061306T4CSC

COMPUTER SCIENCE LEVEL 6

ICT/OS/CS/CR/09/6/A

Understand Algorithms and Data Structures

Nov/Dec 2024

TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL (TVET CDACC)

PRACTICAL ASSESSMENT

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATE

1. You are required to perform the following tasks :
    i. Task 1: Implement Enqueue operation for a queue using C++
    ii. Task 2: Implement Dequeue operation for a queue using C++
    iii. Task 3: Perform Linear search using C++

2. You are provided with the following resources:
    i. A working computer installed with C++ IDE
    ii. 1 plain paper

TASK 1:

Write a C++ program that implements enqueue operation by inserting an element at the end of the queue. The program should perform the tasks below.

i. Check if the queue is full.
ii. If the queue is full, return overflow error and exit.
iii. If the queue is not full, increment the rear pointer to point to the next empty space.
iv. Add the data element to the queue location, where the rear is pointing.
v. Return success.

TASK 2:

Write a C++ program that implements dequeue operation, removes and returns an element that is at the front end of the queue. The program should check if the dequeue operation is successful using the following steps:

a. Check if the queue is empty.
b. If the queue is empty, return the underflow error and exit.
c. If the queue is not empty, access the data where the front is pointing then;
d. Increment the front pointer to point to the next available data element.
e. Return success.

TASK 3:

Implement a function to perform linear search to find the index of element 80 given the following sorted array A.
A= {10, 20, 40, 60, 70, 80, 90}.

THIS IS THE LAST PRINTED PAGE