# Level 3 Develop designs and test software components (7266/7267-301)

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

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# Level 3 Develop designs and test software components (7266/7267-301) Assignment B

Introduction – Information for Candidates

## About this document

This assignment comprises part of the assessment for Level 3 Develop designs and test software components (7266/7267-301).

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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 **6 hours**.

# Level 3 Develop designs and test software components (7266/7267-301)
# 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: 6 hours

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

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

- **Task A** - provides an outline design specification for software.
- **Task B** - provides criteria that should be followed by candidates when producing their design work.
- **Task C** - provides a specification for the software which requires testing.
- **Task D** - provides criteria that should be followed by candidates when producing the testing documentation.

## Scenario

You are employed as a consultant for Millennium Design. As an employee of Millennium Design, you have been asked to assist in the design and testing of Course Booking software.

## Task A

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

In this task you are required to design part of the software for recording course bookings. The outline specification for the course booking software is contained in Appendix A.

1 Produce a suitable diagrammatical representation for the program to show the structure and components.

2 Produce the program design language algorithms for the following:
- Operation of the Booking Seat Plan screen.
- Creation of a new file.

Note that if date validation is required the company have a prewritten library routine called DateCheck which can be used. This routine takes a date input and returns a Boolean value.

3 Specify the following requirements for the software:
- The peripherals.
- Any error handling needed to trap errors in the booking screen and file creation routines.

## Task B

*Check that you have followed the criteria below when producing the design documentation:*

1 The design conforms to the design specification.

2 The program design language clearly shows variable names and data types, argument names and data types, return value data types any data structures used and file access method(s).

3 The design is consistent and complete.

4 Quality criteria are met by the design.

## Task C

*In this task you are required to carry out testing of the COURSES software which has now been developed.*

**Note:** For the purposes of this testing the tickets are printed in a smaller font to save paper.

1 Write down THREE hazards which might occur in a computing environment and the reporting procedures which would be used to report any hazards that were found.

2 Prepare a test plan and test data to carry out testing.

3 Use the test plan and test data to carry out a series of tests and record the test results in a test log.

4 Use the test log to produce a report which specifies the presence or absence of errors, makes proposals for rectifying errors and reports on the success of the test against the original software specification.

## Task D

*Check that you have followed the criteria below when producing the documentation for testing:*

1 The test plan contains a test number, date, purpose and type of test and expected outputs for stated inputs.

2 Evidence of file output and printed output must be cross-referenced to the correct test number.

3 Maintain a safe working environment for yourself and others.

## Note

- Candidates should produce the following for their assessor:
  - Diagrammatical representation for the program.
  - Program design language algorithms for operation of the Booking Seat Plan screen
  - and creation of the new file.
  - Specification of requirements (peripherals and error trapping).
  - Hazards documentation.
  - A test plan, test data and test log.
  - A report on test results.
  - Cross-referenced evidence of testing: ie file print, printed output as necessary to show test results.
- 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.

## Appendix A

# Course Bookings

The Course bookings program must allow up to 100 courses with booking details to be stored in a file. There must be up to a maximum of 10 courses with the same name and each course has 12 places which can be booked. A booking plan must be displayed on screen and a user can change a place to booked or not booked depending on its current setting.

Instructions for the Course.exe program

The program is to be developed for a 32-bit Windows environment.

The opening screen must have a file menu with the following options:

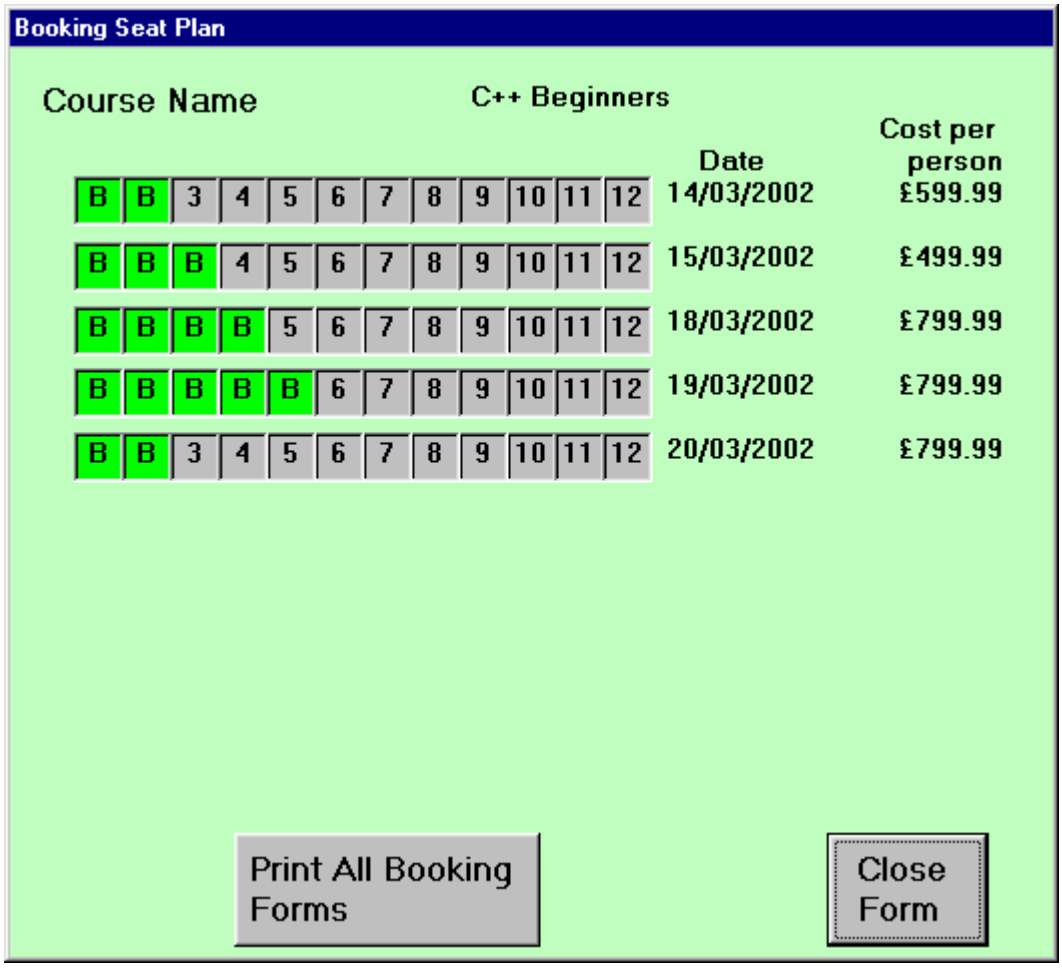
| Option | Action |
|---|---|
| New | Create a new file |
| Open | Open an existing file |
| Save | Save the currently open file |
| Exit | Exit the program with an option to save the file |

The format for an existing file is as follows:

"C++ Beginners"
"19/03/2002"
"£799.99"
"BBBBBFFFFFFF"
"Pascal Advanced"
"19/06/2002"
"£300"
"BFFFBBBBFFBF"
"Pascal Beginners"
"19/02/2002"
"£200"
"BBFFFFFFFFFF"
"Visual Basic Beginners"
"11/03/2002"
"£599.99"
"BFFFFFFFFFFB"
"Pascal Advanced"
"18/06/2002"
"£300"

The course name, date and cost are followed by the booking details. The booking details are for 12 places for each course. F indicates a seat is free and B indicates a seat is booked. The file can be created in a text editor.

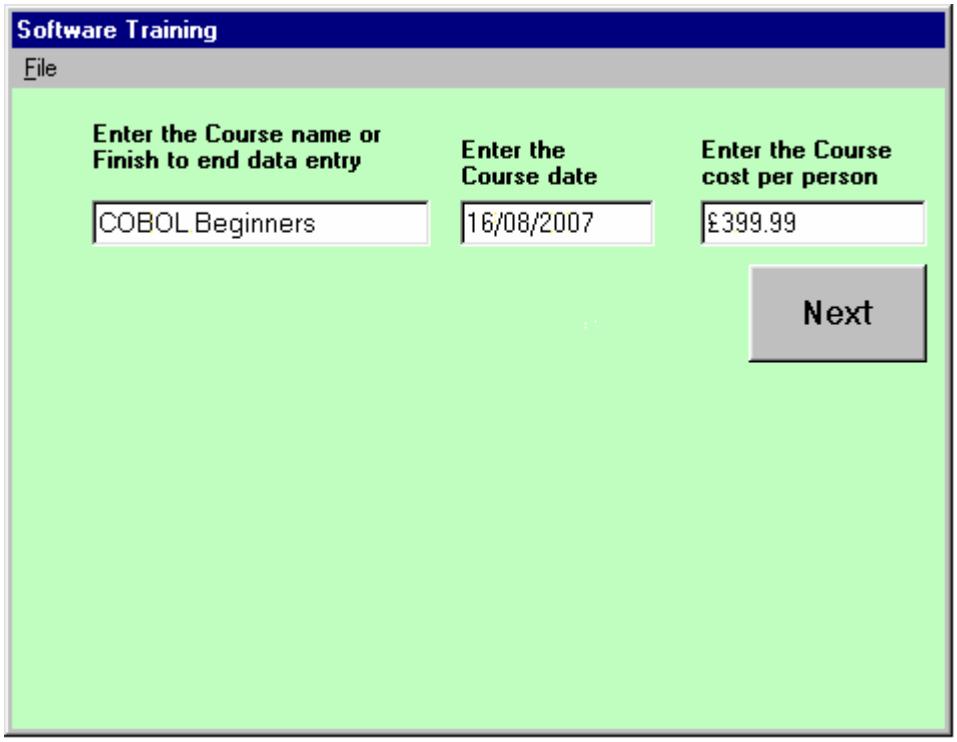
When an existing file is opened a list of courses must be displayed in a selection box. Selecting a course should display a course booking plan with all the courses for the selected course (up to a maximum of 10), similar to the one shown below.




A booked seat must be displayed with a B and a background of green. Clicking on a numbered seat will change it to booked (B and green). Clicking on a booked place should change it back to a number. All the courses with the same course name up to a maximum of 10 courses must be displayed in ascending order of date.

When the file is saved any changes made to the booking plan must be written to the file.

To create a new file, the New option on the File menu must be selected. Then an entry must be made for each course name with date (DD/MM/YYYY) and cost for all the courses for which a booking plan is required. The date entered must be validated and must be a valid date. A new booking plan for each course will be created with all places free. The screen for entry of the courses should appear similar to the screen shown below:




The next button allows entry of another course.

**Error Codes**

The program produces the following error codes:

| Error Code | Error Message |
|---|---|
| 001 | "File incorrect format or missing or dialog cancelled" |
| 002 | "File open error or dialog cancelled" |
| 003 | "File save error" |
| 004 | "Invalid Date" |

A booking form must be printed as shown below.

***BOOKING NUMBER: 1 Pascal Beginners***

**Date:** 19/02/2002
**Cost:** £200

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