

LAB 1 — Introduction to C and Basic I/O

Submit the solutions, C programs, to the following problems under the “labtest” mode on September 15 or 18.

1. Problem A

1.1 Specification

Write a C program to convert measurements from inches to centimetres (1 inch = 2.54 cm). The program reads a measurement in inches and outputs the equivalent measurement in centimetres. It then continues to read and convert the next measurements until a zero is entered.

1.2 Implementation

The program should:

- be named `lab1a.c`
- use a loop to read and convert one input at a time. The loop ends and the program terminates when the input is zero.
- display before each input the following prompt:
`Enter the measurement in inches>`
- use `scanf` to read inputs, which are measurements in inches, of type `float`.
- display the outputs in centimetres with two decimal digits.

1.3 Sample Inputs/Outputs:

```
indigo 336 % lab1a
```

```
Enter the measurement in inches>2
```

```
5.08 cm
```

```
Enter the measurement in inches>5.5
```

```
13.97 cm
```

```
Enter the measurement in inches>10.765
```

```
27.34 cm
```

```
Enter the measurement in inches>0
```

```
indigo 337 %
```

2. Problem B

2.1 Specification

Write a C program to count the number of blank characters (white spaces) in a line of characters. The program reads from the standard input a line of characters and outputs the number of blank characters found in the line.

2.2 Implementation

The program should:

- be named `lab1b.c`
- use `getchar` and a loop to read a line of characters which is terminated by the new line character `'\n'`.
- display the following prompt before each input:

```
Enter a line of characters>
```

2.3 Sample Inputs/Outputs:

```
indigo 352 % lab1b
```

```
Enter a line of characters>Welcome to CSE 2031.
```

```
3
```

```
indigo 353 % lab1b
```

```
Enter a line of characters>123456789
```

```
0
```

```
indigo 354 % lab1b
```

```
Enter a line of characters>a b c d e f g h
```

```
7
```

```
indigo 355 %
```

3. Problem C

Repeat problem A, but do not display the prompt “Enter the measurement in inches>”. Name this program lab1c.c.

4. Problem D

Repeat problem B, but do not display the prompt “Enter a line of characters>”. Name this program lab1d.c.

Common Notes

All submitted files should contain the following header:

```
/*  
 * EECS2031 - Lab 1  
 * 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 texts and outputs according to the required formats.
- End each output result with a new line character `'\n'`.
- **Assume that all inputs are valid (no error checking is required).**