LAB 5 — Arrays and Pointers

Problem A

A.1 Specification

Write a C program to input a line of characters and store the input characters in an array. Reverse the order of the input characters and display the reversed string on the standard output using **`printf`**.

A.2 Implementation

- The program is named `lab5a.c`.
- This is the same problem as in Lab 4. The difference is that you should use pointer variables to point to the array of characters. You can reuse your Lab 4 submission and modify it to manipulate the array elements through pointers rather than the array variable.

A.3 Sample Inputs/Outputs

```
indigo 352 % lab5a
Hello, world!
!dlrow ,olleH
indigo 353 % lab5a
Welcome to CSE2031.
.1302ESC ot emocleW
indigo 354 % lab5a
A
A
indigo 355 % lab5a
123
321
```

Problem B

B.1 Specification

Write a C program to input a line of characters in the form of a floating-point number, convert the line of characters into an actual floating-point number, and display on the standard output the floating-point number.

B.2 Implementation

- The program is named `lab5b.c`
- The input is guaranteed to be at most 100 characters long.
- Use `getchar` and a loop to read a line of characters, and store the input characters into an array. The loop terminates when a new line character '`\n`' is entered. The new line character '`\n`' is NOT part of the line (i.e., discard the new line character '`\n`').
- The input line contains only characters '0' to '9' and the dot character '**.**' in the form of a valid positive floating point number of the following format: **[integer part] . [fractional part]**
- Convert the input line of characters to a **double** floating-point number.
- Display on the standard output the double floating-point number using the `printf` statement.
- Assume that the input line of characters represents a valid floating point number of the form [integer part] **.** [fractional part]

B.3 Sample Inputs/Outputs

```
indigo 360 % lab5b
24.5
24.500000
indigo 361 % lab5b
76.24
76.240000
indigo 362 % lab5b
100.0
100.000000
```

```
indigo 363 % lab5b

0.255

0.255000

indigo 364 % lab5b

12.9999999999

13.000000

indigo 365 % lab5b

1.00000000099

1.000000
```

Common Notes

All submitted files should contain the following header:

```
/*************************************
*    CSE2031 – Lab3                  *
*    Filename: Name of file          *
*    Author: Last name, first name   *
*    Email: Your email address       *
*    cs_num: Your cs number          *
*************************************/
```

In addition, all programs should follow the following guidelines:

- Include the `stdio.h` library in the header of your `.c` files.
- Use `printf` to print text and outputs according to the required formats.
- End each output result with a new line character '`\n`'.
- Do not use any C library functions except `getchar(), putchar(), scanf() and printf()`.
- **Assume that all inputs are valid (no error checking is required on inputs).**