COL100 Lab 3

I semester 2016-17

Week 3, 2016

Objective

To be able to write simple C programs involving data types, arithmetic expressions and input-output.

Instructions

1. After 1 hour 45 minutes have passed, your code will be checked. Whatever you have completed till this point will be recorded. Anything that you complete later will not be recorded.

2. If you complete an assignment later, you can ask the TAs of your lab session any problems and doubts that you face. There is no need to show the TA your code, if there is no problem in it.

3. You cannot attend any lab session other that your allotted session, without informing the TAs of the session you are attending. This too is permitted only for genuine reasons.

4. Also, you will not get attendance, if you do not attend your own lab session, nor will your performance be noted. (Even if you fill in the attendance sheet, it will not be uploaded later.)

Programs

- Press Ctrl + Alt + T to open a terminal.
- cd to the directory COL100.
- In this directory, create another folder, called as lab3.
- cd to lab3.

1. Write a C Program to input the marks in 5 subjects (out of 100), and find and print the average percentage.
   Hint: average = (sub1+sub2+sub3+sub4+sub5)/5

2. Write a program to separate the digits of a three digit number and print them in separate lines. For example, 325 will be printed as:
   3
   2
   5

3. Write a program to compute the SGPA. The program should prompt the user to input grades (out of 10) in 5 subjects, and also prompt to input corresponding credits (1-4) of each subject. The program should then compute and print the SGPA by using the formula:
   $\frac{sub1*credit1+sub2*credit2+sub3*credit3+sub4*credit4+sub5*credit5}{credit1+credit2+credit3+credit4+credit5}$.

4. Write a single program to compute the area of the following:
   a) Circle: Input the radius and print the area.
   b) Square: Input the length of a side and print the area.
   c) Rectangle: Input the length and breadth and print the area.
   d) Parallelogram: Input the base and height, and print the area.
   e) Trapezium: Input the length of the parallel sides, and the perpendicular distance between them and print the area.

Optional Programs

1. Suppose that a cashier has unlimited 25 paisa, 10 paisa, 5 paisa and 1 paisa coins. He has to return you some paise. He always chooses a greedy approach: First he gives the biggest coin that he can, to reduce the remaining amount to as small as possible. Then he chooses the next biggest coin and continues doing so, until the owed amount is returned. However, he will never give you more money than what you owe. You have to find out how many coins will he have to give in total. For example, if the cashier owes 47 paise, he will first give out one 25 paise coin. Then he will give two 10 paise coins, followed by two 1 paise coins. This makes the answer to be 5 coins.

   Write a program to accept the amount owed from the user, and print the total number of coins the cashier will give. The input will be

floating point numbers and can be greater than one. For example, 47 paise will be given in input as 0.47.

2. Write a program to compute the change in Surface Area, if a solid metal ball of radius R, is melted and converted to N metal balls. The program should prompt the user to input the radius R and the number N. Then the program should compute the change in surface area

Useful Commands in Linux

1. Open terminal: Ctrl + Alt + T

2. Terminate current Linux command: Ctrl + C

3. Make a new directory: mkdir *dirname*

4. Copy: cp *src dest*

5. Rename: mv *originalname newname*

6. Delete: rm *filename*

7. Change working directory: cd *path*

8. List contents of a folder: ls

9. List contents of a folder including hidden files: ls -a

10. Print current directory: pwd

Points to Remember

1. To set proxy: Open an internet browser and set the Automatic proxy configuration url to http://www.cc.iitd.ernet.in/cgi-bin/proxy.btech (or proxy.dual if you are a Dual Degree student).
(For Firefox, open Options > Advanced > Network Tab > (Connection) Settings > Choose "Automatic proxy configuration" and set the URL)

Optional : Use vim editor

1. Open a file: vim filename.txt

2. Insert in a file: i (insert mode) (Use Esc to come out of the insert mode)

3. Navigation: arrow keys

4. Undo u

5. Redo Ctrl+R

6. Saving a file :w

7. Closing a file without saving :q!

8. Saving and closing a file :wq

9. Deleting a line dd

10. Copying a line yy

11. Pasting a line p