1) Program to Display All Prime Numbers from 1 to N

```
class PN {
 static void prime_N(int N) {
       int x, y, z;
      System.out.println("All the Prime numbers within 1 and " + N + " are:");
      for (x = 1; x <= N; x++) {
           // Omit 0 and 1 as they are neither prime nor composite
          if (x == 1 || x == 0)
              continue;
          // Using flag variable to check if x is prime or not
          z = 1;
          for (y = 2; y <= x / 2; ++y) {
              if (x % y == 0) {
                  z = 0;
                  break;
              }
          }
          if (z == 1)              // If flag is 1 then x is prime but if flag is 0 then x is not prime
              System.out.print(x + " ");
       }
   }
   public static void main(String[] args)
   {
      int N = 45;
      prime_N(N);    }  }
```

2) Program to Check Armstrong Number between Two Integers

```
import java.io.*;
import java.math.*;

class gfg {

    // Function to print Armstrong
    // Numbers between two integers
    static void ArmstrongNum(int l, int h)
    {
        for (int j = l + 1; j < h; ++j) {

            // Calculating number of digits
            int y = j;
            int N = 0;
            while (y != 0) {
                y /= 10;
                ++N;
            }

            // Calculating the sum of nth
            // power of all the digits
            int sum_power = 0;
            y = j;
            while (y != 0) {
                int d = y % 10;
                sum_power += Math.pow(d, N);
                y /= 10;
            }

            // Checking if the current number
            // i is equal to the sum of nth
            // power of all the digits
            if (sum_power == j)
                System.out.print(j + " ");
        }
    }
      public static void main(String args[])
    {
        int n1 = 50;
        int n2 = 500;
        ArmstrongNum(n1, n2);
        System.out.println();
    }
}
```

3) Program for factorial of a number

```
class fact {
   // Method to find factorial
   // of given number
   static int factorial(int n)
   {
      int res = 1, i;
      for (i = 2; i <= n; i++)
         res *= i;
      return res;
   }

   // main method
   public static void main(String[] args)
   {
      int num = 5;
      System.out.println("Factorial of " + num + " is "
                  + factorial(5));
   }
}
```

4) Program for compound interest

Formula to calculate compound interest annually is given by:

Compound Interest = $P(1 + R/100)^t$

Where,

P is principal amount

R is the rate and

T is the time span

```
import java.io.*;

class ci
{
   public static void main(String args[])
   {
      double principal = 10000, rate = 10.25, time = 5;

      /* Calculate compound interest */
      double CI = principal *
               (Math.pow((1 + rate / 100), time));

     System.out.println("Compound Interest is "+ CI);
   }
}
```

5) Programs to print triangles using *

```
public class Main {
  public static void main(String[] args) {
    int rows = 5;
    for (int i = 1; i <= rows; ++i) {
      for (int j = 1; j <= i; ++j) {
        System.out.print("* ");
      }
      System.out.println();
    }
  }
}
```

6) Program to Print Inverted half pyramid using *

```
public class Main {

  public static void main(String[] args) {
    int rows = 5;

    for (int i = rows; i >= 1; --i) {
      for (int j = 1; j <= i; ++j) {
        System.out.print("* ");
      }
      System.out.println();
    }
  }
}
```

7) Program to Print Floyd's Triangle .

```
public class Main {
```

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

    int rows = 4, number = 1;

    for(int i = 1; i <= rows; i++) {

      for(int j = 1; j <= i; j++) {

        System.out.print(number + " ");

        ++number;

      }

      System.out.println();

    }

  }
```

8) Java program for Method Overloading by Using Different Numbers of Arguments.

```
class multi {



    static int Multiply(int a, int b)
    {

        // Return product
        return a * b;
    }


    static int Multiply(int a, int b, int c)
    {

        // Return product
        return a * b * c;
    }
}

class hello {

    // Main driver method
    public static void main(String[] args)
    {
```

```
        // Calling method by passing
        // input as in arguments
        System.out.println(multi.Multiply(2, 4));
        System.out.println(multi.Multiply(2, 7, 3));
    }
}
```

9) Program for implementing interface.

```
interface Language {
  void getName(String name);
}

class ProgrammingLanguage implements Language {

   public void getName(String name) {
    System.out.println("Programming Language: " + name);
  }
}

class Main {
  public static void main(String[] args) {
    ProgrammingLanguage language = new ProgrammingLanguage();
    language.getName("Java");
  }
}
```

10) Program to implement Java Inheritance

```
class Animal {

   String name;

  public void eat() {

    System.out.println("I can eat");

  }

}

class Dog extends Animal {

    public void display() {

    System.out.println("My name is " + name);

  }
```

```
}

class Main {
  public static void main(String[] args) {
    Dog labrador = new Dog();
    labrador.name = "Rohu";
    labrador.display();
    labrador.eat();

  }
}
```

11) Program to implement Default Method in Java Interface

```
interface Polygon {
  void getArea();

  // default method
  default void getSides() {
    System.out.println("I can get sides of a polygon.");
  }
}

class Rectangle implements Polygon {
  public void getArea() {
    int length = 6;
    int breadth = 5;
```

```
    int area = length * breadth;
    System.out.println("The area of the rectangle is " + area);
  }

  // overrides the getSides()
  public void getSides() {
    System.out.println("I have 4 sides.");
  }
}

// implements the interface
class Square implements Polygon {
  public void getArea() {
    int length = 5;
    int area = length * length;
    System.out.println("The area of the square is " + area);
  }
}

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

    // create an object of Rectangle
    Rectangle r1 = new Rectangle();
    r1.getArea();
    r1.getSides();
```

```
    // create an object of Square
    Square s1 = new Square();
    s1.getArea();
    s1.getSides();
  }
}
```

12) Program on packages.

```
package pack;
public class A
{
public void msg(){System.out.println("Hello");
}
}
```

```
package mypack;
import pack.*;

class B{
public static void main(String args[]){
A obj = new A();
obj.msg();
 }
}
```