SOUTH EASTERN UNIVERSITY OF SRI LANKA
FIRST EXAMINATION IN BACHELOR OF INFORMATION AND COMMUNICATION TECHNOLOGY - 2021/2022
SEMESTER – I, APRIL / MAY - 2024

SWT 11022 – PRACTICAL FOR FUNDAMENTALS OF PROGRAMMING

Answer all Questions **Time: 03 hours.**

Instructions: (STRICTRY FOLLOWED)

- On the Desktop, make a folder with your index number. (For example, ICTXXX)
- Within your index-numbered folder, create subfolders named Que1, Que2, and Que3.
- All answers should be documented, including code and screenshots of their outputs. Save the document in the same folder as your registration number.
- **Give the proper and clear name of the files**
- Make sure to frequently save your work.

Marks Scheme:

- For each question (30 marks each, total 90 marks):
  - Correct implementation of required functions (10 marks)
  - Proper use of C programming concepts specific to the question (10 marks)
  - Code organization, readability, and comments (5 marks)
  - Error handling and input validation (5 marks)
- Additional 10 marks for overall code quality and demonstration of C programming knowledge across all questions.

Total: 100 marks

Question 01:

Implement a program that manages a simple inventory system using an array of structures. Your program should:

a) Define a structure '**Item**' with fields for item code (integer), name (string), and quantity (integer).

b) Create an array to store up to 100 items.

c) Implement functions to:

- Add a new item to the inventory
- Update the quantity of an existing item
- Display all items in the inventory
- Find an item by its code

d) Create a simple menu-driven interface to interact with these functions.

Question 02:

Create a program that processes a text file containing student records (Created by your format). Your program should:

a) Read a file named "students.txt" where each line contains: Name,ID,Score

b) Implement functions to:

- Read the file and store the data in an array of structures
- Sort the students alphabetically by name
- Find the highest and lowest scores
- Write the sorted list to a new file named "sorted_students.txt"

c) Use string functions to parse the input and format the output.

Question 03:

a) Develop a C program to solicit numerical marks from a user and subsequently compute and display the corresponding letter grade and Grade Point Average (GPA) based on the provided grading scale.

Marks Range	Grade	Grade Point
85-100	A+	4.00
70-84	A	4.00
65-69	A-	3.70
60-64	B+	3.30
55-59	B	3.00
50-54	B-	2.70
45-49	C+	2.30
40-44	C	2.00
35-39	C-	1.70
30-34	D+	1.30
25-29	D	1.00
00-24	E	0.00

- Enter the marks of the following subjects of a students.
    - Fundamentals of Programming
    - Essentials of ICT and PC Applications
    - Database Design
    - Logic designing and Computer Organization
    - Mathematics for ICT
- Process the marks data to determine corresponding letter grades and GPAs based on the provided grading scale.
- Create a new text file named "Marksheet.txt" to store the student's name, obtained marks, calculated letter grade, and GPA.