**Assignment 1**

1. Area of Rectangle

Program:

class Rectangle

{

public static void main(String[] args)

{

int l,b,area;

l=Integer.parseInt(args[0]);

b=Integer.parseInt(args[1]);

area=l\*b;

System.out.println(“Area of Rectangle=”+area);

}

}

Output:

Input:

5 6

Output:

Area of Rectangle = 30

2)Armstrong number

Program:

class Armstrong

{

public static void main(String[] args)

{

int r,s=0;

int n=Integer.parseInt(args[0]);

int k=n;

while(n>0){

r=n%10;

s=s+r\*r\*r;

n=n/10;

}

if(k==s){

System.out.println(k+" is Armstrong");

}

else{

System.out.println(k+" is not a Armstrong");

}

}

}

Input: 153

Output: 153 is Armstrong

3)Palindrome

Program:

class Palindrome

{

public static void main(String[] args)

{

int r,s=0;

int n=Integer.parseInt(args[0]);

int k=n;

while(n>0){

r=n%10;

s=(s\*10)+r;

n=n/10;

}

if(k==s){

System.out.println(k+" is a palindrome");

}

else{

System.out.println(k+" is not a palindrome");

}

}

}

Output:

Input: 34643

Output: 34643 is palindrome

4)program to generate first N prime numbers

Program:

class Prime

{

public static void main(String[] args)

{

int n=Integer.parseInt(args[0]);

int i=2;

while(n>0){

int c=0;

for(int j=2;j<=(i/2);j++){

if(i%j==0){

c+=1;

break;

}

}

if(c==0){

System.out.println(i);

n-=1;

}

i+=1;

}

}

Output:

Input: 5

Output: 2 3 5 7 11

5)program to print even numbers between the given two numbers

Program:

public class Even

{

public static void main(String[] args)

{

int n1=Integer.parseInt(args[0]);

int n2=Integer.parseInt(args[1]);

for(int i=n1;i<=n2;i++){

if(i%2==0){

System.out.println(i);

}

}

}

}

Output:

Input: 20 30

Output: 22 24 26 28 30

**1)Abstraction:**

Data **abstraction** is the process of hiding certain details and showing only essential information to the user.  
Abstraction can be achieved with either abstract classes and interfaces.

The  abstract  keyword is a non-access modifier, used for classes and methods:

**Abstract class:**It  is a restricted class that cannot be used to create objects

**Abstract method:** It can only be used in an abstract class, and it does not have a body. The body is provided by the subclass (inherited from).

An abstract class can have both abstract and regular methods

**2)Encapsulation:**

Encapsulation in Java is a mechanism of wrapping the data ( and code acting on the data together as a single unit.

In encapsulation, the variables of a class will be hidden from other classes, and can be accessed only through the methods of their current class. Therefore, it is also known as datahiding.

To achieve encapsulation in Java :

* Declare the variables of a class as private.
* Provide public setter and getter methods to modify and view the variables values.

**3)JDK:**

The Java Development Kit (JDK) is one of three core technology packages used in Java programming, along with the JVM (Java Virtual Machine) and the JRE (Java Runtime Environment). It's important to differentiate between these three technologies, as well as understanding how they're connected:

-> The JVM is the Java platform component that executes programs.

->The JRE  is the on-disk part of Java that creates the JVM.

-> The distinction is that the JDK is a package of tools for developing Java-based software

**4)JVM:**

JVM (Java Virtual Machine) is an abstract machine. It is a specification that provides runtime environment in which java bytecode can be executed.

JVMs are available for many hardware and software platforms (i.e. JVM is platform dependent).

**A specification**  where working of Java Virtual Machine is specified. But implementation provider is independent to choose the algorithm. Its implementation has been provided by Oracle and other companies.

**An implementation** Its implementation is known as JRE (Java Runtime Environment).

**Runtime Instance** Whenever you write java command on the command prompt to run the java class, an instance of JVM is created.

**5)Inheritance:**

Inheritance can be defined as the process where one class acquires the properties (methods and fields) of another. With the use of inheritance the information is made manageable in a hierarchical order.

The class which inherits the properties of other is known as subclass (derived class, child class) and the class whose properties are inherited is known as superclass (base class, parent class).

extends is the keyword used to inherit the properties of a class. Following is the syntax of extends keyword.

The super keyword is similar to this keyword. Following are the scenarios where the super keyword is used.

* It is used to differentiate the members of superclass from the members of subclass, if they have same names.
* It is used to invoke the superclass constructor from subclass.

There are various types of inheritance,they are:

1)single Inheritance

2)Multitilevel inheritance

3)Heirarichal inheritance

4)Multiple inheritance

Java doesnot support the Multiple inheritance ,but supports through interfaces.

**6)** Java is platform independent by being an interpreted language and by having a standardized interpreter for each platform that Java runs on. The Java Virtual Machine, JVM, is unique to each hardware platform that it runs on. The JVM provides a standardized environment in which Java bytecodes are interpreted.

**7)Syntax of main fuction:**

**public static void main(String[] args)**

**public :** This is the access modifier of the main method.It has to be public so that java runtime can execute this method.

**Static :** The main method has to be staticso that JVM can load the class into memory and call the main method.

**Void :** Java main method doesnot return any value,that’s why its return type is void.

**Main :** This is the name of java main method.when we start a java program ,it looks for the main method.

**String[]args :**the main method in java accepts a single argument of type string array.It is also known as java command line arguments.

**8) conditional operator:** It is also known as ternary operator.It has three operands:

->Boolean condition

->First expression

->Second expression

**Syntax:** Boolean condition ? first expression : second expressrst expression otherwise it returns second expression.

**9)Data types :**

There are two groups: primitive and non primitive data types

->Primitive number types are divided into two groups:

**Integer types**  stores whole numbers, positive or negative (such as 123 or -456), without decimals. Valid types are byte,int,short,long.  Which type you should use, depends on the numeric value.

**Floating point types**  represents numbers with a fractional part, containing one or more decimals. There are two types: float and double.

->Non-primitive data types - such as String, array, classes.

**10)Constant:**

A constant is a variable whose value **cannot change once it has been assigned**. Java doesn't have built-in support for constants.

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

To define a variable as a constant, we just need to add the keyword “**final**” in front of the variable declaration.

**Declaration:**

**final datatype variable = value;**

**ex:** final int n=89;