LAB 8 — Arrays, Types and Operators

Submit the solutions, C programs, using the following command:

submit 2031 lab8 lab8a.c lab8b.c util.c util.h

The due date is at 3:30 on Wednesday.

Problem A

A.1 Specification

Use posted lab8a.c, util.c, and util.h for **Problem A**.
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**. Complete function "void str_reverse(char *str)" and lab8a.c.

A.2 Implementation

- You are given an array of characters of size `MAX_SIZE` where `MAX_SIZE` = 100. The array is named `my_strg`.

- Use function "int getaline(char s[],int lim)" in "util.c" in lab8a.c for getting a string from the user.

- Reverse the order of the input characters stored in array `my_strg`.

- You need to complete function "void str_reverse(char *str)" and call the function in "lab8a.c". **You are not allowed to use [] operator for accessing array characters**. Instead, you should use pointers to iterate through arrays.

- Display on the standard output the reversed string using the `printf` statement as

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

- Compile your code using:

    `gcc –lm lab8a.c util.c –o lab8a`

- The -lm option is used to suppress some warning messages.

- **You are not allowed to change the include part of lab8a.c and util.c**.

A.3 Sample

Inputs/Outputs `indigo`

```
352 % lab8a

Hello, world!

!dlrow ,olleH indigo 353 %
```

```
lab8a Welcome to CSE2031.

.1302ESC ot

emocleW indigo

354 % lab8a A

A


indigo 355 %

lab8a 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 `lab8b.c`. **Use the given template `lab8b.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 function "int getaline(char s[],int lim)" in "util.c" in lab8a.c for getting a string from the user.

- To convert the octal number stored in array `my_strg` to a decimal integer, you need to complete and call function "int octal2decimal(char *str)" in util.c. **You are not allowed to use [] operator for accessing array characters**. Instead, you should use pointers to iterate through arrays.

- Display on the standard output the decimal integer using the `printf` statement as follows:

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

- If the input string does not contain a valid octal number, display on the standard output the error message "Error: not an octal number".

- Compile your code using:

    gcc –lm lab8b.c util.c –o lab8b

- The -lm option is used to suppress some warning messages.

- **You are not allowed to change the include part of lab8b.c and util.c**.

B.3 Sample

Inputs/Outputs

```
indigo 356 %

lab8b 12

10

indigo 357 %

lab8b 340

224

indigo 358 % lab8b

-340

-224

indigo 359 % lab8b

5

5

indigo 359 % lab8b

29

Error: not an octal number

indigo 360 % lab8b

abc

Error: not an octal number
```

Common Notes

All submitted files should contain the following header:

```
/************************************

*     EECS2031 – Lab 8

*     Filename:  Name of file

*     Author: Last name, first name

*     Email: Your preferred email address

*     EECS login ID: Your EECS 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 and the resulting decimal numbers are small enough to be stored in an integer variable.