Lab 10: Functions

CSE 4108

Structured Programming I Lab

November 2022

Lab Tasks

1. **toLower() and beyond!:**

We all know about the `tolower()` function from the **<ctype.h>** library, which converts an uppercase letter to a lowercase letter.

i. Write a function **`void read_string(char ch[], int length)`** that will read the input string.

ii. Write a function **`char to_lowercase(char ch)`** that will return a character in lowercase letter.

iii. Write a function **`void print_string(char ch[], int length)`** that will print the whole string in lowercase.

****DON'T USE THE BUILT-IN `tolower()` function.**

2. **Poly-nom-nomial!:**

Write a function that computes the value of the following polynomial:

$$ax^7 + bx^6 - cx^5 - dx^4 + ex^3 - fx^2 + gx + 10$$

Here, a, b, c, d, e, f, g denotes the individual digits of your student id except the zeroes in the middle. For example, if your student id is 210042111, then the polynomial is:

$$2x^7 + 1x^6 - 4x^5 - 2x^4 + x^3 - x^2 + x + 10$$

Write a program that asks the user to enter a value for x, calls the function to compute the value of the polynomial, and then displays the value returned by the function.

3. **Zombsnation!:**

Zombs has started his new job as a DJ in dubstep nation. In dubstep nation, the dj's are supposed to create a new type of music mix made with the word "dub". The process is like this: Every original song must start with the word "dub" and after every word of the original lyric the word "dub" should be added. But Zombs does not like this music. So he decided to get the original song lyrics from the mixed dubstep music. Your task is to write a function that will help Zombs get the original song lyrics from dubstep. The first line of input contains the total length of the dubstep song. Second line contains the dubstep song lyric.

Sample Input:

```
37
dubneverdubgonnadubgivedubyoudubupdub
```

Sample Output:

```
never gonna give you up
```

4. **Kuriyama Mirai's stones**:

Kuriyama Mirai likes to play with her stones in her leisure. The stones are numbered from 1 to n. Initially all the stones are sorted in ascending order and one of the stones is missing. You are given the sorted order of the stones, and the missing stone. Write a function that will take the sorted order as well as the missing stone, and return the position in which the missing stone can be inserted. The first line of input contains the length of the array of the stones. Positions are calculated from 1 to n (not 0 to n).

Sample Input:

```
8
1 2 4 5 6 10 17 29
3
```

Sample Output:

```
3
```