

THE OPEN UNIVERSITY OF SRI LANKA

B.Sc DEGREE PROGRAM: LEVEL 03

FINAL EXAMINATION: 2009/2010

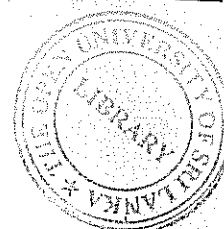
CPU 1141/CSU1180: INTRODUCTION TO COMPUTER PROGRAMMING /
PROGRAMMING PERSPECTIVES & LANGUAGES

DURATION: TWO HOURS (2 HOURS)

Date: 2nd February, 2010

Time: 9.30 am – 11.30 am

Answer FOUR questions ONLY, selecting two questions from each part.
Each question carries equal marks.



PART – A

Q1).

- (i) What are the advantages of using sub programs to develop a computer program?
- (ii) Write Pascal functions/procedures to carry out the following tasks:
 - (a) character(*a*) – This function receives a character '*a*' as the input and returns a relevant character 'C', 'L', 'D' or 'S', depending on whether the character received is an upper case letter, a lower case letter, a digit or a special symbol respectively.

Hint: The following table shows the range of ASCII values for various characters.

Characters	ASCII Values
A – Z	65 – 90
a – z	97 – 122
0 – 9	48 – 57
Special symbols	0 – 47, 58 – 64, 91 – 96, 123 – 127

- (b) swap(*a* , *b*) – This procedure receives two integer parameters, '*a*' and '*b*', and it interchanges these two integers.

Q2).

- (i) What Pascal data types would you use to represent the following data? Briefly explain why you selected that data type for each of them.
 - (a) Weight of an exercise book.
 - (b) To store the number of bytes of a data of float data type.
 - (c) A constant to hold the value of π (3.14159).
 - (d) To store your grade for a mark of a given subject.

Q5).

- (i) Write down the "input" functions in C language and describe their syntaxes using examples.
- (ii) Write a C program to identify the behavior of the functions "gets" and "scanf".
- (iii) Write the appropriate input/output function statements in C language for the following requirements.
 - (a) To read a string (student_name) from the keyboard with spaces.
 - (b) To display a character (person_sex).
 - (c) To read a floating number (x) from the keyboard.
 - (d) To display a string (identcard_no) and height of the person (H).

Q6).

- (i) State whether the following C statements are True or False:
 - (a) The array declared as int num[26] has twenty-six elements.
 - (b) The expression num[1] refers the first element in the array.
 - (c) It is necessary to initialize the array at the time of declaration.
 - (d) The expression num[27] refers the twenty-eighth element in the array.
- (ii) Convert the following Pascal program to a C program.

```

PROGRAM StudentMarks(INPUT,OUTPUT);
VAR
    score: Array [1..5] of Real;
    index: Integer;
BEGIN
    (*Read the marks*)
    FOR index :=1 TO 5 DO
        BEGIN
            WRITELN ('Enter score for student number', index, ':');
            READLN (score [index]);
        END;
    END.

```

- (iii) Write a C program for computing mean (m), variance (v), and standard deviation (s) of a given set of ten (10) numbers.

Hint: Use the following formulas:

$$m = \frac{1}{n} \sum_{i=1}^n x_i, \quad v = \frac{1}{n} \sum_{i=1}^n (x_i - m)^2, \quad s = \sqrt{v}$$

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