# Level 3 Develop software using C++ (7266/7267-302)

## e-Quals
## Assignment guide for Candidates
Assignment B

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# Level 3 Develop software using C++ (7266/7267-302)
## Assignment B

Introduction – Information for Candidates

### About this document

This assignment comprises part of the assessment for Level 3 Develop software using C++ (7266/7267-302).

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### 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**.

# Level 3 Develop software using C++ (7266/7267-302)
# 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 local company has a meeting/conference room that can hold up to 60 people. Because of its size and shape, it is laid out 10 rows deep by 6 seats across. To the embarrassment of the company, there have recently been occasions where delegates attending meetings have been allocated the same seat. Also, at times it is not always possible to verify the names of those attending. As an employee of Terrific Software Ltd you have been asked to design a demonstration program, which could be used to solve this problem.

As part of the design specification, Terrific Software has stipulated that the program should utilise classes. As this is a prototype program there is no need to save the data to disk and the program should only record details of one meeting. If the demonstration is successful the program will be adapted to include different dates.

It has been requested that all the seats allocated or not, are visible on screen at one time and there should be an option to view the names of all delegates attending the meeting.

## Task A

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

In this task you are required to design and create the software to record the delegate seating for a conference.

1 The program must be written using classes and functions.

2 Global variables may be declared but, as far as possible, local variables should be used

3 The seating plan must only consist of 10 rows by 6 seats.

4 The rows must be numeric 1 to 10 and the seats lettered A, B, C, D, E, F.

5 All seating allocations and details of delegates are to be held in arrays.

6 Suitable screen messages must be used throughout the program.

7 The current seat allocation should be displayed on screen with an option to enter a row number to allocate a seat.

**The current seat allocation is:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **1** | **A** | **B** | **C** | **D** | **E** | **F** |
| **2** | **A** | **B** | **C** | **D** | **E** | **F** |
| **3** | **A** | **B** | **C** | **D** | **E** | **F** |
| **4** | **A** | **B** | **C** | **D** | **E** | **F** |
| **5** | **A** | **B** | **C** | **D** | **E** | **F** |
| **6** | **A** | **B** | **C** | **D** | **E** | **F** |
| **7** | **A** | **B** | **C** | **D** | **E** | **F** |
| **8** | **A** | **B** | **C** | **D** | **E** | **F** |
| **9** | **A** | **B** | **C** | **D** | **E** | **F** |
| **10** | **A** | **B** | **C** | **D** | **E** | **F** |

**Enter row number or 99 to end seat allocation :**

8 The row number must be validated.

9 An entry of **99** for the seat row must cause the seating selection to terminate, the current seating plan to be displayed with an added option to view details of the delegates as at 12 below.

10 Only entry of a valid row number should cause a request for the seat letter. The seat letter should be validated.

11 On entry of a valid seat letter if a seat has not been previously allocated then it should be allocated by placing an 'X' in the seat position.

12 Only if a seat can be allocated should there be a request for details of the delegate's name to be entered.
The output should be similar to the following. **Note:** The seats 5D and 6E have been allocated.

**The current seat allocation is:**

| | | | | | | |
|---|---|---|---|---|---|---|
| **1** | **A** | **B** | **C** | **D** | **E** | **F** |
| **2** | **A** | **B** | **C** | **D** | **E** | **F** |
| **3** | **A** | **B** | **C** | **D** | **E** | **F** |
| **4** | **A** | **B** | **C** | **D** | **E** | **F** |
| **5** | **A** | **B** | **C** | **X** | **E** | **F** |
| **6** | **A** | **B** | **C** | **D** | **X** | **F** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **7** | **A** | **B** | **C** | **D** | **E** | **F** |
| **8** | **A** | **B** | **C** | **D** | **E** | **F** |
| **9** | **A** | **B** | **C** | **D** | **E** | **F** |
| **10** | **A** | **B** | **C** | **D** | **E** | **F** |

**Do you want to view the delegate names? Y or N :**

13 The user response for viewing the delegate names must be in the format of Y or N which should be validated. A response of Y should display the delegate names along with their seat allocation in a list.

14 After the display of the delegate names or if the user responds N there must be a message displayed asking the user if they wish to continue with the program. Again the response must be in the format of Y or N. Only Y should cause the program to loop for further input of a row number. A response of N should cause the program to terminate.

15 Create the design for the program specifying the components required.

16 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 Prepare a test plan, create test data to test the program and create the expected results.

2 Test the software, 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 resolve any logical or run-time errors found.

3 Produce technical documentation to describe the class interface and purpose of the program.

4 Print a listing of all the code for the program.

## Task C

*Candidates should follow the criteria below when producing their work:*

1 The program conforms to the design specification.

2 The code is structured so that it is easily maintained.

## Note

- Candidates should produce the following for their assessor:
  - Design documentation.
  - A printed program listing.
  - Test data, test plan, expected results, actual 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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