IT No.....

PC No. .....

Sri Lanka Institute of Information Technology

B.Sc. Degree
in
Information Technology

Final Examination
Year 1, Semester 1 (2018)
January Intake

Introduction to Programming (C / C++) (IT1103)

Duration: 2 Hours

Paper C

Instructions to Candidates:

- This is an **online closed book** examination.
- This paper contains **1 question on 3 pages** without the cover page.
- Create a folder in the **Home** directory with your **IT number**.
- Save the program you write inside the folder.
- Read the question before answering.
- The total marks obtainable for this examination is 50.

Question One

(50 marks)

The "Metro" Pvt. Ltd. monitors and records rainfall in 2 districts for 7 days and is shown in the following table 1 and 2 respectively. The measurements are taken in millimeters and range between 0 and 1000 per day.

Table 1-District A Rainfall

Day	1 (MON)	2 (TUE)	3 (WED)	4 (THU)	5 (FRI)	6 (SAT)	7 (SUN)
Array *index*	0	1	2	3	4	5	6
Rainfall	160.5	180	150	110	290	140.5	165

Table 2- District B Rainfall

Day	1 (MON)	2 (TUE)	3 (WED)	4 (THU)	5 (FRI)	6 (SAT)	7 (SUN)
Array *index*	0	1	2	3	4	5	6
Rainfall	180	100.5	515	170	155	165	195

(a) Write a function using C statements called *InputRainfall*() which takes a float *array* and an integer as the *size of the array* as parameters. The method should ask the user to insert rainfall of each day and fill the array. The values are entered through the keyboard and range between 0 and 1000 per day. (5 marks)

(b) Write a function using C statements called *MinimumRainfall*() which takes a float *array* and an integer as the *size of the array* as parameters. The method should find and return the index of the lowest rainfall in the array. (5 marks)

(c) Write a function using C statements called *MaximumRainfall*() which takes a float *array* and an integer as the *size of the array* as parameters. The method should find and return the index of the highest rainfall in the array. (5 marks)

(d) Write a function using C statements called *AverageRainfall*() which takes a float *array* and an integer as the *size of the array* as parameters. The method should find and return the average rainfall over 7 days. (5 marks)

(e) Write a function using C statements called *DisplayRainfall*() to print the rainfall in millimeters. The function should take a float *array and* an integer as the index number as a parameter. (5 marks)

(f) Write a function using C statements called *PrintReport*() which will take two float arrays (*array1, array2), and an integer as* the *size of the array1* as parameters. The method prints the report as given below. (15 marks)

Note: Use the functions already defined to print day in letters, minimum rainfall, maximum rainfall and average rainfall.

Sample Output:

Day	District A	District B	Minimum	Maximum
Monday	160.5	180	160.5	180
Tuesday	180	100.5	100.5	180
Wednesday	150	515	150	515
Thursday	110	170	110	170
Friday	290	155	155	290
Saturday	140.5	165	140.5	165
Sunday	165	195	165	195

Rainfall Range
District A: Min=110 Max=290
District B: Min=100.5 Max=515

Average Rainfall
District A: 170.86
District B: 211.5

(g) Implement the main method of a C program to do the followings:

i. Create float arrays with the names district_A and district_B. The arrays are of size 7. (1 mark)

ii. Insert District A rainfall details to the district_A array using the function *InputRainfall*(). (1 mark)

iii. Input District B rainfall details to the district_B array using the function *InputRainfall*(). (1 mark)

iv. Find and print the highest rainfall of District A using the functions *MaximumRainfall*() and *DisplayRainfall*(). (1 mark)

v. Find and print the highest rainfall of District B using the functions *MaximumRainfall*() and *DisplayRainfall*(). (1 mark)

vi. Find and print the lowest rainfall of District A using the functions *MinimumRainfall*() and *DisplayRainfall*(). (1 mark)

vii. Find and print the lowest rainfall of District B using the functions *MinimumRainfall*() and *DisplayRainfall*(). (1 mark)

viii. Find and print the average rainfall of both District A and B using the function *AverageRainfall*(). (1 mark)

ix. Print the report using the function *PrintReport*(). (2 marks)

----------End of the question paper----------