Level 3 Software design fundamentals

(7540-033/7630-348)

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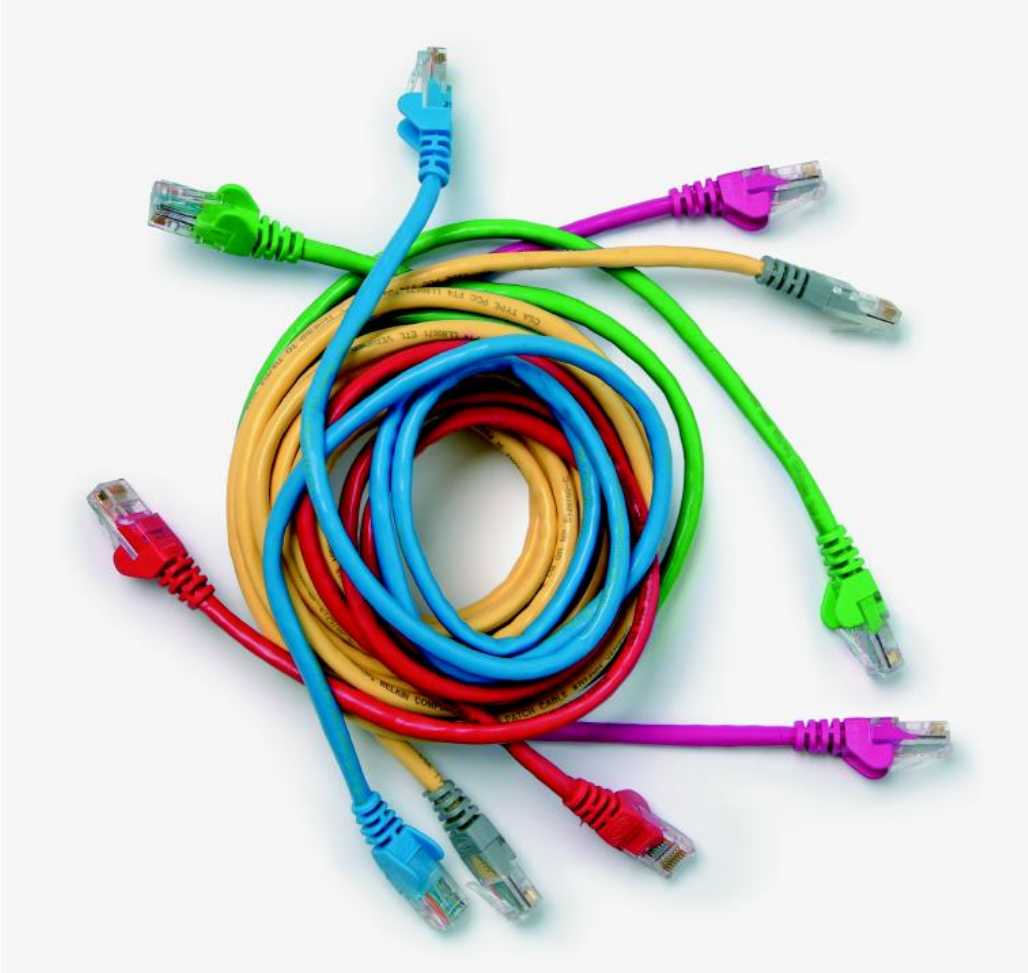
Assignment guide for Candidates

Assignment A



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Level 3 Software design fundamentals (7540-033/7630-348)
Assignment A

Introduction – Information for Candidates

About this document

This assignment comprises all of the assessment for Level 3 Software design fundamentals 7540-033/7630-348).

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 **3 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: 3 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 **two** 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.

Scenario

You are employed as a consultant for Ultra Design Systems. As an employee of Ultra Design Systems, you have been asked to assist in the design of Theatre 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 theatre bookings. The outline specification for the Theatre booking software is contained in Appendix A.

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

2 Define a print layout for the tickets to include the seat number, the play name, the date of the performance and the price.

3 Produce the program design language algorithms for the following:
- printing tickets (note that the data from the file is available in a two-dimensional array)
- creation of a new file.

Note: If date validation is required the company has a prewritten library routine called DateValid which can be used. This routine takes a date input and returns a boolean value of true if the date is valid and false if the date is not valid.

4 Specify any error handling needed to trap errors in the printing tickets and file creation algorithms.

5 Give a brief description of the role of software design in the IT Systems Development Life Cycle (SDLC).

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 Quality criteria are met by the design.

Note

- Candidates should produce the following for their assessor:
  - Diagrammatical representation of the program.
  - Print layout for the tickets.
  - Program design language algorithms for printing tickets and creation of the new file.
  - Specification of error trapping.
  - Brief description of the role of software design in the IT SDLC.
- 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

Theatre booking

The Theatre booking program must allow up to 100 plays with seat booking details to be stored in a file. The Theatre has 10 rows (A – J) and 20 seats in each row.
A booking seat plan must be displayed on screen and a user can change a seat to sold or unsold depending on its current setting.

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

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

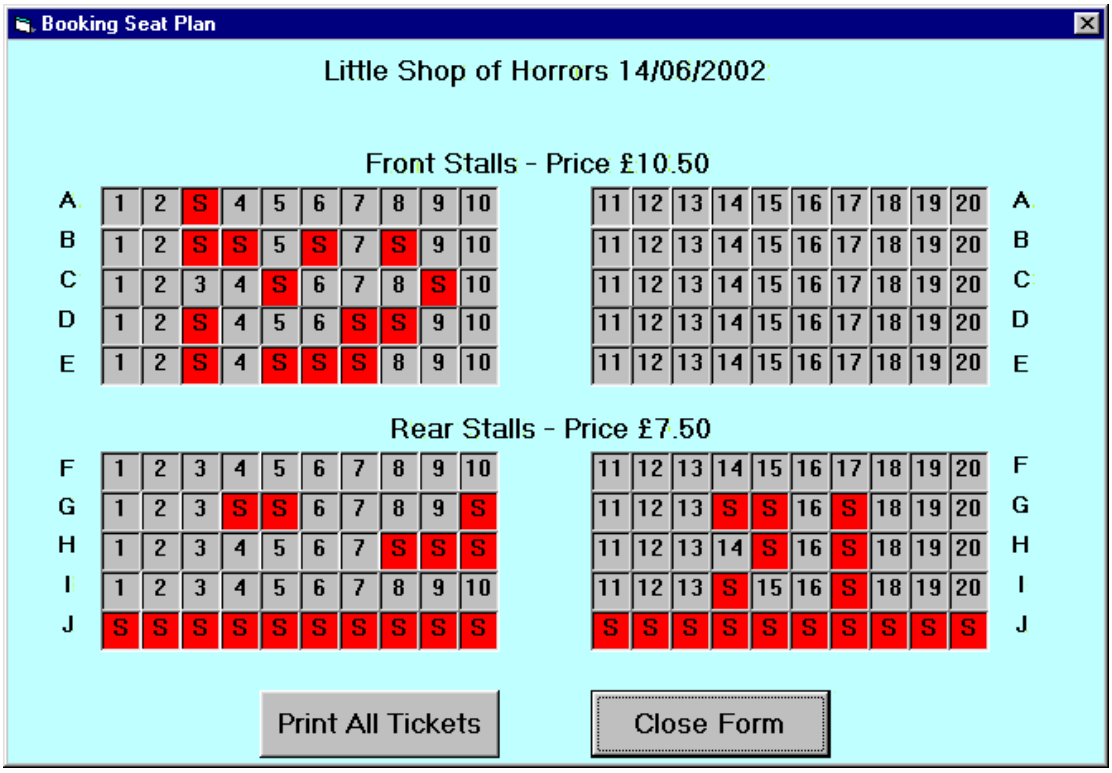
Option	Action
New	Create a new file
Open	Open an existing file
Save	Save the currently open file
Exit	Exit the program with an option to save the file

The format for an existing file is as follows:

```
Little Shop of Horrors 13/06/2002
FFFFFFFFFFFFFFFFFFF
SFFFFSFSFFFFFFFFFFF
FFFFFFSFFFFSFFFFFFF
SFFFFFFSFFFSFFFFFFF
SSFFSFFFSSFFSFFFFFF
SFFFFFFFFFFFFFFFFFF
FFFFFSFFFFFFFFFFSFF
SFFFFFFFFFFFFFFFFFF
FFFSFFFFFFFFFFFFFFF
SSSSSSSSSSSSSSSSSSS
Little Shop of Horrors 14/06/2002
FFSFFFFFFFFFFFFFFFF
FFSSFSFSFFFFFFFFFFF
FFFFSFFFSFFFFFFFFFF
FFSFFFSSFFFFFFFFFFF
FFSFSSSFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFF
FFFSSFFFFSFFFSSFSFF
FFFFFFFSSSFFFFFSFSF
FFFFFFFFFFFFFSFFSFF
SSSSSSSSSSSSSSSSSSS
```

The play name and date are followed by the seat booking details. The seat booking details are for 10 rows (A – J) and 20 seats in each row. F indicates a seat is free and S indicates a seat is booked. The file can be created in a text editor.

When an existing file is opened a list of plays with dates must be displayed in a selection box. Selecting a play should display a booking seat plan for the selected play, similar to the one shown below.



A booked seat must be displayed with an S and a background of red. Clicking on a numbered seat should change it to booked (S and red). Clicking on a booked seat should change it back to a number.

When the file is saved any changes made to the booking seat 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 play name with date for all the plays for which a booking seat plan is required. A new booking seat plan for each play must be created with all seats free. The screen should appear similar to the screen shown below:

The Next button allows entry of another play.

Error Codes

The following error codes are to be used:

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”

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