(int i = 5; i>=0; i--){
                System.out.println(a/i);
            }
        }
    }
}
```

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```
    }  
    }  
    catch(Exception e){  
        System.out.println(e);  
    }  
    }  
    public static void main(String[] args) {  
        throws1 t= new throws1();  
        t.throwException();  
    }  
}
```

**Output:-**

```
1  
1  
1  
2  
5  
java.lang.ArithmeticException: / by zero
```

## PRACTICAL-21

**Q 1).write a java program to that creates three threads the first thread displays “ good morning” for every one second the second thread display “hello “ for every two second and thirds display “welcome “ for every three seconds.**

**Code:-**

```
class thread1 extends Thread{  
    synchronized public void run(){  
        for(int i=1; i<=5; i++){  
            System.out.println("good morning");  
            try{  
                Thread.sleep(1000);  
            }  
        }  
    }  
}
```

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```
        }
        catch(Exception e){
            System.out.println(e);
        }
    }
}

class thread2 extends Thread{
    synchronized public void run(){
        for(int i=1; i<=5; i++){
            System.out.println("Hello");
            try{
                Thread.sleep(2000);
            }
            catch(Exception e){
                System.out.println(e);
            }
        }
    }
}

class thread3 extends Thread{
    synchronized public void run(){
        for(int i=1; i<=5; i++){
            System.out.println("welcome");
            try{
                Thread.sleep(3000);
            }
            catch(Exception e){
                System.out.println(e);
            }
        }
    }
}

public class practical21 {
    public static void main(String[] args) {
        thread1 t1=new thread1();
        thread2 t2=new thread2();
        thread3 t3=new thread3();
    }
}
```

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```
t1.start();
t2.start();
t3.start();
}
}
```

**Output:-**

```
good morning
welcome
Hello
good morning
Hello
good morning
welcome
good morning
Hello
good morning
Hello
welcome
Hello
welcome
welcome
```

## PRACTICAL-22

Q1). Write a java program that create three threads . the first thread displays " hiii" for every one second the second thread displays " hello" for every two second and the third thread display " how are you ..? for every three second.

**Code:-**

```
class thread1 extends Thread{
    synchronized public void run(){
        for(int i=1; i<=5; i++){
            System.out.println("Hiiii...");
            try{
```



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```
        Thread.sleep(1000);
    }
    catch(Exception e){
        System.out.println(e);
    }
}
}

class thread2 extends Thread{
    synchronized public void run(){
        for(int i=1; i<=5; i++){
            System.out.println("Hello");
            try{
                Thread.sleep(2000);
            }
            catch(Exception e){
                System.out.println(e);
            }
        }
    }
}

class thread3 extends Thread{
    synchronized public void run(){
        for(int i=1; i<=5; i++){
            System.out.println("How are you....?");
            try{
                Thread.sleep(3000);
            }
            catch(Exception e){
                System.out.println(e);
            }
        }
    }
}

public class practical22 {
    public static void main(String[] args) {
        thread1 t1=new thread1();
        thread2 t2=new thread2();
    }
}
```

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```
        thread3 t3=new thread3();

        t1.start();
        t2.start();
        t3.start();
    }
}
```

**Output:-**

```
Hiiii...
How are you....?
Hello
Hiiii...
Hiiii...
Hello
How are you....?
Hiiii...
Hello
Hiiii...
How are you....?
Hello
Hello
How are you....?
How are you....?
```

## PRACTICAL-23

**Q1). Write a java program in main() method that count the number of words in a text file whose name is accepted from standard input also print the size of a file**

**Code:-**

```
import java.io.*;
class practical23{
```

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```
public static void main(String[] args) throws Exception {
    FileInputStream in = new FileInputStream("C:\\Users\\Vivek
sharma\\Desktop\\vivek.txt");
    int size=in.available();

    char c;
    for(int i = 0;i < size; i++){
        c=(char)in.read();
        System.out.print(Character.toLowerCase(c));
    }
    in.close();
}
}
```

**Output:-**

```
my name is vivek kumar
```

## PRACTICAL-24

Q 1).Write a java program to main() method that count the number of words in a text file whose name is accepted from standard input. Also print the size of a file

**Code:-**

```
import java.io.*;
import java.util.*;

public class practical24 {
    public static void main(String[] args) throws Exception{
        FileInputStream in = new FileInputStream("C:\\Users\\Vivek
sharma\\Desktop\\vivek.txt");
        Scanner sc=new Scanner(in);
        int size=in.available();
        int count=0;
```

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```
while(sc.hasNext()){
    sc.next();
    count++;
}
System.out.println("Size of file :-"+size+" bytes");
System.out.println("There are :-"+count+" word in file");
in.close();
}
```

**Output:-**

```
Size of file :-22 bytes
There are :-5 word in file
```

## PRACTICAL-25

**Q 1).write a java program to perform insert, delete and access operation in the ArrayList class**

**Code:-**

```
import java.util.*;
public class practical25{
    public static void main(String args[]){
        ArrayList<String> al=new ArrayList<String>();
        al.add("vivek");
        al.add("suraj");
        al.add("ashish");
        al.add("saurav");
        for(String s2:al)
            System.out.println("Elements:-"+s2);
        al.remove("vivek");
        for(String s:al)
            System.out.println("After remove:-"+s);
        al.clear();
        System.out.println("size:-"+al.size());
    } }
```

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## Output:-

```
Elements:-vivek
Elements:-suraj
Elements:-ashish
Elements:-saurav
After remove:-suraj
After remove:-ashish
After remove:-saurav
size:-0
```

## PRACTICAL-26

Q 1).write a java program to perform insert, delete and access operation in the Vector class

Code:-

```
import java.util.*;
public class practical26{
    public static void main(String args[]){
        Vector <String> al=new Vector<String>();
        al.add("vivek");
        al.add("suraj");
        al.add("ashish");
        al.add("saurav");
        for(String s2:al)
            System.out.println("Elements:-"+s2);
        al.remove("vivek");
        for(String s:al)
            System.out.println("After remove:-"+s);
        al.clear();
        System.out.println("size:-"+al.size());
    } }
```

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**Output:-**

**Output:-**

```
Elements:-vivek
Elements:-suraj
Elements:-ashish
Elements:-saurav
After remove:-suraj
After remove:-ashish
After remove:-saurav
size:-0
```

## PRACTICAL-27

**Q 1).write a java program perform push and pop operation in the stack class**

**Code:-**

```
import java.util.*;
class practical27 {
public static void main(String[] args)
{
Stack stack1 = new Stack();
stack1.push(4);
stack1.push("All");
stack1.push("Hello");
System.out.println(stack1);
stack1.pop();
}
```

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```
System.out.println(stack1);  
System.out.println(stack1.peek());  
} }
```

**Output:-**

```
[4, All, Hello]  
[4, All]  
All
```

## PRACTICAL-28

**Q 1).write a java program to perform put and clear operation in the map class.**

**Code:-**

```
import java.util.*;  
public class practical28 {  
    public static void main(String[] args) {  
        Map <String, String> map = new LinkedHashMap<>();  
        map.put("123", "vivek ");  
        map.put("111", "suraj");  
        map.put("123", "ashish");  
        map.put("222", "saurav");  
    }  
}
```

Program create by Vivek sharma

Roll no:- 92201703084

Batch :- A 2EC2

```
System.out.println(map);  
System.out.println(map.get("222"));  
map.clear();  
System.out.println("Size:"+map.size());  
} }
```

## output

```
{123=ashish, 111=suraj, 222=saurav}  
saurav  
Size:0
```