Worksheet-4

Que.1

OOPS concepts:- Object – oriented programming is a core of java programming which is used for designing a program using classes and objects. The main principles of object oriented programming are abstraction , encapsulation, inheritance, and polymorphism.

Objects :-

Objects are always called instances of class which are created from a class in java or any other languages . They have states and behaviour.

Example;-

```
Public class Main {
Int x=5;
Public static void main (String [] args )
Main myObj =new Main();
System.out.println(myObj.x);
  }
}
```

\Classes:-

The collection of objects is said to be a class. Classes is also called a templates of an objects. Classes are said to be logical quantities.

Example:-

```
Public class Main {
Int x=5;
}
```

Abstraction:-

Abstraction is process which displays only the information needed and hides the unnecessary information.

- **Abstract class:** is a restricted class that cannot be used to create objects (to access it, it must be inherited from another class).
- **Abstract method:** can only be used in an abstract class, and it does not have a body. The body is provided by the subclass (inherited from).

Example:-

```
Abstract class Animal {        //Abstract class
Public abstract void animalSound();  //Abstract method
Public void sleep() {  // Regular method
System.out.println(“Zzz”);
  }
}
Class Dog extends Animal
{     //Subclass(inherit from animal)
Public void animalSound() {
System.out.println(“The dog says : Bow Bow”);
}
}
Class Main {
Public ststic void main(String [] args ) {
Dog myDog =new Dog();  / create  A Dog objects
myDog.animalSound();
myDog.sleep();
}
```

}

Inheritance:-

Inheritance is a method in which one object acquires/inherits another object’s properties, and inheritance also supports hierarchical classification. The idea behind this is that we can create new classes built on existing classes, i.e., when you inherit from an existing class, we can reuse methods and fields of the parent class.

Single level:-

In this one class i.e., the derived class inherits properties from its parental class

Syntax;

```
    Class a {

    ........

    }

    Class b extends class a {

    ........

    }
```

Multilevel:

This one class is derived from another class which is also derived from another class i.e., this class has more than one parental class, hence it is called multilevel inheritance.

Syntsx:

```
Class a {

........

}

Class b extends class a {

........

}

Class c extends class b {

.........

}
```

Hierarchical level:

In this one parental class has two or more derived classes or we can say that two or more child classes have one parental class.

```
Class a {

........

}

Class b extends class a {

........

}

Class c extends class a {

..........

}
```

Que:2

/* Even Odd Program */

```
import java.util.Scanner;
public class evenOdd {
public static void main(String[] args) {
        int n;
        System.out.println("Enter any number");
Scanner r=new Scanner (System.in);
n=r. nextInt();
if (n%2 ==0)
{
        System.out.println("Even Number");
}
else
{
        System.out.println("Odd Number");
}
}
}
```

```
/* Swap of two number */

import java.util.Scanner;

public class swap {

        public static void main(String[] args) {
        int a,b ,temp;
        System.out.println("Enter two numbers");
        Scanner r=new Scanner(System.in);
        a=r.nextInt();
        b=r.nextInt();
        System.out.println("Before Swapping"+a+""+b);
        temp=a;
        a=b;
        b=temp;
        System.out.println("After Swapping"+a+""+b);
        }
}
```

```
/*Average of two number */

package assignmenttask;

public class avg {

        public static void main(String[] args) {
        float a, b, c, ave;
                a=10;b=5; c=a+b;
                ave=c/2;
                System.out.println(ave);



        }

}
```

```
/*Prime number program */

package assignmenttask;
import java. util.Scanner;
public class primeNum {

        public static void main(String[] args) {
                 Scanner s=new Scanner(System.in);
        System.out.println("Enter any number");
        int no=s.nextInt();
int temp=0;
for(int i=1; i<=no; i++)
                {
```

```
            if(no%i==0)
            {
                temp=temp+1;
            }
        }
        if(temp==2)
        {
            System.out.println(no+"is prime no");
        }
        else
        {
            System.out.println(no+"is not prime");

        }
    }
}


/* find the table of n */

package assignmenttask;
import java.util.Scanner;

public class main {

    public static void main(String[] args) {
    System.out.println("enter no");
Scanner sc=new Scanner(System.in);
int n=sc.nextInt();
for(int i=1;i<=10; i++)
{
    System.out.println(n*i);

}
    }

}
```

```
/*Greatest no in three*/

package assignmenttask;

public class greatest {

        public static void main(String[] args) {
                int a=10,b=20,c=30;
                if(a>b)
                {
                        if(a>c)
                                System.out.println(a);
                        else
                                System.out.println(b);
                }
                else
                {
                        if(b>c)
                                System.out.println(b);
                        else
                                System.out.println(c);
                }
        }

}
```

```
/* Simple interest */

package assignmenttask;
 import java.util.Scanner;

public class simple_interest {

        public static void main(String[] args) {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter any amount");
    int p=sc.nextInt();
    System.out.println("Enter time in months");
    int t=sc.nextInt();
    System.out.println("Enter Interest rate");
    int r=sc.nextInt();
    int si=(p*t*r);
    System.out.println("Simple interest is :" +si);
        }

}
```

```
*/ Area and perimeter of rectangle */

package assignmenttask;

public class rectangle {

        public static void main(String[] args) {
                double len=6;
                double b=2;
                double peri=2*len+2*b;
                double area=len*b;
                System.out.println("Perimeter is:"+peri);
        System.out.println("area is:"+area);
        }
}
```

```
*/ vowel or consonant */

package assignmenttask;
import java.util.Scanner;
public class vowel_consonant {

        public static void main(String[] args) {
        char ch;
        System.out.println("Enter any alphabet");
    Scanner r=new Scanner(System.in);
    ch=r.next().charAt(0);
    if(ch=='a' || ch=='e'|| ch==+'i' || ch=='o' || ch=='u')
    {
        System.out.println("vowel");
    }
    else {
          System.out.println("consonant");
    }
          }

          }
```

MCQ;

1. A
2.A
3.B
4.A
5.A
6.C
7.A
8.C
9.A
10.Derived::show()called
11.Compile Error
12.Base::show()called
13.Test class,
      Derived class
14Error
15.104
16.   Compile time error
17.   Exception type conveersion is not possible
18.   0 0
19.   Constructor called 10,
      Constructor called 5
20.7
21.Eroor main method is not found
22.2
23.1 2
24.1 2
25.obj1 =4 obj1=3
    obj2=4 obj2=3