Exercise 1 - Factorials
Write a Java program that asks the user for a positive integer less than 15 and shows how to calculate its factorial and prints the result. If the user inputs an invalid number then print an error message and exit.

Example 1
Please input a positive integer less than 15: 6
6! = 6 * 5 * 4 * 3 * 2 * 1 = 720

Example 2
Please input a positive integer less than 15: 20
Invalid input

Exercise 2 - Loop control
What is the value of counter after executing the following code snippets? Note: counter is an integer that was initialized to zero before executing each snippet.

A. for (int i=1; i < 10; i += 2) counter++;
B. while (counter <= 10) counter += 2;
C. do counter++; while (counter < 0);
D. for (int i=1; i < 10; i++) {
    if ((i % 2) == 0) continue;
    counter++;
}
E. while (counter < 10) {
    if ((counter % 2) == 0) break;
    counter++;
}

F. for (int i=1; i != 10; i++) {
    counter++;
    i++;
}

Exercise 3 – Timed loops
System.currentTimeMillis() returns a long integer that shows the number of milliseconds elapsed since midnight 1/1/1970. Write a Java program that counts and prints the milliseconds elapsed since the program started until at least 5 seconds pass.

Example
Time elapsed: x milliseconds
Time is up!

Exercise 4 [Homework] – Numbers Diamond
Write a Java program that asks the user for a positive integer between 1 and 9 and prints a diamond of numbers as shown in the example.
Example
Please input an integer between 1 and 9: 5

```
1
1 2 1
1 2 3 2 1
1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
1 2 3 4 3 2 1
1 2 3 2 1
1 2 1
1
```