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

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e-Quals
Assignment guide for Candidates
Assignment D

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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).

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

Time allowance: 6 hours

Assignment set up:

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

Task A – interpret documentation and design software components from a given specification
Task B - test the supplied software
Task C - prepare a health and safety report

Scenario

You work as a software developer for Thackwell Designs who design software for clients. You have been asked to work as a team member to help design and test software for motor insurance quotes for an Insurance company - DirectQuote. The specification for the software is supplied in Appendix A.

Task A

In this task you are required to design part of the software. The following Event/Action chart has been provided by your team leader.

Event/Action chart			
Event/function/ procedure	**Parameters**	**Action**	**Function/ procedure calls**
private void mnuOpen		Opens the quote file as append	
private void mnuClose		Closes the quote file	
private void mnuPrintQuote		If a quote is displayed on screen prints the quote	
private void btnPrintQuote			mnuPrintQuote
private void mnuExit		Prompts to save quote record if it has not been saved. If response is Yes the record is saved and the software exited	btnSaveQuote
private void btnCalcPrem		Calculates and displays the Annual and Monthly Premium for Comprehensive or Third Party	CalcAge CalcComprehensive
private void		Displays a prompt to ask	mnuPrintQuote

btnSaveQuote		if the quote is to be printed. If the response is Yes the quote is printed. If the quote file is open the displayed quote record is saved in comma delimited format and then the data entered on the screen is cleared The Annual and Monthly Premium are removed from the screen	
private float CalcComprehensive	by value integer Age – the age of the applicant Returns calculated comprehensive rate as floating point	Calculates the rate for comprehensive insurance using the rules and decision table and the parameter Age and returns the calculated comprehensive rate	
private integer CalcAge	returns CalculatedAge as an integer	Calculates the age using today's date and the entered date of birth and returns the calculated age	

1 Produce a file layout for the output file for the quotes.

2 Produce the design language algorithms for the following functions/procedures:

- CalcPrem
- CalcAge
- CalcComprehensive
- btnSaveQuote

3 Make sure that error messages as specified in the specification are output if an error occurs.

4 Make sure that the design follows the criteria listed below:

- the design conforms to the specification
- the program design language clearly shows
  - variable names and data types,
  - argument/parameter names and data types,
  - return value data types
- the design is consistent and complete
- quality criteria are met by the design.

Task B

The program has now been developed. In this task you are required to carry out testing of the software.

1 Prepare a test plan to carry out functional testing of the software. The test plan should contain test numbers, date, purpose of test and expected outputs for stated inputs. (Testing should include importing the output file into a spreadsheet.)

2 Prepare the test data to be used with the test plan.

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

4 Provide evidence of testing eg printout of quotes, printout of output file and screen prints.

5 Use the test log to produce a report which identifies any errors found and comments on the success of the test against the original software specification.

Task C

In this task you are required to monitor compliance with health and safety procedures.

1 Prepare a brief report that specifies **two** health and safety precautions which should be applied when using a computer and identifies the cleaning procedure for a computer keyboard.

END OF ASSIGNMENT

Note

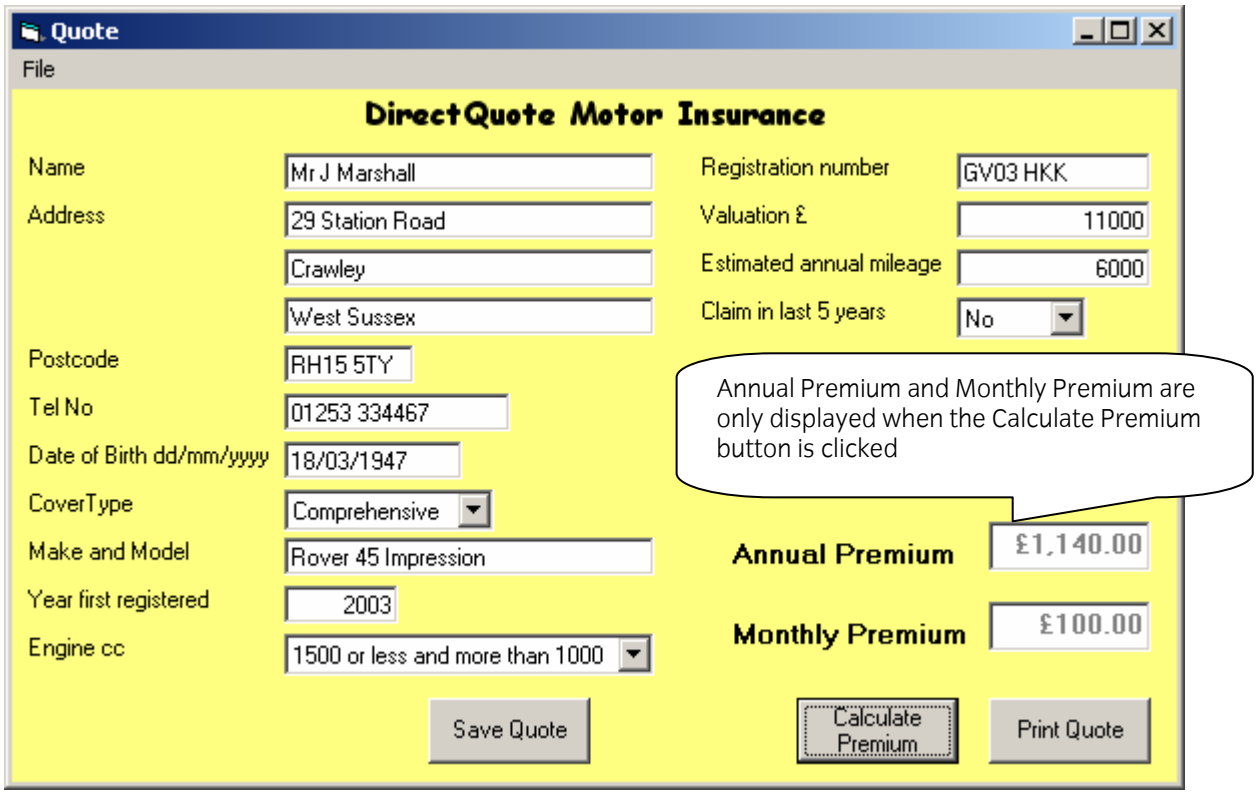
- Candidates should produce the following for their assessor:
  - program design language algorithms for the functions/procedures CalcPrem, CalcAge, CalcComprehensive, btnSaveQuote
  - test plan
  - test data
  - test log and evidence of results
  - report on the test results
  - health and safety report
- Ensure that your name is on all documentation
- If the assignment is taken over more than one period, all paperwork must be returned to the test supervisor at the end of each sitting.

Appendix A

Specification

The software is to be developed to enable a call centre to be able to provide a quote for motor insurance over the telephone and then send a printed quote out to a customer if required.

The screen layout is shown below:



The input fields for Date of Birth, Year first registered, Valuation and Estimated annual mileage are validated. The Registration number field must not be blank.

The File menu has the menu options Open, Close, Print Quote and Exit.

The file is saved as a **.txt** file and is opened as Append so that if the file does not exist it will be created otherwise records will be added at the end of the existing file. All the fields for a record are separated by a comma and the last field in the record is saved with a newline character. The Engine cc field is saved with the class letter only ie A, B, C, D or E. The file is to be used as an import file to a spreadsheet application.

The Save Quote button prompts to ask the user if they want to print the quote. If the response is Yes the quote is printed and then the quote record is saved to the file otherwise the quote is not printed and the quote record is saved to the file. All the fields on the screen are cleared and the Annual Premium and Monthly Premium fields are removed from the screen.

The Print Quote button/menu option and Save Quote button print the quote displayed on screen in the following format:

DirectQuote
Statement of Insurance

Name	Mr J Marshall
Address	29 Station Road Crawley West Sussex RH15 5TY
Telephone No	01253 334467
Registration number	GV03 HKK
Make and model	Rover 45 Impression
Year first registered	2003
Engine cc	Class C
Valuation	£11,000
Estimated annual mileage	6,000

Period of cover	QUOTATION ONLY
Permitted	Use for Social, Domestic and Pleasure purposes only including travelling to and from a permanent place of work
Cover Type	Comprehensive
Windscreen Cover Included?	Unlimited subject to £75 excess
Excess amount	£200
Protected no claims discount	Yes

Annual Premium	**£1,140.00**
Monthly Premium	**£100.00**

Insurer – DirectQuote Motor Insurance Date of Issue 2/4/2008
59 Goswell Road
Horsham
RH10 5TY

Important: If the information given in this assessment is incorrect or incomplete ring us now on 0870 4642233

The Calculate Premium button calculates and then displays the Annual Premium and the Monthly Premium fields according to the rules shown below:

Motor vehicles are classified as Class A – E for insurance purposes.
Customers aged less than 25 who own a Class A – C motor vehicle pay the full rate, but pay 80% of the full rate for a Class D or E motor vehicle.
Customers aged 25 or over pay 80% of the full rate for a Class A motor vehicle, 70% of the full rate for a Class B motor vehicle, 60% of the full rate for a Class C motor vehicle, 50% of the full rate for a Class D motor vehicle and 40% of the full rate for a Class E motor vehicle.
Customers who have made a claim for insurance within the last five years pay the full rate.

Class A – 2000cc or more
Class B – 2000cc or less and more than 1500cc
Class C –1500cc or less and more than 1000cc
Class D –1000cc or less and more than 800ccd
Class E – 800cc or less

The full rate for annual Comprehensive cover is £2000.
The monthly premium is calculated as the full rate divided by 12 plus £5.

Comprehensive insurance rates
Decision table

Age less than 25	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
Claim in last 5 years	Y	N	N	N	N	N	Y	N	N	N	N	N
Class A		Y						Y				
Class B			Y						Y			
Class C				Y						Y		
Class D					Y						Y	
Class E						Y						Y
80%					X	X		X				
70%									X			
60%										X		
50%											X	
40%												X
Full rate	X	X	X	X			X					

If the estimated annual mileage is 6000 miles or less an extra discount of 5% is applied to the calculated comprehensive rate.

For third party insurance cover the rate is 50% of the calculated comprehensive cover rate.

For the printed output a customer has a protected no claims discount if they have not had a claim in the past five years.

Error messages

Error Code	Error message
001:	Cannot open file *filename*
002:	File already open *filename*
003:	Cannot save Quote
004:	Invalid Date entered
005:	Invalid Mileage entered
006:	File not open
007:	Invalid age calculated because date of birth invalid
008:	Invalid Registration Year entered
009:	Invalid Valuation entered
010:	Cannot print Quote
011:	Registration number must be entered

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