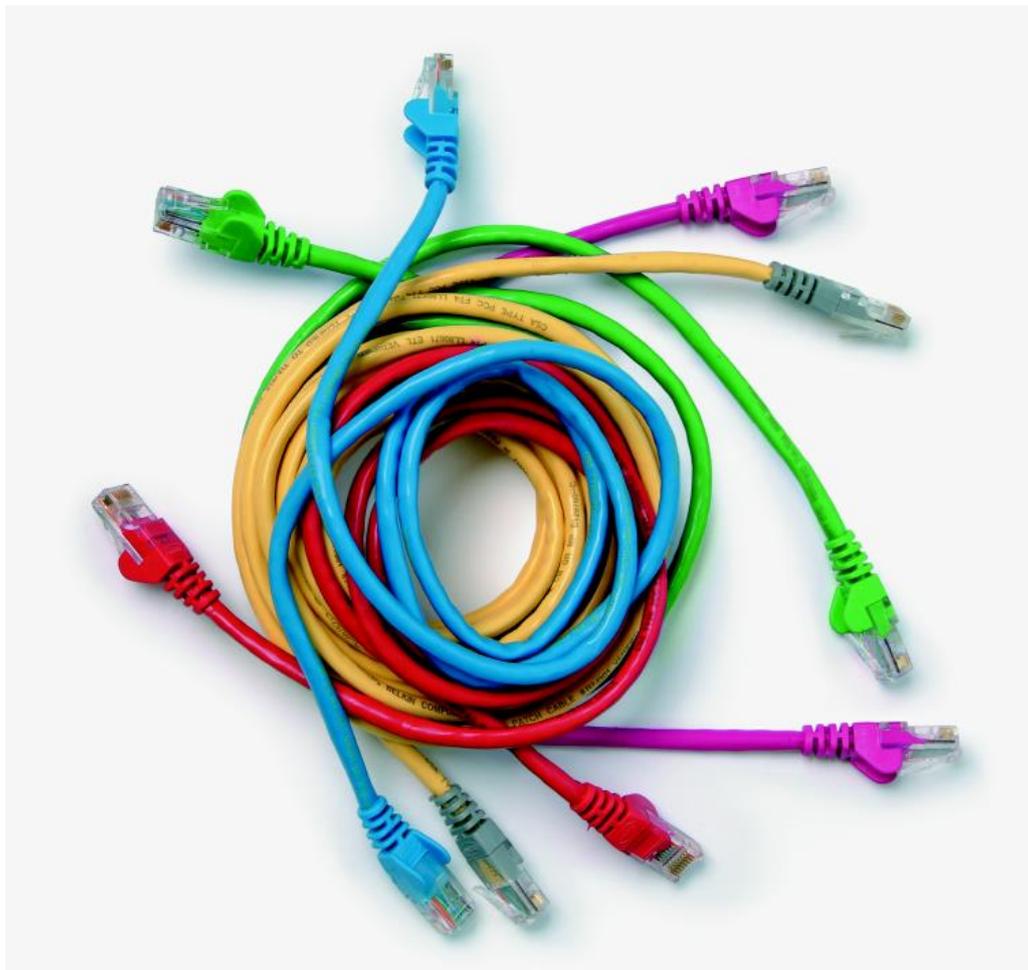


Level 3 Creating an object oriented computer program using C++ (7540-034/7630-320)

Assignment guide for Candidates Assignment A



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Level 3 Creating an object oriented computer program using C++ (7540-034/7630-320)

Assignment A

Introduction – Information for Candidates

About this document

This assignment comprises all of the assessment for Level 3 Creating an object oriented computer program using C++ (7540-034/7630-320).

Health and safety

You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance

The recommended time allowance for this assignment is **4 hours**.

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Candidate instructions

Candidates are advised to read **all instructions** carefully before starting work and to check with your assessor, if necessary, to ensure that you have fully understood what is required.

Time allowance: 4 hours

Assignment set up: A scenario is provided for candidates in the form of a company specification for a service that they require.

This assignment is made up of **three** tasks

- **Task A** - provides a detailed specification that should be followed by candidates when developing their program.
- **Task B** - requires the candidate to test the program and provide documentation.
- **Task C** - provides criteria that should be followed by candidates when producing their work.

Scenario

A company, Mannering Products, wishes to develop a queuing system for their orders to ensure that they are processed in strict order of receipt. This means that orders to be processed will be removed from the front of the queue and orders received will be placed at the rear of the queue.

Order numbers must be in the range 1000 – 9999.

As an employee of the company you are asked to develop and test a program which can be used for this purpose. Only order numbers will be stored in the queue.

When an order number is removed from the front of the queue for processing, it should be written to a sequential file.

Task A

Candidates should use the following detailed specification to fulfil the company's requirements.

- 1 **A new class is to be created called Queue. The class must have methods for the following:**

AddItem - adds an order number to the rear of the queue

RemoveItem – removes an order number from the front of the queue

ErrorHandler - outputs the appropriate error message eg Queue empty, according to a number passed in as a parameter

DisplayQueue – displays the items in the queue (from the front)

QueueFull - returns true if the queue is full and false if not

QueueEmpty - returns true if the queue is empty and false if not

- 2 The queue should be held in a limited size array eg 10 and to maximise its use should wrap around from the rear to the front if there are empty cells available at the front.
- 3 To test the Queue class a menu is to be used as shown below.

MENU

1. Add an order number
2. Remove an order number
3. Display the order numbers
4. Quit

Enter menu option required:

- 4 After a user selection of menu option 1, 2 or 3 has been made and the relevant code executed the program must loop back to the menu. Validate the menu selections in the range 1 to 4.
- 5 If menu option 1 is selected the following actions should be taken:
 - display a prompt for the entry of a new order number
 - validate the order number in the range 1000 to 9999
 - call the AddItem method in the Queue class to add the order number to the queue.
- 6 If menu option 2 is selected the following actions should be taken:
 - call the RemoveItem method to remove an order number from the queue
 - write the order number to the sequential file
- 7 If menu option 3 is selected call the DisplayQueue method to display all the order numbers on the queue.
- 8 Menu option 4 should terminate the program.
- 9 Write the code to implement the design.

Task B

In this task you are required to test the program you have created and provide documentation.

- 1 **Create test data to test the program and determine the expected results.**

- 2 Prepare a test plan, test the program, compare the actual results to the expected results keeping a log for each test which identifies any discrepancies between actual and expected results and records any amendments made to correct any errors found. Use available debugging tools to help locate and resolve errors.
- 3 Produce technical documentation to describe the class interface and purpose of the program.
- 4 Print a listing of all the code of the program.
- 5 Print a copy of the output file.

Task C

Candidates should follow the criteria below when producing their work:

- 1 The program conforms to the design specification.**
- 2 The code is commented.
- 3 Meaningful names are used for attributes.

Note

- Candidates should produce the following for their assessor:
 - A printed program listing.
 - Printout of the output file.
 - Test data, test plan, expected results and the log of testing.
 - Technical documentation.
- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on the removable media and all documentation.
- If the assignment is taken over more than one period, all removable media and paperwork must be returned to the test supervisor at the end of each sitting.

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