



UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING
COMPUTER SCIENCE DEGREE PROGRAMME
FIRST YEAR

SCS 1202 - Programming Using C
Tutorial 9

1. You are required to read following details for each student from the keyboard.

Student registration no	Character array of length 20
Student name	Character array of length 50
Student age	integer

You must use a structure to define the above students' details. Then use the structure to create an array of Student to read and store the 5 student details.

Finally write all the details in the array to a file in the following format:

StRe_no	St_Name	St_age
PS/00/78	Nimal	23

2. Write a program to read a text file called "data.txt" which contain employee name, employee no employee basic and OT amount salary in following format.

Employee name	Employee No	Basic salary(Rs)	OT hours
Nimal	001	35000.00	9
Kamal	002	45000.00	10
Sunil	003	55000.00	2
Mailika	004	25000.00	5

- a. You must use a structure to define the above details (Employee name, Employee No, Basic salary and OT hours).
- b. Then use the structure to create an array of employee to read and store employee details.

- c. Write a function to calculate the net salary of OT amount.

$$\text{Net salary} = \text{Basic salary} + \text{Basic salary} * 0.35 + \text{OT amount}$$

$$\text{OT amount} = \text{OT hours} * 15.00$$

- d. Calculate the total amount of money this company should have to pay the employee salaries.
e. Display the Employee No, Basic salary, OT amount, Net salary of each employee.
f. Finally display the total amount of money this company should have to pay the employee salaries.

3. Write a program to read a text file called “readme.txt” which contains the results of a survey of the household of a town. Each record contains data for a particular household including identification number, annual income and the number of members.

Identification number	Integer
Annual income(\$)	Integer
Number of members	Integer

- a. Create a structure to store the above records.
b. Write a program to read the survey results in “readme.txt” file into an array of above structure.
c. Write functions to perform the following analysis.
i. Calculate the average household income of the town.
ii. Calculate the total number of members in the town.
iii. Find the Median annual income.

Example:

ID number	Annual Income (\$)	No of members	($x_{i-1} + x_i$)
3210	190	6	6
9280	250	2	8
3600	290	5	13
4725	590	3	16
6217	600	2	18
total		18	

According to the above records total number of members in the town is 18. The median point can be calculated as below

$$\begin{aligned}\text{Median point} &= \text{total number of members in the town} / 2 \\ &= 18/2 \\ &= 9\end{aligned}$$

Then the Median annual income =290

- d. You should display the results on the screen as follows,

ID number	Annual Income (\$)	No of members
3210	190	6
9280	250	2
3600	290	5
4725	590	3
6217	600	2
Average household Income (\$) –		
Total number of members in the town –		
Median Annual Income (\$)		

4. Write a Program to count the vowels and letters in a word given from keyboard. Then display the number of occurrence of each of the vowel a, e, i, o and u in the word, the total number of letters.

Finally write all the details to a text file in the following format.

Your “myword.txt” file should be created in the following format.

Word	a	e	i	o	u	other	total
Apple	1	1	0	0	0	3	5
University	0	1	2	0	1	6	10
Programming	1	0	1	1	0	11	8