Jalpaiguri Government Engineering College, Jalpaiguri
Department of Computer Science & Engineering
Principles of Computer Programming (ES-CS291) 23rd August' 2020
Laboratory Examination, 1st Year, Even Semester

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1. Answer all the below questions.

   (a) In a C program the maximum and minimum integer number that can be stored in an integer variable depends on the platform (where the C program is being executed). Write a complete and user-friendly C program that checks this and prints those maximum and minimum numbers.

   Hint: If you increment an integer variable storing the largest possible value that it can store, its value should reduce.

   (b) To overcome the limitation identified in the last assignment, you may try to store a larger integer number (numbers that cannot be stored in integer variables) in a character array as a string. For example, the integer 987654321 can be stored as char number1[20] = "987654321"; or char number1[20] = {'9', '8', '7', '6', '5', '4', '3', '2', '1', '∅'};.

   Write a complete user-friendly C program that reads two integers from the user, stores that in two character arrays as strings and adds this two numbers to store the sum as a string in a third array of characters and prints the sum.

   (c) Write a user-friendly C program to Sorting an array A of n integers in ascending order using below recursion step.

   If n is 1, then, do not do anything since it is already 'sorted. [**Step 1**]

   Else find i so that A[i] is largest and then interchange A[i] and A[n]. Then sort first n-1 elements of A. [**Step 2**]

   (d) Write a C function "**intfindNthLargest(int data[], int size, int n)**" that find the **n**th largest number from the passed array **data** of **size** elements. Write a complete user-friendly C program to demonstrate your function.

   (e) Write a complete and user-friendly program which when invoked as "$.compact file1 file2" compacts the contents of file1 into file2. That is, the program should replace any sequence of multiple white characters (space, tab, newline) in file1 by a single space character in file2, copying other contents of file1 into file2 as they are. The names of the files (that is, names for file1 and file2) should be taken by the program from command line.