National Institute of Technology Calicut
Department of Computer Science and Engineering
Third Semester B. Tech.(CSE)
CS2092D Programming Laboratory
Assignment #1

Submission deadline (on or before):

- 08.08.2022, 11:55 PM

Policies for Submission and Evaluation:

- You must submit your assignment in the Eduserver course page, on or before the submission deadline.
- Ensure that your programs will compile and execute without errors in the Linux platform.
- During the evaluation, failure to execute programs without compilation errors may lead to zero marks for that evaluation.
- Detection of ANY malpractice related to the lab course can lead to awarding an F grade in the course.

Naming Conventions for Submission

- Submit a single ZIP (.zip) file (do not submit in any other archived formats like .rar, .tar, .gz). The name of this file must be

  `ASSG<NUMBER>_<ROLLNO>_<FIRST-NAME>.zip`

  (Example: *ASSG*1_*BxxyyyyCS_LAXMAN.zip*). DO NOT add any other files (like temporary files, input files, etc.) except your source code, into the zip archive.

- The source codes must be named as

  `ASSG<NUMBER>_<ROLLNO>_<FIRST-NAME>_<PROGRAM-NUMBER>.c`

  (For example: *ASSG*1_*BxxyyyyCS_LAXMAN*_1.*c*). If you do not conform to the above naming conventions, your submission might not be recognized by our automated tools, and hence will lead to a score of 0 marks for the submission. So, make sure that you follow the naming conventions.

Standard of Conduct

- Violation of academic integrity will be severely penalized. Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating and plagiarism. Any submitted work MUST BE an individual effort. Any academic dishonesty will result in zero marks in the corresponding exam or evaluation and will be reported to the department council for record keeping and for permission to assign F grade in the course. The department policy on academic integrity can be found at: http://cse.nitc.ac.in/sites/default/files/Academic-Integrity_new.pdf.

General Instructions

- Programs should be written in C language and compiled using C compiler in Linux platform. **Submit the solutions to questions through the submission link in Eduserver**.

QUESTIONS

1. Write a program to find the sum of powers of digits of a given number. For example, if the given number is 123 and the specified power is 3, you have to compute $1^3+2^3+3^3$ and the answer would be 36. Your program must contain the following function.

   POWER(a, e) - A function that takes two inputs, a and e, and returns a^e.

   Input format:

   - The first line of the input contains an integer $n \in [0, 10^4]$, the number.
   - The second line of the input contains an integer $e \in [0, 16]$, the power.

   Output format:

   - The output is the sum of digits of the given number raised to the given power.

   Sample Test Case #1

   Input: 4953
   4

   Output: 7523

   Sample Test Case #2

   Input: 86
   5

   Output: 7523

2. Write a program that cyclically rotates the elements of an array of integers by N times. In the one cyclic rotation of an array, the first element becomes the last element; the second element becomes the first element, the third element becomes the second element, and so on.

   Input format:

   - The first line of the input contains an integer $n \in [0, 10^4]$, the size of the array A.
   - The second line lists the n elements in A, as space-separated integers in the range $[-1000, 1000]$.
   - The third line of the input contains the integer $m \in [0, 10^4]$ denotes the required number of rotations.

   Output format:

   - Output is the cyclically rotated array.

   Sample Test Case #1

   Input: 5
   3 4 10 8 5
   2

   Output: 10 8 5 3 4

   Sample Test Case #2

   Input: 4
   10 20 30 40
   4

   Output: 10 20 30 40

3. Write a program to check if the given string A is palindrome or not. For example, if the given string is "MALAYALAM," "malayalam," "MALAYalam," or "MaLaYAlaM," your program should recognize each of these as palindromes without worrying about the case mismatches.

   Input format:

   - The input is a string with uppercase, lowercase characters $\in [A - Z, a - z]$

   Output format:

   - If string A is palindrome print "YES" else "NO".

   Sample Test Case #1

   Input: NatiONAL

   Output: NO

   Sample Test Case #2

   Input: EagGae

   Output: YES