Lab 02
Data Types, Floating Point Arithmetic and Conditional Statements

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Lab objectives

The objectives of this lab is to get familiar with floating point arithmetic, learn proper usage of float, int and char data types and introduce menu-driven programs with the concepts of branching. In the process, the students should solve some simple real world problems.

Floating Point Arithmetic

Task 01: Write a program that takes your weight in pounds and displays it in kilograms.

(**Note:** $1\ kg$ is approximately $2.2\ pounds$)

Task 02: Write a program that takes the values of two sides of a right triangle and then determine the size of the hypotenuse. The formula for finding the hypotenuse is

$$hyp\ = \sqrt{a^2 + b^2}$$

('a' and 'b' are integers while 'hype' is float variable)

Hint: Include "math.h" header file in your program and use built-in function $pow(double\ x, double\ y)$ and $sqrt(double\ x)$ for power and square root respectively. Since both functions expect double data types in the arguments, you might need typecasting.

Conditional Statements

Task 01: Build a GPA calculator that inputs grades of 4 different subjects along with the credit hours from the user and displays the user's GPA.

The input grades and their corresponding grading points are given below

Grade	**Points**
A	4.0
A-	3.67
B+	3.33
B	3.0

B-	2.67
C+	2.33
C	2.0
C-	1.67
D+	1.33
D	1.0
F	0

The formula is

$$GPA = (GP1 * CH1 + GP2 * CH2 + GP3 * CH3 + GP4 * CH4)/(CH1 + CH2 + CH3 + CH4)$$

Where GP1 is Points of Subject 1 and CH1 show credit hours of subject 1.

Sample Run:

Please Enter your grade in Subject 1: A

Please Enter the Credite Hours of Subject 1: 3

Please Enter your grade in Subject 2: B+

Please Enter the Credite Hours of Subject 2: 3

Please Enter your grade in Subject 3: C-

Please Enter the Credite Hours of Subject 3: 2

Please Enter your grade in Subject f4: A-

Please Enter the Credite Hours of Subject 4: 3

Your GPA is:

Hint: You might need 2 characters to store a grade