LAB 3 — Types and Operators

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 `lab3a.c`. **Use the given template `lab3a.c`** and fill in your code.
- You are given an array of characters of size `MAX_SIZE` where `MAX_SIZE` = 100. The array is named `my_strg`.
- Use `getchar` and a loop to read a line of characters, and store the input characters into array `my_strg`. 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`').
- Reverse the order of the input characters stored in array `my_strg`.
- Display on the standard output the reversed string using the `printf` statement as follows:

```
printf( "%s\n", my_strg );
```

A.3 Sample Inputs/Outputs

```
indigo 352 % lab3a
Hello, world!
!dlrow ,olleH
indigo 353 % lab3a
Welcome to CSE2031.
.1302ESC ot emocleW
indigo 354 % lab3a
A
A
indigo 355 % lab3a
123
```

```
321
```

Problem B

B.1 Specification

Write a C program to input an octal number in the form of a line of characters and store the input characters in an array. Convert the octal number to a decimal integer and display the decimal integer on the standard output using **`printf`**.

B.2 Implementation

- The program is named `lab3b.c`. **Use the given template `lab3b.c`** and fill in your code.
- You are given an array of characters of size `MAX_SIZE` where `MAX_SIZE` = 100. The array is named `my_strg`.
- Use `getchar` and a loop to read an octal number in the form of a line of characters, and store the input characters into array `my_strg`. 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`').
- Convert the octal number stored in array `my_strg` to a decimal integer.
- Display on the standard output the decimal integer using the `printf` statement as follows:

```
printf( "%10d\n", my_int );
```

B.3 Sample Inputs/Outputs

```
indigo 356 % lab3b
12              /* The input is an array of characters */
        10      /* The output is an integer */
indigo 357 % lab3b
340
       224
indigo 358 % lab3b
-340
```

```
      -224
indigo 359 % lab3b
5
         5
indigo 359 % lab3b
29
Error: not an octal number
```

Common Notes

All submitted files should contain the following header:

```
/*************************************
*     EECS2031 – Lab 3                *
*     Filename:  Name of file         *
*     Author: Last name, first name   *
*     Email: Your email address       *
*     EECS login ID: Your login ID    *
*************************************/
```

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 the input strings are shorter than 100 characters.