PRACTICAL 1

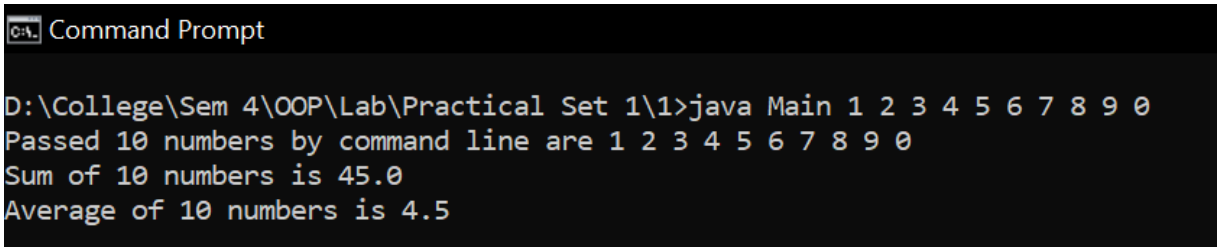
1.

AIM:
WAP to print sum & average of three nos. using command line arguments.

CODE:

```
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 22nd Dec 2020
Brief: Finding sum and average of 3 numbers using Command Line Args
*/

public class Main {
  public static void main(String[] args) {
    int totalNos = args.length;
    float average = 0, sum = 0;

    System.out.print("Passed " + totalNos + " numbers by command lin
e are ");
    for (int i = 0; i < totalNos; ++i) {
      System.out.print(args[i] + " ");
      sum += Float.parseFloat(args[i]);
    }
    System.out.println();

    average = sum / totalNos;
    System.out.println("Sum of " + totalNos + " numbers is " + sum);
    System.out.println("Average of " + totalNos + " numbers is " + a
verage);
  }
}
```

SCREENSHOT:



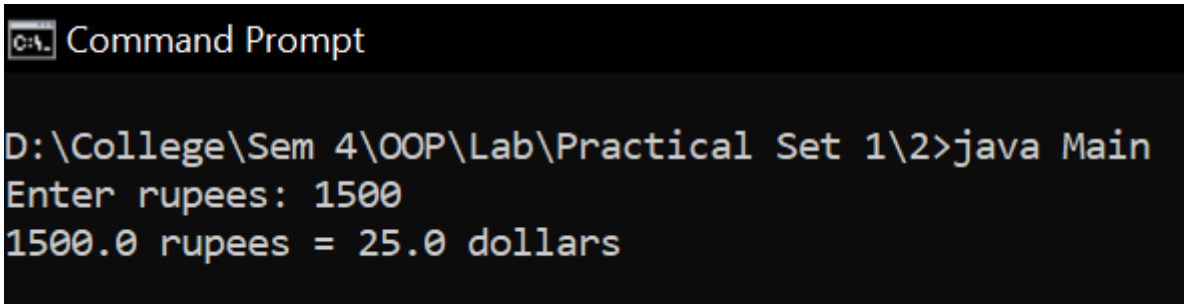
2.

AIM: WAP to convert rupees to dollar. 60 rupees=1 dollar.

CODE:

```java
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 22nd Dec 2020
Brief: Converting rupees to dollars [60rs = $1]
*/

import java.util.Scanner;

public class Main {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    System.out.print("Enter rupees: ");
    float rupees = input.nextFloat();
    float dollars = rupees / 60;
    System.out.println(rupees + " rupees = " + dollars + " dollars")
;
    input.close();
  }
}
```

SCREENSHOT:



3.

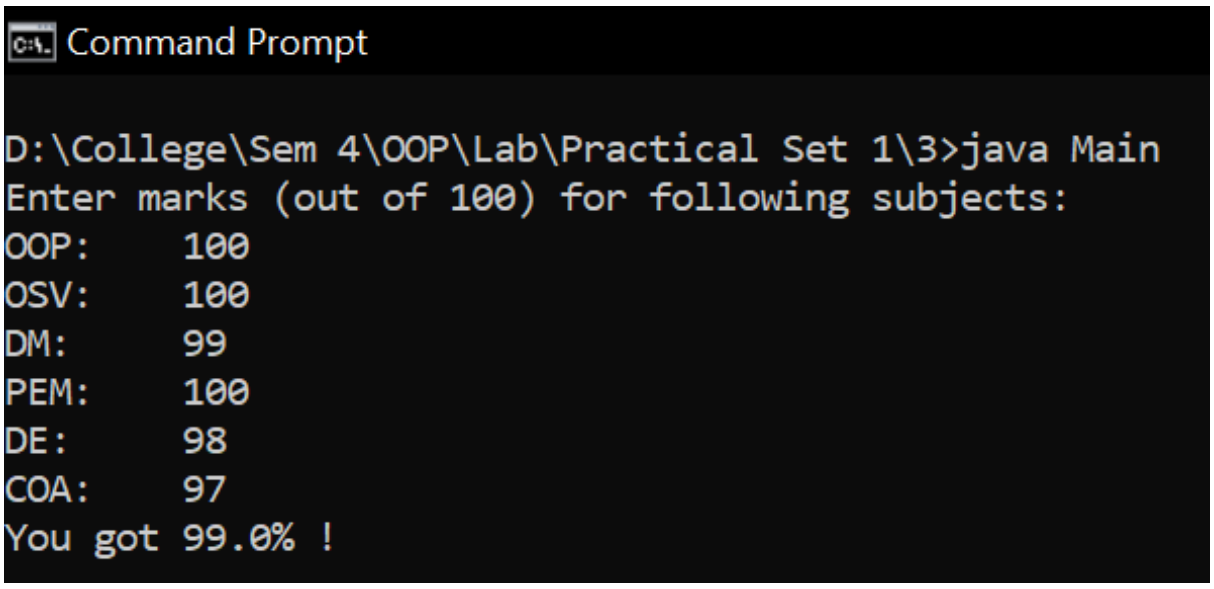
AIM:
WAP that calculates percentage marks of the student if marks of 6 subjects are given.

CODE:

```
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 22nd Dec 2020
Brief: Calculating percentage of the 6 subjects
*/

import java.util.Scanner;

public class Main {
  public static void main(String[] args) {
    String[] subjects = new String[] { "OOP", "OSV", "DM", "PEM", "DE", "COA" };
    float[] marks = new float[6];

    Scanner input = new Scanner(System.in);

    float totalMarks = 0;
```

```
    System.out.println("Enter marks (out of 100) for following subje
cts: ");
    for (int i = 0; i < subjects.length; ++i) {
      System.out.print(subjects[i] + ":\t");
      marks[i] = input.nextFloat();
      totalMarks += marks[i];
    }

    float percentage = totalMarks / (100 * 6) * 100; // basic formul
a
    System.out.println("You got " + percentage + "% !");

    input.close();
  }
}
```

SCREENSHOT:



4.

AIM:

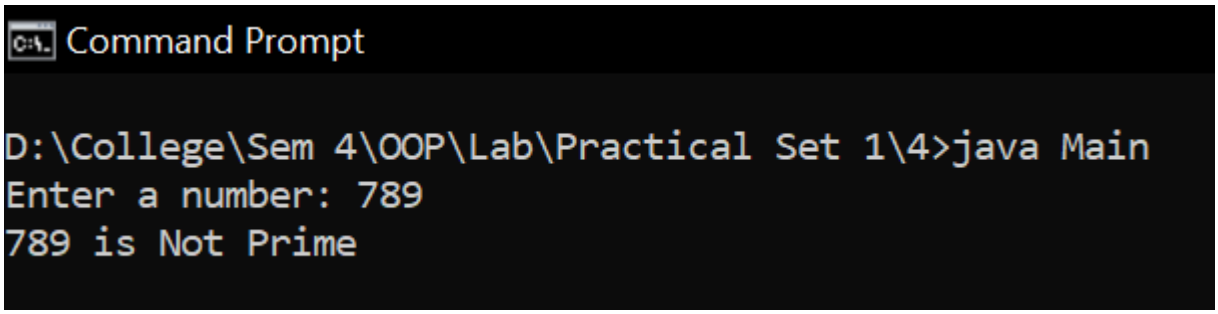
WAP to check that number entered is prime or not using Boolean data type.

CODE:

```
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 22nd Dec 2020
Brief: Finding if a number is prime or not
*/

import java.util.Scanner;

public class Main {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    System.out.print("Enter a number: ");
    int number = input.nextInt();
    System.out.println(number + " is " + (isPrime(number) ? "Prime"
: "Not Prime"));
    input.close();
  }

  public static boolean isPrime(int num) {
    if (num <= 1)
      return false;
    for (int fact = 2; fact * fact <= num; ++fact) {
      if (num % fact == 0)
        return false;
    }

    return true;
  }

  public static void printPrimesUpto100() {
    String ANSI_RESET = "\u001B[0m";
    String ANSI_RED = "\u001B[31m";
```

```
    String ANSI_GREEN = "\u001B[32m";

    for (int i = 0; i < 100; ++i) {
      boolean isCurrentNumberPrime = isPrime(i);
      if (isCurrentNumberPrime) {
        System.out.println(i);
      }
    }
  }
}
```

SCREENSHOT:



5.

AIM:

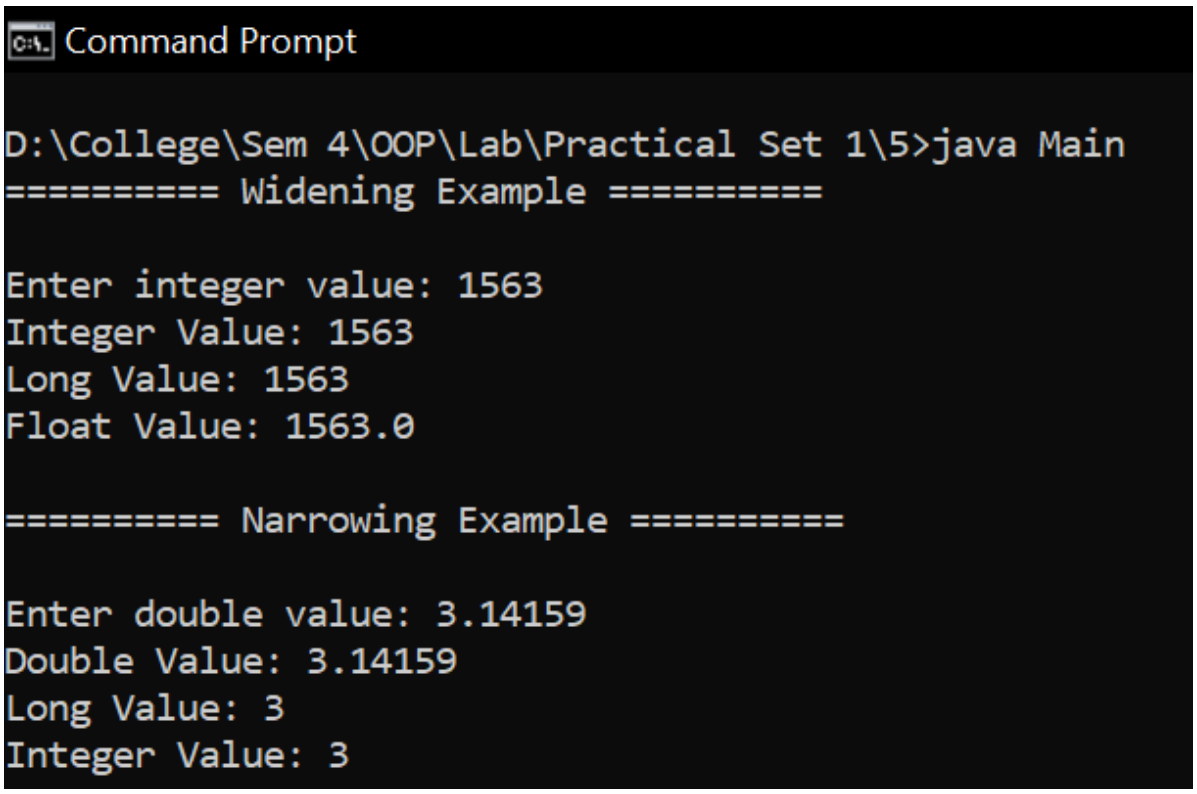
WAP to demonstrate the concept of narrowing and widening type conversion.

CODE:

```
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 5th Jan 2021
Brief: Demonstrating Narrowing and Widening Concepts
*/
```

```java
import java.util.Scanner;

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

    Scanner input = new Scanner(System.in);

    // widening example
    System.out.println("========== Widening Example ==========\n");
    System.out.print("Enter integer value: ");
    int intNumber = input.nextInt();
    long longNumber = intNumber;
    float floatNumber = intNumber;

    System.out.println("Integer Value: " + intNumber);
    System.out.println("Long Value: " + longNumber);
    System.out.println("Float Value: " + floatNumber);

    // narrowing example
    System.out.println("\n========== Narrowing Example ==========\n"
);
    System.out.print("Enter double value: ");
    double realNumber = input.nextDouble();
    longNumber = (long) realNumber;
    intNumber = (int) realNumber;

    System.out.println("Double Value: " + realNumber);
    System.out.println("Long Value: " + longNumber);
    System.out.println("Integer Value: " + intNumber);

    input.close();
  }
}
```

SCREENSHOT:



6.

AIM:

WAP to implement the sum of following pattern using the concept of multi dimension array.

1	4
2 2	3 3
3 3 3	2 2 2
4 4 4 4	1 1 1 1

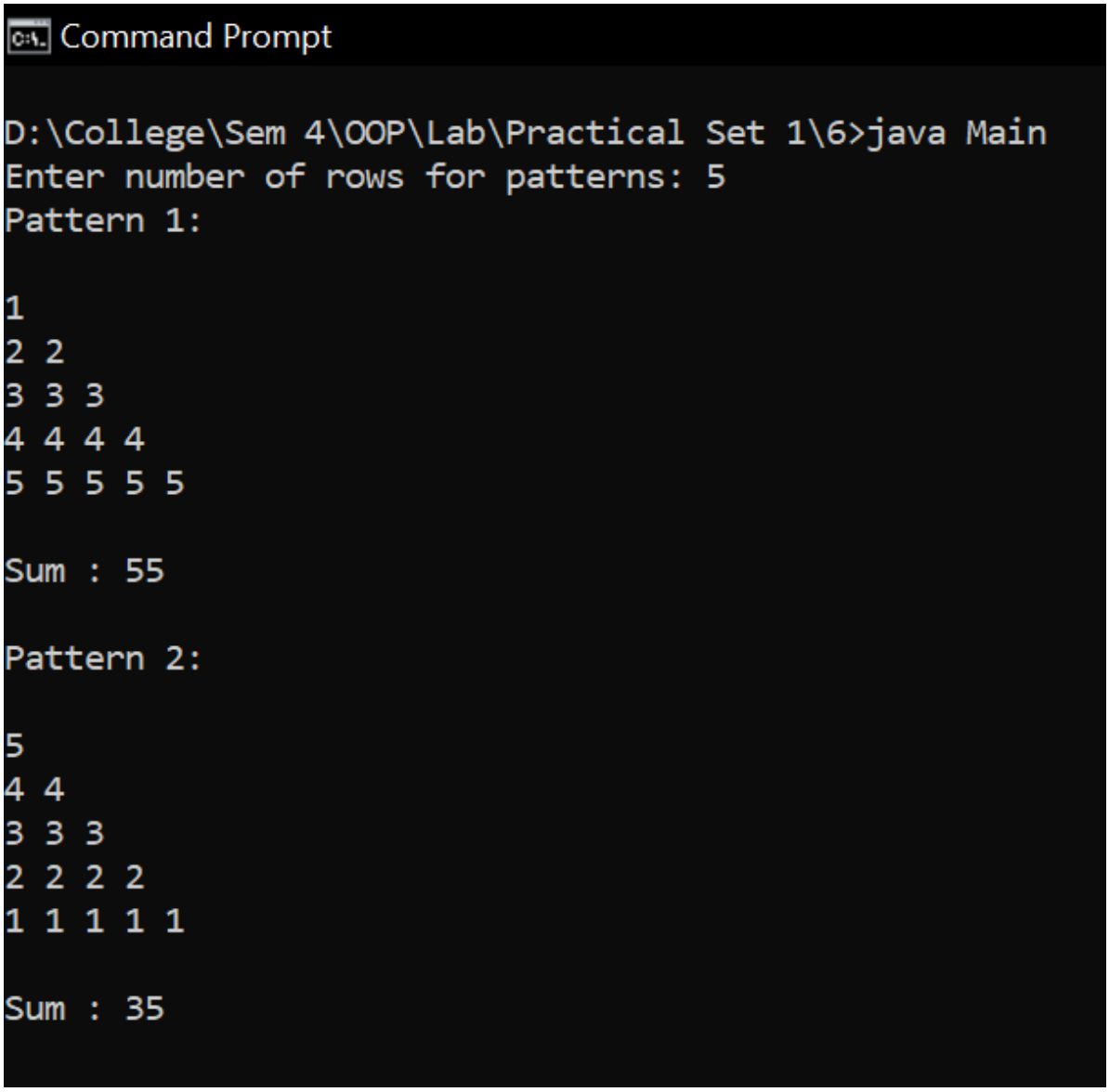
CODE:

```
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 22nd Dec 2020
Brief: Printing Patterns
*/
```

```java
import java.util.Scanner;

public class Main {
  public static void main(String args[]) {
    Scanner input = new Scanner(System.in);
    System.out.print("Enter number of rows for patterns: ");
    final int maxValue = input.nextInt();
    int sum;

    // Pattern 1

    System.out.println("Pattern 1:\n");
    int arr1[][] = new int[maxValue][];
    sum = 0;

    for (int i = 0; i < maxValue; i++) {
      arr1[i] = new int[i + 1];
      for (int j = 0; j <= i; j++) {
        arr1[i][j] = i + 1;
      }
    }

    for (int i = 0; i < arr1.length; i++) {
      for (int j = 0; j < arr1[i].length; j++) {
        System.out.print(arr1[i][j] + " ");
        sum += arr1[i][j];
      }
      System.out.println();
    }
    System.out.println("\nSum : " + sum + "\n");
```

```java
    // Pattern 2

    System.out.println("Pattern 2:\n");
    int arr2[][] = new int[maxValue][];
    sum = 0;

    for (int i = 0; i < maxValue; i++) {
      arr2[i] = new int[i + 1];
      for (int j = 0; j <= i; j++) {
        arr2[i][j] = maxValue - i;
      }
    }

    for (int i = 0; i < arr2.length; i++) {
      for (int j = 0; j < arr2[i].length; j++) {
        System.out.print(arr2[i][j] + " ");
        sum += arr2[i][j];
      }
      System.out.println();
    }
    System.out.println("\nSum : " + sum + "\n");

    input.close();
  }
}
```

SCREENSHOT:



7.

AIM:

WAP to print following Pascal triangle using irregular multi-dimensional array
1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1

CODE:

```java
/*
Author: Ankit Verma
Enroll No: 190170116077
Date: 5th Jan 2021
Brief: Printing Pascal's Triangle

NOTE: logic: nCr = nC(r-1) * (n-r+1)/r
*/

import java.util.Scanner;

public class Main {
  public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    System.out.print("Enter number of rows in Pascal Triangle: ");
    final int noOfRows = input.nextInt();
    int pascalTriangle[][] = new int[noOfRows][];

    // creating pascal triangle
    for (int i = 0; i < noOfRows; ++i) {
      pascalTriangle[i] = new int[i + 1];
      int iCj = 1;
      pascalTriangle[i][0] = pascalTriangle[i][i] = iCj; // C(0,0) =
 C(i,i) = 1
      for (int j = 1; j < i; ++j) {
        iCj = iCj * (i - j + 1) / j;
        pascalTriangle[i][j] = iCj;
      }
    }

    // display pascal triangle
    System.out.println("Pascal Triangle");
    for (int i = 0; i < pascalTriangle.length; ++i) {
```

```
      for (int j = 0; j < pascalTriangle[i].length; ++j) {
        System.out.printf("%3d ", pascalTriangle[i][j]);
      }
      System.out.println();
    }

    input.close();
  }
}
```

SCREENSHOT: