Programming 1

Tutorial 7

Activity 1

Use OOP to model books and libraries. A library contains books. Books can be borrowed from and returned to a library.

* This is a do-along-with-teacher activity.

Activity 2

Write a program that reads an integer and output its binary form. You are required to implement a **recursive** method to convert a decimal integer into a binary string.

The method of converting decimal number to binary string can be read from **Tutorial 6**.

Activity 3

Write and run a recursive method to reverse a string.

Activity 4

Write and run a recursive method to print the Fibonacci sequence. The Fibonacci sequence is: 0 1 1 2 3 5 8 13 21 34 55… The first two numbers are 0 and 1. Starting from the 3rd number, the number is equal to the sum of the previous two numbers.

(*) Also write a recursive method to return the n^{th} number in the Fibonacci sequence.

Activity 5

(non-recursive) Ask user to enter a password. Measure its strength with the following rules:

- Length:
  - From 8 to 12, 1 point.
  - > 12, 2 points.
- Contains at least one uppercase letter: 1 point
- Contains at least one lowercase letter: 1 point
- Contains at least one digit: 1 point
- Contains non-alphanumeric characters (symbols): 1 point

Then rate the strength:

- 1-2 points: weak
- 3-4 points: medium
- 5-6 points: strong

Expected result:

Case 1:

```
Enter a new password: 123456
Strength: 1 (weak)
```

Case 2:

```
Enter a new password: andrew1974
Strength: 3 (medium)
```

Case 3:

```
Enter a new password: peterX124%_beTTy
Strength: 6 (strong)
```