

Assignment 1

1 .Write a java program to find the area of rectangle?

```
import java.util.Scanner;

public class Program
{
    public static void main(String[] args) {
        Scanner s=new Scanner(System.in);
        int len=s.nextInt();
        int bre=s.nextInt();
        System.out.print("Area of rectange is: "+len*bre);
    }
}
```

Output:



2.Write a java program to check the given no is Armstrong or not(153 is Armstrong no $1*1*1+5*5*5+3*3*3=153$)

```
import java.util.Scanner;

public class Program
{
    public static void main(String[] args) {
        Scanner s=new Scanner(System.in);
        int num=s.nextInt();
        int temp,rem,res=0;
        temp=num;
        while (temp!= 0)
        {
            rem=temp % 10;
            res += Math.pow(rem, 3);
            temp /= 10;
        }
        if(res == num)
```

```

        System.out.println(num + " is an Armstrong number.");
    else
        System.out.println(num + " is not an Armstrong number.");
    }
}

```

Output:

```

Output
556 is not an Armstrong number.

```

```

Output
153 is an Armstrong number.

```

3. Write a java program to check the given no is palindrome or not

```

import java.util.*;

public class Program
{
    public static void main(String[] args) {
        Scanner sc=new Scanner(System.in);
        int num=sc.nextInt();
        String s=Integer.toString(num);
        String rev="";
        int length = s.length();
        for ( int i = length - 1; i >= 0; i-- )
            rev = rev + s.charAt(i);
        if(s.equals(rev))
            System.out.println(num + " is an Palindrome number.");
        else
            System.out.println(num + " is not an Palindrome number.");
    }
}

```

Output:

```

Output
101 is an Palindrome number.

```

```

Output
100 is not an Palindrome number.

```

4. Write a java program to generate first N prime numbers

```
import java.util.*;

public class Program
{
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int i =0,num=0;
        String primeNumbers = "";
        System.out.println("Enter the value of n:");
        int n = s.nextInt();
        s.close();
        for (i = 1; i <= n; i++)
        {
            int counter=0;
            for(num =i; num>=1; num--)
            {
                if(i%num==0)
                {
                    counter = counter + 1;
                }
            }
            if (counter ==2)
            {
                primeNumbers = primeNumbers + i + " ";
            }
        }
        System.out.println("Prime numbers from 1 to n are :");
        System.out.println(primeNumbers);
    }
}
```

Output: Enter the value of n: 100

Prime numbers from 1 to n are :
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79
83 89 97

5. Write a java program to print even numbers in between given two numbers.

```
import java.util.*;

public class Program
{
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        int a=s.nextInt();
        int b=s.nextInt();
        System.out.println("the even numbers between a and b are:");
        for(int i=a;i<b;i++){
            if (i%2==0){
                System.out.print(" "+i);
            }
        }
    }
}
```

Output:

```
the even numbers between a and b are:
  2  4  6  8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42
44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82
84 86 88 90 92 94 96 98
```

1. What is Abstraction?

A.) **Abstraction** is a process of hiding the implementation details and showing only functionality to the user.

Example: sending SMS where you type the text and send the message. You don't know the internal processing about the message delivery.

In Java, abstraction is achieved using Abstract classes and interfaces.

2. What is Encapsulation?

A.) **Encapsulation in Java** is a *process of wrapping code and data together into a single unit*, for example, a capsule which is mixed of several medicines.

We can create a fully encapsulated class in Java by making all the data members of the class private. Now we can use setter and getter methods to set and get the data in it.

The **Java Bean** class is the example of a fully encapsulated class.

3. What is JDK?

A.) The Java Development Kit (JDK) is a software development environment used for developing Java applications and applets. It includes the Java Runtime Environment (JRE), an interpreter/loader (Java), a compiler (javac), an archiver (jar), a documentation generator (Javadoc) and other tools needed in Java development.

4. What is JVM?

A.) JVM(Java Virtual Machine) acts as a run-time engine to run Java applications. JVM is the one that actually calls the **main** method present in a java code. JVM is a part of JRE(Java Runtime Environment).

Java applications are called WORA (Write Once Run Anywhere). This means a programmer can develop Java code on one system and can expect it to run on any other Java enabled system without any adjustment. This is all possible because of JVM.

When we compile a *.java* file, *.class* files(contains byte-code) with the same class names present in *.java* file are generated by the Java compiler. This *.class* file goes into various steps when we run it. These steps together describe the whole JVM.

5. Define Inheritance

A.) **Inheritance in Java** is a mechanism in which one object acquires all the properties and behaviors of a parent object. It is an important part of OOPs (Object Oriented programming system).

The idea behind inheritance in Java is that you can create new classes that are built upon existing classes. When you inherit from an existing class, you can reuse methods and fields of the parent class. Moreover, you can add new methods and fields in your current class also.

Inheritance represents the **IS-A relationship** which is also known as a *parent-child* relationship.

6. How java achieved platform independence?

A.) When you try to run your java program the *.class* file with same program name is picked by JVM instead of *.java* file because it consists of the bytecode. The JVM is more environment specific like OS and environment based.

So, though the bytecode remains same in any environment as JVM can understand this bytecode and communicate it with the environment which it is installed to, you don't have to write the same code for different environments. This way JVM can act as the mediator between same java code and different platforms, Operating systems, environments etc.

So, with the help of converting your Java files to an intermediate format called Java bytecode (with a *.class* extension) and creating or offering different JVMs for different platforms, **Java has achieved platform independence.**

7. Write the syntax of main function.

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

8. What is conditional operator?

A.) The conditional operator is also known as the ternary operator. This operator consists of three operands and is used to evaluate Boolean expressions. The goal of the operator is to decide; which value should be assigned to the variable. The operator is written as:

variable x = (expression)? value if true: value if false

9. How many data types in java?

A.) In Java, we have eight primitive data types: boolean, char, byte, short, int, long, float and double. Java developers included these data types to maintain the portability of java as the size of these primitive data types do not change from one operating system to another.

byte, short, int and **long** data types are used for storing whole numbers.

float and **double** are used for fractional numbers.

char is used for storing characters(letters).

boolean data type is used for variables that holds either true or false.

10. What is constant? How it is declared?

A.) A constant is a variable whose value cannot change once it has been assigned. Java doesn't have built-in support for constants, but the variable modifiers *static* and *final* can be used to effectively create one.

Constants can make your program more easily read and understood by others. In addition, a constant is cached by the JVM as well as your application, so using a constant can improve performance.