

## Section 16

PDS Lab

Lab-2

25.08.2023

### *Instructions:*

- This lab is based on the topics: IO, Variables, Assignment and Expressions.
- You should save each program with the file name as specified against each problem as <Lab#>\_<Assignment#>\_<Roll#>.c. For example, **02\_01\_23CS10006.c** to save Program to 1<sup>st</sup> assignment in Lab 2 with Roll Number 23CS10006
- You should upload each program to the Moodle system. Also, copy+paste your programs to the text window on the test page.
- There will be no evaluation and hence grade, if you don't submit your .c files to the Moodle server. Use **emacs** editor and **gcc command** in terminal to run the following programs.
- Document your programs meaningfully using appropriately named variable and sufficient amount of comments. Documentation and proper code indentation carry marks.
- **The top two lines of your programs must contain the following information:**
  - //Roll No.: <Type in your roll no.>
  - //Name: <Type in your name>

1. Write a program to read a floating point number and display its integral part and the fractional part separately.

**Example:** for 123.235, it should display:

Integral part=123

Fractional part=0.235

Name your C program file as <Lab#>\_<Assignment#>\_<Roll#>.c.

For example, **02\_01\_23CS10006.c** if your roll number is 23CS10006.

**[5 Marks]**

2. Write a program to read an integral value representing the age of a person in months and display the age of the person in years.

**Example:** for a person aged 241 months, the display should be “The person is 21 years old”.

Name your C program file as **02\_02\_<roll#>.c**.

**[5 Marks]**

3. Assume that you are going to deposit certain amount of money in bank fixed deposit. Write a program to read two unsigned integers representing the amount being deposited and the period of deposit in years. Next, read a floating point number indicating the applicable interest rate. Compute the total amount payable at the end of the deposit period assuming fixed interest rate computed.

Name your C program file as **02\_03\_<roll#>.c**.

**[5 Marks]**

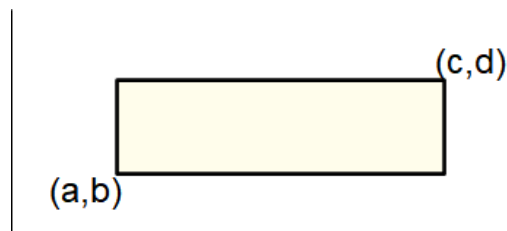
4. Write a C program in which first declare two integer variables **m** and **n**. Then prompt the user to write the values of **m** and **n** and read them. Then, display the following information:

- a. The sum **m+n**
- b. The difference **m-n**
- c. The product **m\*n**
- d. The integer quotient **m/n**
- e. The integer remainder **m%n**
- f. The floating point quotient **m/n**
- g. The sum of the squares **m<sup>2</sup>+n<sup>2</sup>**
- h. The square of the sum **(m+n)<sup>2</sup>**
- i. The average **(m+n)/2** as a floating point number
- j. The average of the sum of the squares **(m<sup>2</sup>+n<sup>2</sup>)/2** as a floating point number

Name your C program file as **02\_04\_<roll#>.c**

**[10 Marks]**

5. A rectangle with sides parallel to the X and Y-axis can be fully specified by specifying the (x,y) coordinates of its bottom-left corner and its top-right corner as shown below:



Write a program that will do the following (in the given order):

- Declare to integer variables a, b, c, and d
- Read the coordinates (a, b) of the bottom-left corner of the rectangle (read both a and b in a single scanf statement)
- Read the coordinates (c, d) of the top-right corner of the rectangle (read both c and d in a single scanf statement)
- Compute the area and perimeter of the rectangle. Store them in integer variables named **area** and **perim** respectively.
- Display the values of **area** and **perim** with a suitable message (using a single printf statement)
- Compute the coordinates (p,q) of the point of intersection of the two diagonals of the rectangle. The point of intersection (p,q) are floating point numbers.
- Display the coordinates (p,q) with a suitable message (using a single printf statement)

Name your C program file as **02\_05\_<roll#>.c**

**[10 Marks]**