Level 2 Create software components using C++

(7266/7267-202)

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Assignment guide for Candidates
Assignment D

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City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)20 7294 2800
F +44 (0)20 7294 2400
www.cityandguilds.com
learnersupport@cityandguilds.com

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Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 2 Create software components using C++ (7266/7267-202).

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 2 Create software components using C++ (7266/7267-202) 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 below for this assignment.

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

- **Task A** - provides a detailed design specification that should be followed by candidates when developing their program.
- **Task B** - provides presentation criteria that should be followed by candidates when producing their work.
- **Task C** - lists what the candidate should produce for their assessor.

Scenario

Terrific Software Ltd, your employers, have been contacted by an historical railway society (Daffodil Railways), who are considering computerising their ticket issuing facilities.

Currently separate tickets are issued to individuals for a specific journey from a booking office. Because of the lack of staff available, combined with the number of groups and families that travel to see their trains, Daffodil Railways want to be able to issue tickets for groups and individuals on the trains. This will alleviate the need to man the booking office.

There are only SIX stations on the railway line and customers can purchase tickets to any one of the stations or to the end terminus. A return ticket can be purchased from a terminus only, but passengers must get off the train at the other terminus while it re-fuels.

The current charges are as follows:

Old Age Pensioner	Per stop	£ 0.30
	Return ticket	£ 3.00
Children under 16 yrs	Per stop	£0.50
	Return ticket	£5.00
Adults	Per stop	£0.75
	Return ticket	£6.00

The stations are named:

0. Station yard terminus
0. Badgers Holt
0. Copse View
0. Castle Hill
0. Viking Meadow
0. Blacksmiths Arms
0. Daffodil Valley
0. Aqueduct Terminus

Daffodil Railways requests that the final ticket be similar to: -

Departure station: *Abcd*
Travelling to: *Abcd*

No. Adults	No. Children	No. OAP
0	*0*	*0*
Adult fare paid	Child fare paid	OAP fare paid
£ *0.00*	£ *0.00*	£ *0.00*

Total ticket price: £ *0.00*
Return ticket: *Yes / No* Date: *dd / mm / yyyy*

As this is to be a demonstration program the ticket will only be printed to screen and the date manually entered by the user. In addition, the user must be able to enter more tickets from the same station.

The ticket collector will require a total to be displayed of the fares collected at that station in order that he can check his money.

It will be necessary to create a test plan in order to verify the totals displayed on the ticket and the amount of money collected at each station, compared against any expected values.

You have been given FOUR hours to produce the demonstration program and to assist you in creating your program Terrific Software have produced the following design specifications.

Task A

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

1 The program must use functions and local variables wherever possible.

2 The program starts in wait state with a suitable welcome screen, awaiting a keystroke.

3 On pressing any key, the screen should clear an a request for the current date made.

4 Dates must be recorded in the format of dd/mm/yyyy.

5 There must be a request for input of the current station identification number, with the following options displayed.

0. Station Yard Terminus
0. Badgers Holt

0. Copse View
0. Castle Hill
0. Viking Meadow
0. Blacksmiths Arms
0. Daffodil Valley
0. Aqueduct Terminus

6 Entry of station numbers must be range validated.

7 Entry of the relevant number shall cause a message to be displayed similar to:

" Departure station - Badgers Holt "

8 There should follow a request for the destination station (forward values only unless for a return ticket).

9 If the departure station is 'Station Yard Terminus' and the number 1 is entered here, there should follow a message similar to:

" Is this a return ticket Y/N : "

10 The reply must be validated and converted to uppercase.

11 An entry of a value other than 'Y' shall cause the request at 8 to be repeated.

12 An entry of 'Y' shall cause the return ticket price to be calculated for this ticket.

13 There must follow suitable requests for the number of passenger types, similar to:

" How many adults: "
" How many children: "
" How many OAP's: "

14 Response to these messages should be numeric.

15 The total cost for this ticket must be calculated.

16 The screen must clear and a ticket similar to the example displayed.

17 Under the ticket should be a user message similar to:

" Are there any more tickets to be issued Y/N : "

18 User response should be validated and converted to uppercase.

19 An entry of 'Y' shall cause the program to loop from 8 above.

20 An entry other than 'Y' shall cause the total amount of money collected at that station to be displayed on screen.

21 After a suitable delay or keystroke entry, the screen should clear and the program terminate.

22 Suitable test data should be produced to confirm the prices/totals displayed on the ticket.

Task B

Candidates should follow the below criteria when producing their work:

1 The program conforms to the design specification.

2 The program uses the most appropriate data type(s).

3 Meaningful names are used when declaring variables.

4 The most appropriate method is used to read from the keyboard.

5 The syntax is consistently indented to aid readability.

6 The program is commented so as to aid understanding of the program.

Task C

Candidates should produce the following for their assessor:

1 A printed program listing.

Note

- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on the disk 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.

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)20 7294 2468
F +44 (0)20 7294 2400
www.cityandguilds.com

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