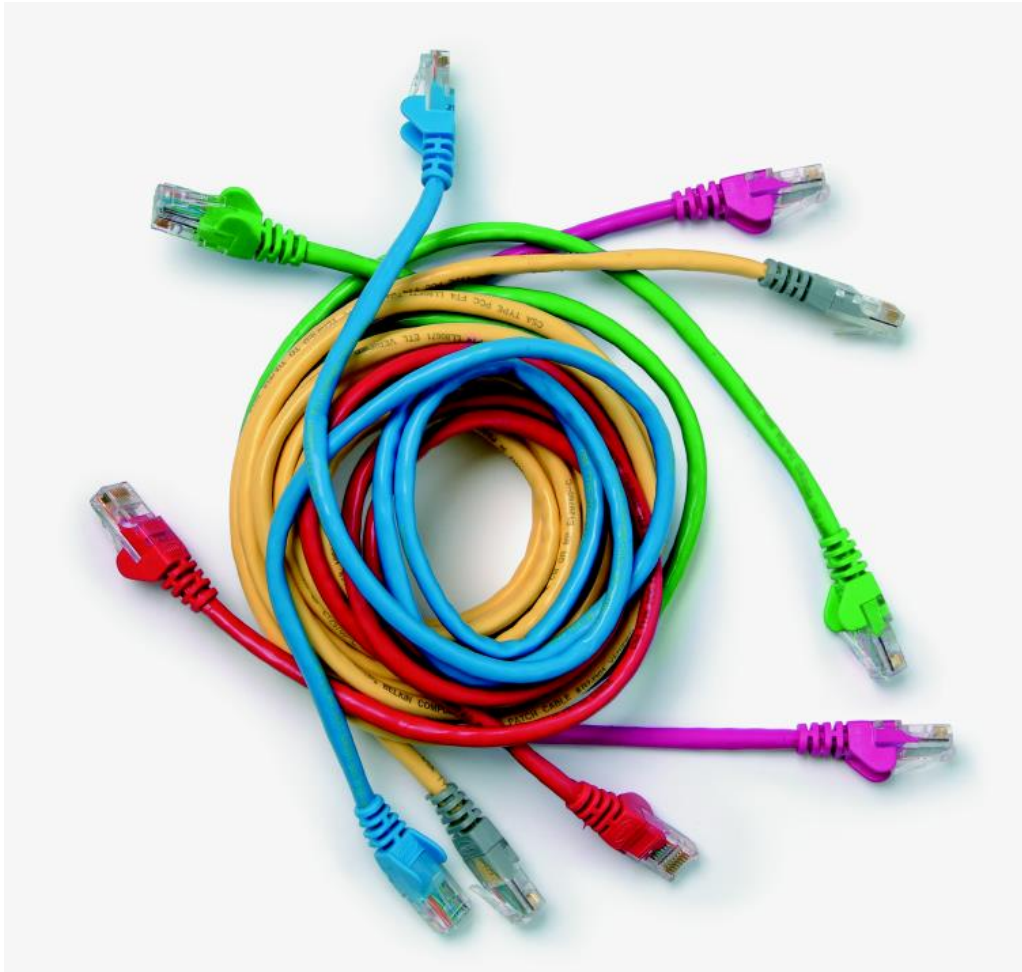


# Level 3 Software design fundamentals

**(7540-033/7630-348)**

**Assignment guide for Candidates**  
Assignment B



## **About City & Guilds**

City & Guilds is the UK's leading provider of vocational qualifications, offering over 500 awards across a wide range of industries, and progressing from entry level to the highest levels of professional achievement. With over 8500 centres in 100 countries, City & Guilds is recognised by employers worldwide for providing qualifications that offer proof of the skills they need to get the job done.

## **City & Guilds Group**

The City & Guilds Group includes City & Guilds, ILM (the Institute of Leadership & Management) which provides management qualifications, learning materials and membership services, NPTC which offers land-based qualifications and membership services, and HAB (the Hospitality Awarding Body). City & Guilds also manages the Engineering Council Examinations on behalf of the Engineering Council.

## **Equal opportunities**

City & Guilds fully supports the principle of equal opportunities and we are committed to satisfying this principle in all our activities and published material. A copy of our equal opportunities policy statement is available on the City & Guilds website.

## **Copyright**

The content of this document is, unless otherwise indicated, © The City and Guilds of London Institute 2010 and may not be copied, reproduced or distributed without prior written consent.

However, approved City & Guilds centres and learners studying for City & Guilds qualifications may photocopy this document free of charge and/or include a locked PDF version of it on centre intranets on the following conditions:

- centre staff may copy the material only for the purpose of teaching learners working towards a City & Guilds qualification, or for internal administration purposes
- learners may copy the material only for their own use when working towards a City & Guilds qualification

The *Standard Copying Conditions* on the City & Guilds website also apply.

Please note: National Occupational Standards are not © The City and Guilds of London Institute. Please check the conditions upon which they may be copied with the relevant Sector Skills Council.

## **Publications**

City & Guilds publications are available on the City & Guilds website or from our Publications Sales department at the address below or by telephoning +44 (0)20 7294 2850 or faxing +44 (0)20 7294 3387.

Every effort has been made to ensure that the information contained in this publication is true and correct at the time of going to press. However, City & Guilds' products and services are subject to continuous development and improvement and the right is reserved to change products and services from time to time. City & Guilds cannot accept liability for loss or damage arising from the use of information in this publication.

## **City & Guilds**

**1 Giltspur Street**

**London EC1A 9DD**

**T +44 (0)844 543 0000 (Centres)**

**T +44 (0)844 543 0033 (Learners)**

**F +44 (0)20 7294 2413**

**[www.cityandguilds.com](http://www.cityandguilds.com)**

**[learnersupport@cityandguilds.com](mailto:learnersupport@cityandguilds.com)**

# Contents

Introduction – Information for Candidates	2
Candidate instructions	3
Appendix A	5

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

## Assignment B

### 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**.

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

## 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 Millennium Design. As an employee of Millennium Design, you have been asked to assist in the design 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 of 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
- opening of an existing file.

Note that if date validation is required the company has a prewritten library routine called DateCheck 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.

- 3 **Specify any error handling needed to trap errors in the booking screen, file creation and opening an existing file algorithms.**
- 4 Give a brief description of the importance of software design in the 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.
  - Program design language algorithms for operation of the Booking Seat Plan screen, creation of the new file and opening an existing file.
  - Specification of error trapping.
  - Brief description of the role of software 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

## Course booking

The Course booking 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.

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"  
"BBBBBFFFFFFFFF"  
"Pascal Advanced"  
"19/06/2002"  
"£300"  
"BFFFBBBBFFBF"  
"Pascal Beginners"  
"19/02/2002"  
"£200"  
"BBFFFFFFFFFFFF"  
"Visual Basic Beginners"  
"11/03/2002"  
"£599.99"  
"BFFFFFFFFFFFFB"  
"Pascal Advanced"  
"18/06/2002"  
"£300"  
"BBFFBFFFFFFFFF"
```

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.

Booking Seat Plan													
Course Name											C++ Beginners		
											Date	Cost per person	
B	B	3	4	5	6	7	8	9	10	11	12	14/03/2002	£599.99
B	B	B	4	5	6	7	8	9	10	11	12	15/03/2002	£499.99
B	B	B	B	5	6	7	8	9	10	11	12	18/03/2002	£799.99
B	B	B	B	B	6	7	8	9	10	11	12	19/03/2002	£799.99
B	B	3	4	5	6	7	8	9	10	11	12	20/03/2002	£799.99

Print All Booking Forms

Close Form

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

---

---

**Published by City & Guilds**

**1 Giltspur Street**

**London**

**EC1A 9DD**

**T +44 (0)844 543 0000 (Centres)**

**T +44 (0)844 543 0033 (Learners)**

**F +44 (0)20 7294 2413**

**[www.cityandguilds.com](http://www.cityandguilds.com)**

**City & Guilds is a registered charity  
established to promote education  
and training**