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First Semester B.E. Degree Examination, Dec.2015/Jan.2016
Programming in C ad Data Structures

Time: 3 hrs.

Max. Marks: 80.

**Note: Answer any FIVE full questions, choosing
one full question from each module.**

Module-1

- 1 a. What is variable? Explain the rules for constructing variables in C language. Give examples for valid and invalid variables. (06 Marks)
- b. Evaluate the following expressions :
 i) $100\% 20 <= 20 - 5 + 100\% 10 - 20 == 5 > = 1 != 20$
 ii) $a += b * c -- 5$ where $a = 3$ $b = 5$ and $c = 8$. (04 Marks)
- c. Write a C program to find the area and perimeter of a rectangle. (06 Marks)

OR

- 2 a. Write a C program which takes as input p, t, r. Compute the simple interest and display the result. (06 Marks)
- b. Convert the following mathematical expression into C expressions :
 i) $\frac{x}{b+c} + \frac{y}{b-c}$ ii) $a + \frac{b(ad+e)}{b-a} - \frac{c}{d}$ (04 Marks)
- c. What is value of "x" in following code segments? Justify your answers :
 i) `int a, b ;
float x ;
a = 4 ;
b = 5 ;
x = b/a ;`
 ii) `int a, b ;
float x ;
a = 4 ;
b = 5 ;
x = (float) b/a ;` (06 Marks)

Module-2

- 3 a. Explain the syntax of do-while statement. Write a C program to find the factorial of a number using do-while, where the number n is entered by user. (08 Marks)
- b. What is two way selection statement? Explain if, if else, and cascaded if-else with examples. (08 Marks)

OR

- 4 a. Write a C program that takes from user an arithmetic operator ('+', '-', '*' or '/') and two operands. Perform the corresponding arithmetic operation on the operands using switch statement. (08 Marks)
- b. What is an array? How to declare and initialize the two dimensional array? (08 Marks)

Module-3

- 5 a. What is a function? Write a C program to find the cube of a number using function. (05 Marks)
- b. Write a C program to check a number is a prime or not using recursion. (05 Marks)
- c. Write a program to replace each constant in a string with the next one except letter 'z' 'Z' and 'a', 'A'. Thus the string "programming in C is fun" should be modified as "Qsphsannjoh jo D jt gvo". (06 Marks)

OR

- 6 a. Write a C program to sort the elements by passing array as function argument. (08 Marks)
b. Write a C program to concatenate two strings without using built – in function strcat(). (08 Marks)

Module-4

- 7 a. What is structure? Explain the C syntax of structure declaration with example. (05 Marks)
b. Write a C program to pass structure variable as function argument. (07 Marks)
c. Explain fopen() and fclose() functions. (04 Marks)

OR

- 8 a. Write a C program to store and print name, USN, subject and IA marks of students using structure. (08 Marks)
b. Explain fputc(), fputs(), fgetc() and fgets() functions with syntax. (08 Marks)

Module-5

- 9 a. What is a pointer? Write a C program to find the sum and mean of all elements in an array using pointer. (08 Marks)
b. What is stack? Explain its operations with examples. (08 Marks)

OR

- 10 a. Write a C program to swap two numbers using call by address. (06 Marks)
b. Explain any five preprocessor directives in C. (05 Marks)
c. What are primitive and non-primitive data types? Explain with examples. (05 Marks)

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First/Second Semester B.E. Degree Examination, Dec.2015/Jan.2016
Programming in 'C' and Data Structures

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE questions, selecting ONE full question from each Part.

PART - 1

- 1 a. Explain the structure of "C" program with example. (08 Marks)
b. Explain scanf() and printf() function in 'C' language with syntax and examples. (08 Marks)
c. Write a 'C' program to find area of a circle. (04 Marks)
- 2 a. What is an Algorithm? Write an algorithm to find largest of 3 numbers. (08 Marks)
b. Explain the following operators in 'C' language :
i) Relational ii) Logical iii) Conditional. (08 Marks)
c. What is an Identifier? Give any 5 rules that are to be followed, while declaring a variable. (04 Marks)

PART - 2

- 3 a. Explain the ELSE - IF ladder with syntax and example. (08 Marks)
b. List the types of loops. Explain the working of any one type of loop with syntax and example. (08 Marks)
c. Write a program to read a year as an input and find whether it is a LEAP YEAR or not. (04 Marks)
- 4 a. Explain SWITCH statement, with syntax and example. (08 Marks)
b. Differentiate between WHILE and DO - WHILE loops. (06 Marks)
c. Write a program to find reverse of a number and check whether it is a PALINDROME or not. (06 Marks)

PART - 3

- 5 a. What is an ARRAY? Explain the different ways of initializing an array with examples. (07 Marks)
b. What are the advantages of using User - Defined functions? (06 Marks)
c. Write a program to read a sentence and print the frequencies of each VOWEL and total count of CONSONANTS. (07 Marks)
- 6 a. Explain the different types of arrays, with syntax and examples. (07 Marks)
b. Explain any 4 string manipulating functions with examples. (08 Marks)
c. Define the following : i) Actual parameter ii) Formal parameter iii) Global variable iv) Local variable. (05 Marks)

PART - 4

- 7 a. Define a STRUCTURE. Explain structure with syntax and example. (10 Marks)
b. What is a FILE? Explain any 2 FILE functions, with example.
c. Write a program to maintain a record of "n" student details using an array of structures with four fields (Roll number, Name, Marks and Grade). Each field is of an appropriate data type. Print the marks of the student given student name as input. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

- 8 a. Differentiate between STRUCTURES and UNIONS. (05 Marks)
 b. Explain the various MODES in which a FILE can be created successfully. (05 Marks)
 c. Given 2 university information files "studentname.txt" and "usn.txt" that contains students Name and USN respectively. Write a program to create a new file called "output.txt" and copy the contents of files "studentname.txt" and "usn.txt" into output file in the sequence shown below : (10 Marks)

Student Name	USN
Name - 1	USN - 1
Name - 2	USN - 2
.	.
.	.
.	.

PART - 5

- 9 a. Define a POINTER. Explain how pointer variable is declared and initialized. (06 Marks)
 b. What are primitive and non - primitive data types? Give examples. (06 Marks)
 c. Write a program using pointers to compute sum, mean and standard deviation of all elements stored in an array of "n" real numbers. (08 Marks)
- 10 a. Explain any 2 pre - processor directives in 'C' language. (05 Marks)
 b. What is a STACK? Explain its applications. (05 Marks)
 c. What is a QUEUE? Explain with example. (05 Marks)
 d. Write a program to swap 2 numbers using call - by - reference method. (05 Marks)
