# Flow Control Exercises

**1. Write a Java program to get a number from the user and print whether it is positive or negative.**

Test Data
Input number: 35
*Expected Output:*
Number is positive

**2. Take three numbers from the user and print the greatest number.**

Test Data
Input the 1st number: 25
Input the 2nd number: 78
Input the 3rd number: 87
*Expected Output:*
The greatest: 87

**3. Write a Java program that reads a floating-point number and prints "zero" if the number is zero. Otherwise, print "positive" or "negative". Add "small" if the absolute value of the number is less than 1, or "large" if it exceeds 1,000,000.**

Test Data
Input value: 25
*Expected Output:*
Positive number

**4. Write a Java program that keeps a number from the user and generates an integer between 1 and 7 and displays the name of the weekday.**
Note: 1 is Monday and 7 is Sunday

Test Data
Input number: 3
*Expected Output:*
Wednesday

**5. Write a Java program that reads in two floating-point numbers and tests whether they are the same up to three decimal places.**

Test Data
Input floating-point number: 12.47832642
Input floating-point another number: 12.47832099
*Expected Output:*
They are the same up to three decimal places

**6. Write a Java program to find the number of days in a month.**

Test Data
Input a month number: 2
Input a year: 2016
*Expected Output:*
February 2016 has 29 days

**7. Write a Java program that takes the user to provide a single character from the alphabet. Print Vowel or Consonant, depending on the user input. If the user input is not a letter (between a and z or A and Z), or is a string of length > 1, print an error message.**

Test Data
Input an alphabet: p
*Expected Output:*
Input letter is Consonant

**8. Write a Java program that takes a year from user and print whether that year is a leap year or not.**

Test Data
Input the year: 2016
*Expected Output:*
2016 is a leap year

**9. Write a program in Java to display the first 10 natural numbers.**

*Expected Output:*
The first 10 natural numbers are:
1
2
3
4
5
6
7
8
9
10

**10. Write a program in Java to display n terms of natural numbers and their sum.**

Test Data
Input the number: 2
*Expected Output:*
Input number:
2
The first n natural numbers are:
1
2
The Sum of Natural Number up to 2 terms: 3

**11. Write a program in Java to input 5 numbers from keyboard and find their sum and average.**

Test Data
Input the 5 numbers: 1 2 3 4 5
*Expected Output:*

Input the 5 numbers:
1
2
3
4
5
The sum of 5 is: 15
The Average is: 3.0

**12. Write a program in Java to display the cube of the number up to given an integer.**

Test Data
Input number of terms: 4
*Expected Output:*

Number is: 1 and cube of 1 is: 1
Number is: 2 and cube of 2 is: 8
Number is: 3 and cube of 3 is: 27
Number is: 4 and cube of 4 is: 64

**13. Write a program in Java to display the multiplication table of a given integer.**

Test Data
Input the number (Table to be calculated): Input number of terms: 5
*Expected Output:*

5 X 0 = 0
5 X 1 = 5
5 X 2 = 10
5 X 3 = 15
5 X 4 = 20
5 X 5 = 25

**14. Write a program in Java to display the n terms of odd natural number and their sum.**

Test Data
Input number of terms is: 5
*Expected Output:*

The odd numbers are:
1
3
5
7
9
The Sum of odd Natural Number up to 5 terms is: 25

**15. Write a program in Java to display the pattern like right angle triangle with a number.**

Test Data
Input number of rows: 10
*Expected Output:*

1
12
123
1234
12345
123456
1234567
12345678
123456789
12345678910

**16. Write a program in Java to make such a pattern like right angle triangle with a number which will repeat a number in a row. The pattern is as follows:**

Test Data
Input number of n: 4
*Expected Output:*

1
22
333
4444

**17. Write a program in Java to make such a pattern like right angle triangle with number increased by 1. The pattern like:**

Test Data
Input number of rows: 4
*Expected Output:*

1
2 3
4 5 6
7 8 9 10

**18. Write a program in Java to make such a pattern like a pyramid with a number which will repeat the number in the same row.**

Test Data
Input number of rows: 4
*Expected Output:*

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

**19. Write a program in Java to print the Floyd's Triangle.**

Test Data
Input number of rows: 5
*Expected Output:*

1
01
101
0101
10101

**20. Write a program in Java to display the pattern like a diamond.**

Test Data
Input number of rows (half of the diamond): 7
*Expected Output:*

```
       *
      ***
     *****
    *******
   *********
  ***********
*************
  ***********
   *********
    *******
     *****
      ***
       *
```

**21. Write a Java program to display Pascal's triangle.**

Test Data
Input number of rows: 5
*Expected Output:*

```
      1
     1 1
    1 2 1
   1 3 3 1
  1 4 6 4 1
```

**22. Write a java program to generate a following *'s triangle.**

Test Data
Input the number: 6
*Expected Output:*

```
******
 *****
  ****
   ***
    **
     *
```

**23. Write a java program to generate a following @'s triangle.**

Test Data
Input the number: 6
*Expected Output:*

```
     @
    @@
   @@@
  @@@@
 @@@@@
@@@@@@
```

**24. Write a Java program to display the number rhombus structure.**

Test Data
Input the number: 7
*Expected Output:*

```
      1
     212
    32123
   4321234
  543212345
 65432123456
7654321234567
 65432123456
  543212345
   4321234
    32123
     212
      1
```

**25. Write a Java program to display the following character rhombus structure.**

Test Data
Input the number: 7
*Expected Output:*

```
       A
      ABA
     ABCBA
    ABCDCBA
   ABCDEDCBA
  ABCDEFEDCBA
ABCDEFGFEDCBA
  ABCDEFEDCBA
   ABCDEDCBA
    ABCDCBA
     ABCBA
      ABA
       A
```

**26. Write a Java program that reads a positive integer and count the number of digits the number (less than ten billion) has.**

Test Data
Input an integer number less than ten billion: 125463
*Expected Output:*
Number of digits in the number: 6

**27. Write a Java program that accepts three numbers and prints "All numbers are equal" if all three numbers are equal, "All numbers are different" if all three numbers are different and "Neither all are equal or different" otherwise.**

Test Data
Input first number: 2564
Input second number: 3526
Input third number: 2456
*Expected Output:*

All numbers are different

**28. Write a program that accepts three numbers from the user and prints "increasing" if the numbers are in increasing order, "decreasing" if the numbers are in decreasing order, and "Neither increasing or decreasing order" otherwise.**

Test Data
Input first number: 1524
Input second number: 2345
Input third number: 3321
*Expected Output:*

Increasing order