

## Introduction to Computer Programming and Data Structures

### Assignments 01

Maximum Marks: 120

Clarification Deadline: 2023-Feb-03

Submission Deadline: **2023-Feb-07**

#### Assignment problem # AP0101

- Problem: You are provided an array  $A$  of size  $N$  that contains non-negative integers. Your task is to determine whether the number that is formed by selecting the last digit of all the  $N$  numbers is divisible by 99.
- Input: from a file "input\_AP0101.txt"
  - First line: A single integer  $N$  denoting the size of the array  $A$ .
  - Second line:  $N$  space-separated integers.
- Output: in a file "output\_AP0101.txt"
  - If the number is divisible by 11, then print "yes".
  - Otherwise, print "no".
  - each output should be in a new line

[20]

#### Assignment problem # AP0102

- Problem: Write a C program that tells a given number to words. For example "123456789" should be printed as "Twelve Crore Thirty Four Lac Fifty Three Thousand Seven Hundred Eighty Nine".
- Aim: to learn switch-case.
- Input: from a file "input\_AP0102.txt"
  - The First line will contain  $N$  – the number of inputs.
  - The Second line will contain  $N$  integers separated by space.
- Output: in a file "output\_AP0102.txt"  
Print numbers to words in each new lines
- Hint: Use *strcat()* function from "string.h" library to concatenate two strings

[20]

### Assignment problem # AP0103

- Problem: Find max/min of  $N$  given integers.
- Input: from a file "input\_AP0103.txt"
  - The First line will contain  $N$ , the number of input.
  - The Second line will contain  $N$  integers separated by space.
- Output: in terminal: max/min of  $N$  integers

[20]

### Assignment problem: AP0104

- Problem: Given marks in % of a student. Outputs his/her grade as follows. If marks  $\geq 80$ : grade A+, marks  $\geq 60$ : grade A, marks  $\geq 45$ : grade B, marks  $\geq 30$ : grade C, marks  $< 30$ : grade D
- Input: from a file "input\_AP0104.txt"
  - First line:  $n$  /\*indicates number of test cases\*/
  - $n$  lines: in each line a single  $m_i$ ; where  $0 \leq m_i \leq 100$
- Output: in a file "output\_AP0104.txt"
  - In each new line, A+/A/B/C/D according to the input

[20]

### Assignment problem # AP0105

- Problem: Find the Factorial of a given number.
- Aim: to learn 'For loop'.
- Input: from command line: A non-negative integer  $n$ .
- Output: in the terminal: Factorial of  $n$ .

[20]

### Assignment problem # AP0106

- Problem: Check whether a given integer is a palindrome. A palindrome is the same if read forward or backward, for example 12021.
- Aim: to learn 'For loop'.
- Input: from a file "input\_AP0106.txt"
  - The First line will contain  $n$ . the number of input.
  - The Second line will contain  $n$  integers separated by space.
- Output: in a file "output\_AP0106.txt"
  - In each line, print "yes" If the number is a palindrome,
  - Otherwise, print "no".

[20]