

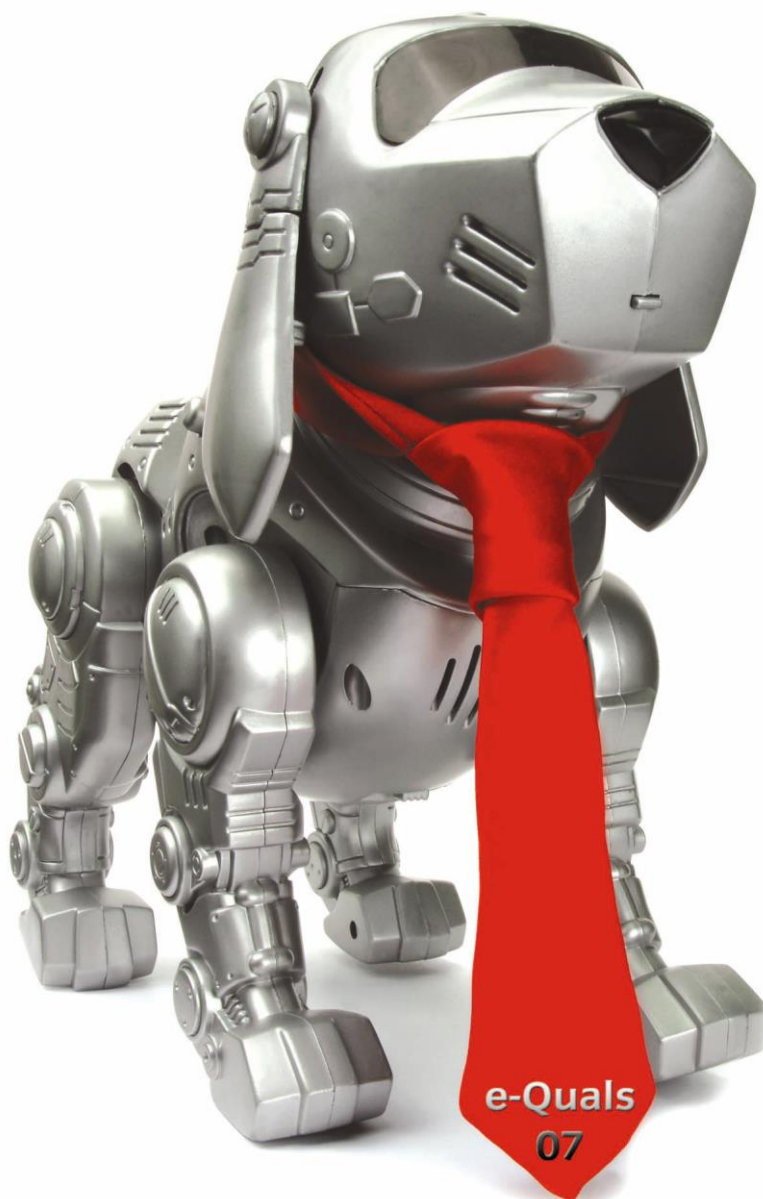
Level 2 Creating an object oriented computer program using C++ (7540-004)

Assignment guide for Candidates Assignment C

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Introduction – Information for Candidates

About this document

This assignment comprises **all** of the assessment for Level 2 Creating an object oriented computer program using C++ (7540-004).

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**.

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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: 4 hours

Assignment set up: A scenario is provided below for this assignment.

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

- **Task A** - provides a detailed design specification that should be followed by candidates when developing their program.
- **Task B** - provides criteria that should be followed by candidates when producing their work.

Scenario

A recent educational review implies that the level of competence in applying mental arithmetic may be in decline, especially when applying the rules of algebra. In order to investigate this, a local computer company specialising in survey software, Total Objective Multi-Surveys (TOMS), has been asked to prototype an on-line program to test this theory.

In their outline specification, Total Objective Multi-Surveys have stated that their software should:

- generate a list of hard-coded mental arithmetic questions
- calculate the number of questions answered correctly
- calculate the number of correct answers as a percentage
- indicate which questions were answered incorrectly.

In addition, TOMS have stated that the software should:

- give the interviewee an opportunity to repeat the whole test again
- allow the interviewee an opportunity to repeat only those questions incorrectly answered
- allow the interviewee to exit the program if questions or the test are not to be repeated
- not take into consideration any repeated questions in the final scoring.

As a contracted employee of Total Objective Multi-Surveys, you have been asked to design and develop a demonstration program for the test. This demonstration program will operate only from keyboard entry and will only indicate its actions on-screen.

To assist in the development of the test a sample list of 10 questions have been provided at Appendix 'A'. There must be a total of 10 questions in the survey program.

Task A

Using the Integrated Development Environment:

- Total score: $\text{Number of correct questions} / 10$
Percentage: $\text{Score calculated as percent \%}$

- The questions incorrectly answered were:
- Question 1
 - Question 3
 - Question 7

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- 15 Now modify the program slightly to allow the candidate to answer only those questions that were incorrectly answered (if any). Prior to item **Task A10** there should be an additional question:

Do you want to re-take those questions incorrectly answered again? Y/N :
- 16 The candidate's response should be in the format of a Y/N answer which should be validated.
- 17 Selection of 'Y' should cause the screen to clear and only those questions that were incorrectly answered repeated. At the conclusion of the repeated questions the question at Task A10 should be repeated.
- 18 Selection of 'N' should cause the message at **Task A10** to appear underneath along with the repeat/end process.
- 19 Create test data and expected results.
- 20 Test the program and compare the expected results to the actual results and correct any errors found. Use available debugging facilities to help locate errors.
- 21 Produce a printed program listing.

Task B

Candidates should follow the criteria below when producing the program:

- 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 program syntax is consistently indented to aid readability.
- 5 The program includes suitable comments to aid understanding of the program.

Note

- Candidates should produce the following for their assessor:
 - printed program listing
 - test data and expected 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'

Any of these sample questions may be used in the assignment, or the Candidate can write his/her own.

<p>Question 1</p> <p>$123 - 39 =$</p> <p>1 64 2 44 3 74 4 84</p> <p>Answer = 4</p>	<p>Question 2</p> <p>$123 + 39 =$</p> <p>1 162 2 166 3 62 4 66</p> <p>Answer = 1</p>
<p>Question 3</p> <p>$123 * 9 =$</p> <p>1 1007 2 1107 3 1106 4 1116</p> <p>Answer = 2</p>	<p>Question 4</p> <p>$135 / 15 =$</p> <p>1 8 2 8.5 3 9 4 9.5</p> <p>Answer = 3</p>
<p>Question 5</p> <p>$12 * (12 / 2) =$</p> <p>1 144 2 6 3 72 4 36</p> <p>Answer = 3</p>	<p>Question 6</p> <p>$130 / 2 + 8 =$</p> <p>1 13 2 14 3 75 4 73</p> <p>Answer = 4</p>
<p>Question 7</p> <p>$10 + 12 + 13 * 6 / 2 =$</p> <p>1 105 2 44 3 61 4 84</p> <p>Answer = 3</p>	<p>Question 8</p> <p>$(10 + 12 + 13 * 6) / 2 =$</p> <p>1 50 2 44 3 61 4 84</p> <p>Answer = 1</p>
<p>Question 9</p> <p>$8(12 + 6 / 3 * 2) - 1 =$</p> <p>1 127 2 103 3 95 4 135</p> <p>Answer = 1</p>	<p>Question 10</p> <p>$1 / 1 * 1 - 1 + 1 =$</p> <p>1 1 2 -1 3 0 4 -2</p> <p>Answer = 1</p>

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