Lab 07: Review

CSE 4108

Structured Programming I Lab

October 2022

Lab Tasks

1. **Three Patterns:**

Given the value n where $0 < n < 10$, print three different types of pattern in the console.

Input	Output
1	* * *
2	* * * * * * * * *
3	* * * * * * * * * * * * * * * * * *

2. **<u>Numbers!:</u>**

For each integer n in the interval $[a, b]$, *where* $(1 \leq a \leq b \leq 10^6)$ (given as input) :
- If $1 \leq n \leq 9$, then print the English representation of it in lowercase. That is "one" for **1**, "two" for **2**, and so on.
- If $n > 9$ and it is an even number, then print **"even"**.
- If $n > 9$ and it is an odd number, then print **"odd"**.

Input	Output
8 11	eight nine even odd

3. **<u>Lucky Numbers:</u>**

John Doe likes to play with numbers. He considers a number lucky if it contains only 4 or 7 in it. For example, 447474, 477747 is a lucky number. But 400514, 43, 76447 are not. Now, you have to write a C program that can find out whether a number is a lucky number or not.

Input	Output
40007	No
477747	Yes

4. **Lucas Numbers:**

A series of numbers in which each number (Fibonacci number) is the sum of the two preceding numbers. Similar to the Fibonacci numbers, each Lucas number is defined to be the sum of its two immediate previous terms, thereby forming a Fibonacci integer sequence. The first two Lucas numbers are $L_0 = 2$ and $L_1 = 1$, which differs from the first two Fibonacci numbers. Though closely related in definition, Lucas and Fibonacci numbers exhibit distinct properties.. Your task is to find the Lucas sequence within a range n. For example, the fibonacci sequence within range $n = 5$ is 2, 1, 3, 4, 7. The range is $0 < n \leq 25$.

Input	Output
5	2 1 3 4 7
8	2 1 3 4 7 11 18 29

5. **Foosball:**

Ace loves football very much. One day, as he was watching a foosball match between team A and B, he was writing the players' current positions on a piece of paper. To simplify the situation he depicted it as a number consisting of **zeros** and **ones**. A **zero** corresponds to players of one team; a **one** corresponds to players of another team. If there are at least 7 players of some team standing in a certain situation, then the situation is considered dangerous for the other team. For example, the situation 11011111110 is dangerous and

10101010101 is not. You are given the current situation. Determine whether it is dangerous or not.
(0 = Players of team A, 1 = Players of team B)

Input	Output
11011111110	Yes
10101010101	No