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INTERNATIONAL CENTRE FOR APPLIED SCIENCES
(Manipal University)
I SEMESTER B.S. DEGREE EXAMINATION - APRIL / MAY 2017
SUBJECT: INTRODUCTION TO COMPUTERS & PROGRAMMING (CS 111)
(OLD SCHEME)
(BRANCH: COMMON TO ALL)
Friday, 12 May 2017

Time: 3 Hours   **Max. Marks: 100**

Answer ANY FIVE full Questions.

1A. What is a Computer? Briefly describe key characteristics of a Computer.
1B. Explain the following terms.
    (i) Data (ii) Information (iii) Word (iv) Program
1C. Differentiate RAM with ROM. (atleast six differences)   **(6+8+6)**

2A. Write an algorithm and flowchart to find whether a given number is palindrome or not.
2B. Explain the characteristics of an algorithm.
2C. Write a flowchart to find factorial of a given number.   **(6+6+8)**

3A. What are constants? Briefly explain the basic types of C/C++ constants.
3B. Explain the following with syntax and example.
    (i) Declaration of variables
    (ii) User defined type declaration
    (iii) Reference variables   **(10+10)**

4A. Give the general syntax and flowchart of switch statement and explain with suitable
    example.
4B. Write a complete C++ program to find the all the roots of a quadratic equation using else-if
    ladder.   **(10+10)**

5A. Write a C/C++ complete program to insert an element into any position (i.e. Begin or Middle
    or End) of a given unsorted list.
5B. Write a C/C++ complete program to check whether given string is palindrome or not.
5C. Compare C with C++ with an example (atleast six points)?   **(6+8+6)**

6A. Give the general form of a function definition and explain.
6B. Distinguish between (i) Pass by value and Pass by reference and (ii) Actual and Formal
    Parameters.
6C. Write a function IsPrime which takes as parameter an integer and returns 1 or 0 based on
    whether the integer is prime or not. Write a main function, which reads an integer and prints
    it is a prime number or not using the function IsPrime.   **(6+6+8)**

7A. What is an inline function? Give the inline functions syntax. Explain with an example.

7B. What is a constant member function? How to change values inside constant member function? Give an example?

7C. How can a global non-member function be declared as a friend to a class? Illustrate with an example? **(8+8+4)**

8A. Complete the following tasks
 (i) Create a Student class that holds the protected data member roll_number as integer. Include the public member functions are get_number initializes the data member and put_number retrieves the data member.
 (ii) Create a Sports class that holds the protected data member score as float. Include the public member functions are get_score initializes the data member score and put_score retrieve the data member.
 (iii) Create a Test class that inherits from Student class, access specifier as public, that holds the protected data members are part1 and part2 as float. Include the public member functions are get_marks initializes the data members and put_marks retrieves the data members.
 (iv) Create a Result class that inherits from the both Test and Sports classes, access specifier as public, that holds the protected data member total as float. Include the member functions as Display, it retrieves the roll number part1 and part 2 marks, score and total of the each student.
 (v) Demonstrate the use of above functions in the main( ), by creating an object named as 'Student_1' and calling functions appropriately.

8B. Explain with syntax, the following file handling functions.
     (i) fopen (ii) fclose **(10+10)**

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