**Programming Paradigms Laboratory**

**B.Tech. 4th Semester**



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| Faculty | Engineering & Technology |
| Programme | B. Tech. in Computer Science and Engineering |
| Year/Semester | 2nd Year / 4th Semester |
| Name of the Laboratory | Programming Paradigms Laboratory |
| Laboratory Code | 19CSL217A |

# Laboratory 1

Title of the Laboratory Exercise: Introduction to Java programming environment with variables, data types and arithmetic operators

1. Questions
2. Develop a Java program to check the input number is positive or negative.
3. Develop a Java program to reverse the input number using for and while loop.
4. Develop a program to compute the factorial of the input number.
5. Develop a Java program to check whether the input year is leap or not.

1. Calculations/Computations/Algorithms

**Algorithm 2.1 Program to check the input number is positive or negative.**

Step 1: start

Step 2: input a number, say num

Step 3: if num > 0 or equal to 0

3.1 then, print “number is positive”

Step 4: else:

4.1 print “number is negative”

Step 5: stop

**Algorithm 2.2 Program to reverse the input number using for and while loop.**

Step 1: start

Step 2: input a number, say num

Step 3: assign another variable rev = 0

Step 4: while (num not equal to 0):

4.1 rev = rev \* 10

4.2 rev = rev + num % 10

4.3 num = num / 10

Step 5: print rev

Step 6: stop

**Algorithm 2.3 Program to compute the factorial of the input number**

Step 1: start

Step 2: input a number, say num

Step 3: assign a variable fact = 1

Step 4: for (i=1 ; i <= n ; i++):

4.1 fact = fact \* i

Step 5: print fact

Step 6: stop

**Algorithm 2.4 Program to check whether the input year is leap or not**

Step 1: start

Step 2: input the year, say variable ‘year’

Step 3: if ((year % 4 == 0 and year % 100 != 0) or year % 400 == 0):

3.1 then, print “leap year”

Step 4: else:

4.1 print “not a leap year”

Step 5: stop

1. Presentation of Results

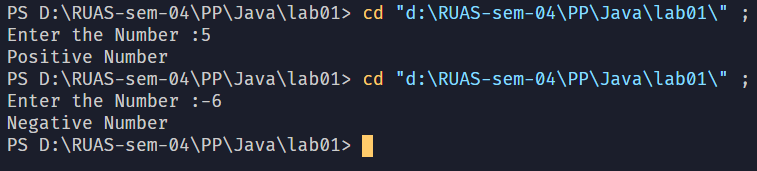
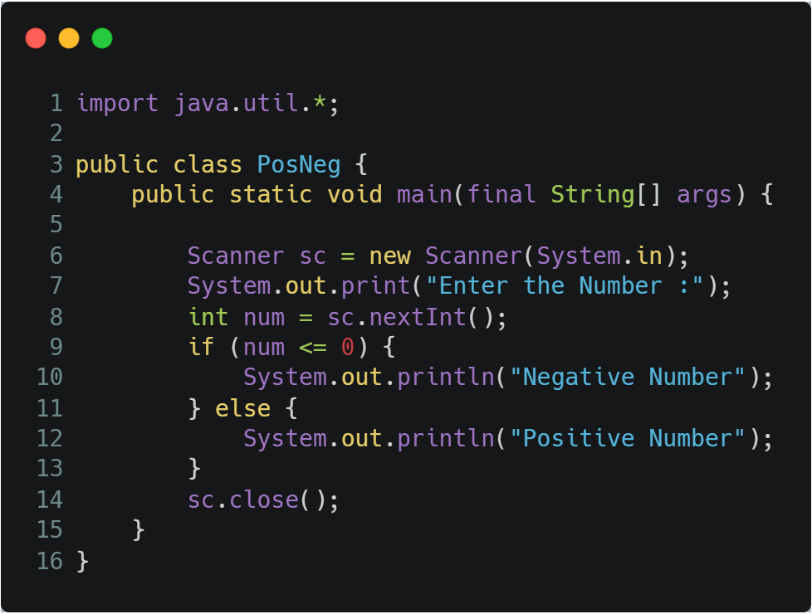


Figure Program to check the input number is positive or negative.

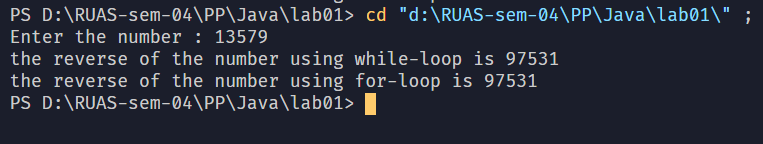
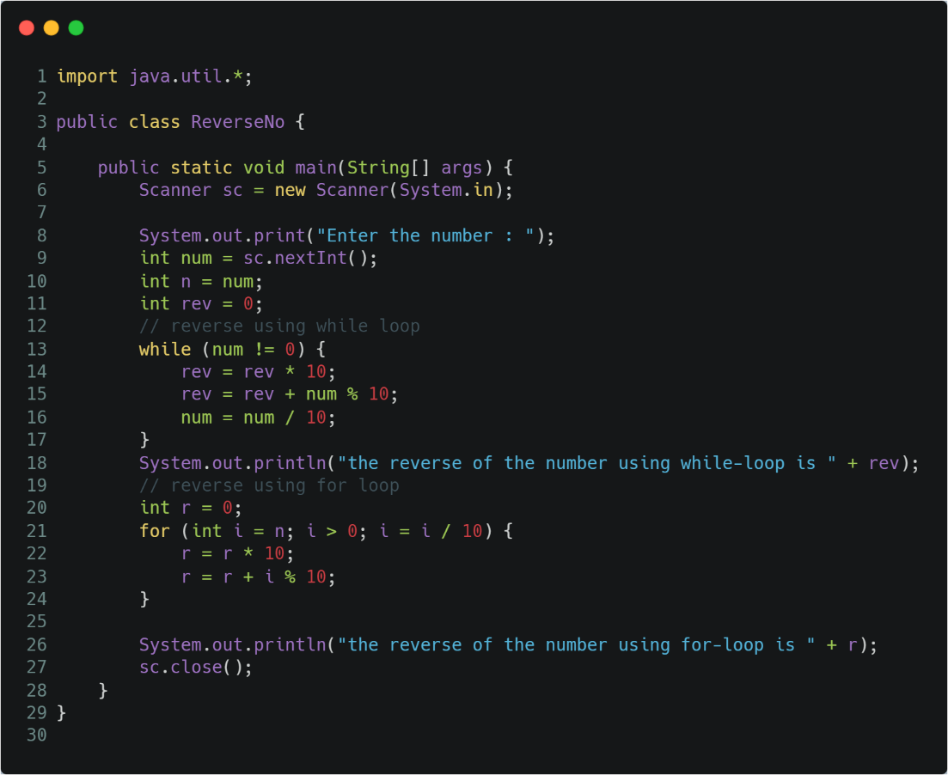


Figure Program to reverse the input number using for and while loop.

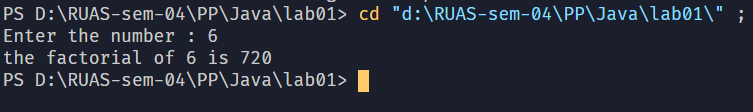
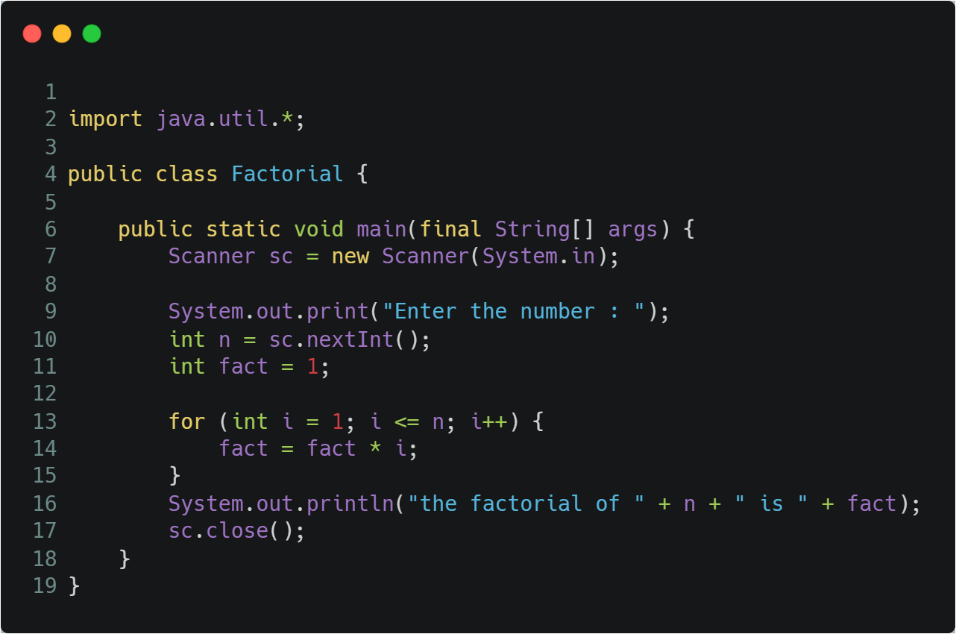


Figure Program to compute the factorial of the input number

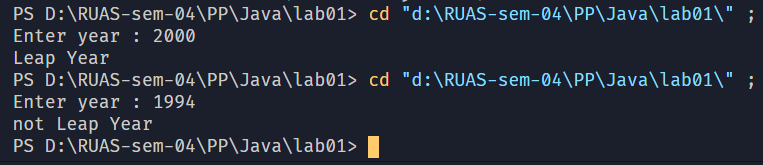
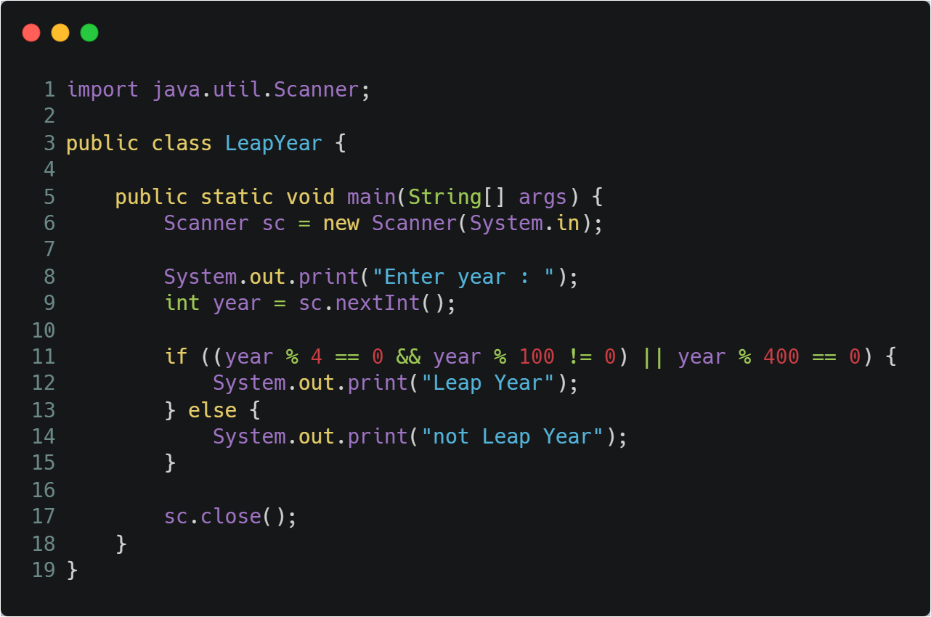


Figure Program to check whether the input year is leap or not.

1. Conclusions

Learning happened:

* The Java programming language includes five arithmetic operators, i.e. + (addition), - (subtraction), \* (multiplication), / (division), and % (modulo).
* Object reference variables are initialized to null.
* A number is by default an int literal, a decimal number is by default a double literal
* Java has 8 primitive data types. i.e. Boolean, byte, short, char, int, long, float and double

1. Limitations of Experiments and Results

5.1 we could detect if the number input is positive, negative or zero.

5.2 the program only does palindrome for integers; it does not work for strings.

5.3 the datatype of fact is integer, hence factorial of large numbers will not be supported.