

Lab 1

Introduction and C programming basics

Objectives and Topics

1. To become familiar with lab environment.
2. To practice C programming by solving simple problems.
3. Basic control and looping statements such as *if-else*, *for*, *while*, *do-while* and *switch* statements.

Prelab Assignment

- Complete Reading Assignment #1 (Kernighan & Ritchie)

Problems:

1. Write a program to compute the area of a circle, by predefining (by using `#define`) the value of *pi*.

Hint(s):

- a. Use *printf* to display the result and *scanf* to get input from the terminal.
- b. Include header files `<stdio.h>` and `<math.h>`

2. If the cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also, determine how much profit he/she made or the loss he/she had.

Hint(s):

- a. Use *printf* to display the result and *scanf* to get input from the terminal.
- b. Include header files `<stdio.h>` and `<math.h>`
- c. Use *if-else* statement to specify the conditions.

3. Write a program to create a simple calculator using the **switch** statement. The calculator should have the functionality to perform addition, subtraction, multiplication, and division. Moreover, the program should give an error message if any operator other than those mentioned above is entered.

Input: Should include an operator and 2 operands.

E.g.: Operand 1: 4, Operator: +, Operand 2: 5

Output: Should include the two operands, the operation type, the result and error (if any).

E.g. $4 + 5 = 9$; “Wrong format! Please re-enter!” or “Error! Division by zero.”

Hint(s):

- a. Use *getchar()*, to input an operator from the keyboard.
- b. Put an error message in the *default* case.

Deliverables (due at the beginning of the following week’s lab)

1. Lab Report:

The lab report should include

- 1) The objective of the lab (written in your own words)
- 2) Discussion: Describe any problems that you may have encountered while coding the lab. How did you fix them? Talk about what you learned, interesting/unexpected things that you observed, problems/limitations that your current approach may have, alternative solutions/approaches, etc.
- 3) Any other relevant comments related to the lab (e.g. something was unclear).
- 4) Append your source code to the end of you report with proper comments.

2. Demonstration:

Demonstrate your solutions to the TA.

Grading:

Problem 1 Demo:	10
Problem 2 Demo:	10
Problem 3 Demo:	20
Report:	30
Code:	30 (for proper indentation, comments in problems 1, 2, and 3)