Level 2 Create designs and test software components (7266/7267-201)

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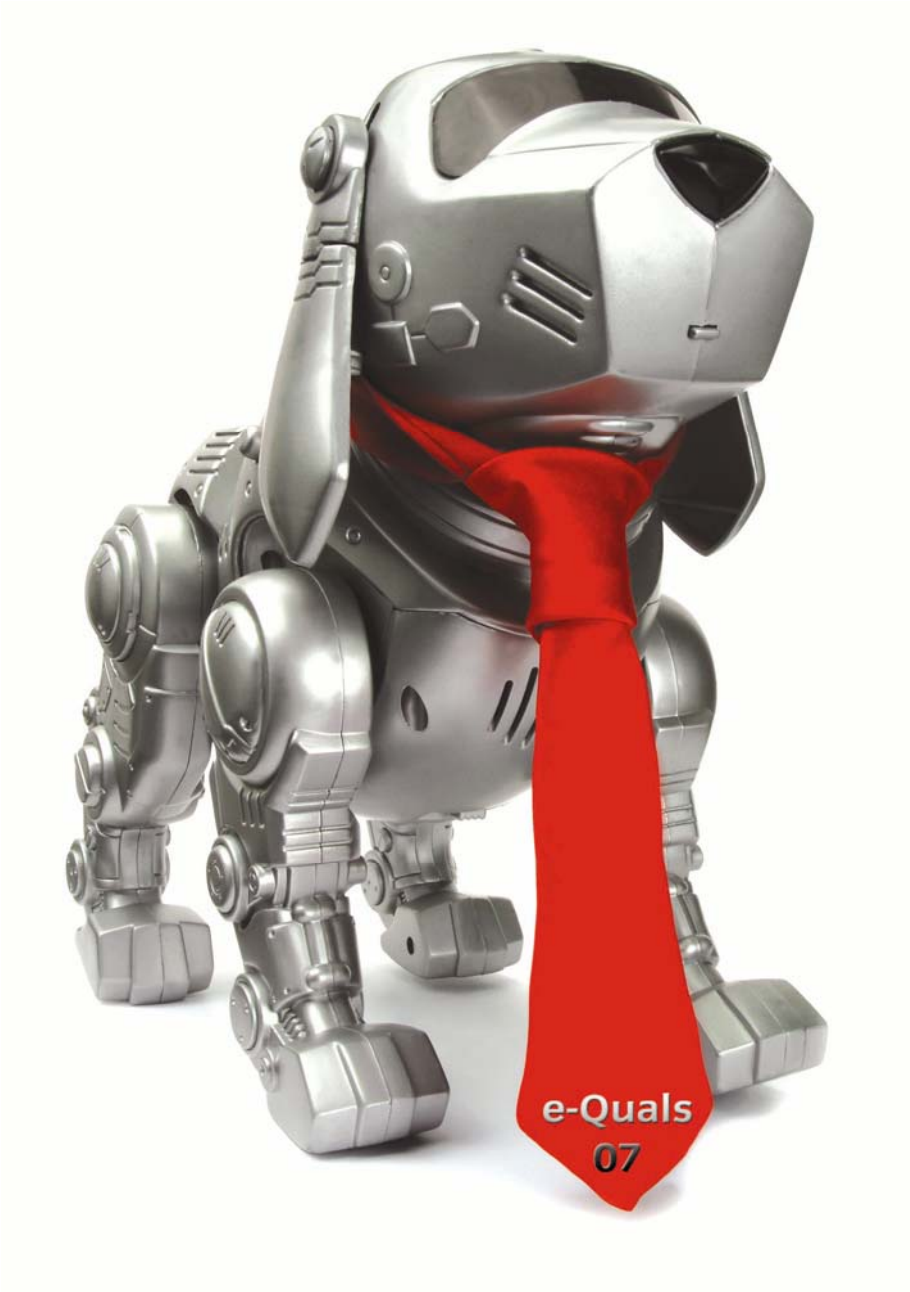
Assignment guide for Candidates
Assignment D



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Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 2 Create designs and test software components (7266/7267-201).

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 for candidates in the form of a company specification for a service they require.

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

- **Task A** – provides an outline design specification for a software component to validate input.
- **Task B -** provides criteria that should be followed by candidates when producing their design work.
- **Task C -** provides a specification for the software which requires functional testing.
- **Task D -** provides criteria that should be followed by candidates when producing the testing documentation.

Scenario

A software development company, PHOTO Development Systems, develop software for use by clients. Software is being developed to create and maintain entry details for a photo competition. You have been asked to design the software component that validates the input of the entry records. You are then required to test the whole program after development.

Task A

Candidates should use the following specification to fulfill the company's requirements

In this task you are required to design the routines for validation of the entry records. The validation routine will be called by another routine. If a field is invalid the appropriate error message must be displayed. When every field in the input form has been accepted control must be passed back to the calling routine. Shown below is the screen input layout for an entry record.

The File menu should be used to open the file each time printing is required.

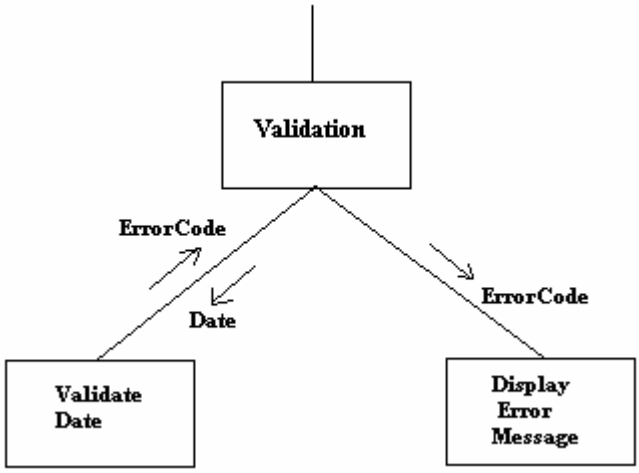
The Records menu should be used to display the records on screen or to send the records to the printer.
The End menu should be used to exit the program.

The fields and the validation required is shown in the following table.

Field	**Validation**
Entrant's Number	Not spaces Modulus 11 Must be 6 digits Numeric
Name of Entrant	None
Picture Title	None
Picture Location	None
Date of Entry	dd/mm/yyyy Full date check
Category Code	People, Landscape, Garden, Close-up
Camera Type	D or F (upper or lower case allowed)

See Appendix A for details about Modulus 11 check digit

The structure chart for the validation routines is shown below.



1 Use a program design language to produce the design for the validation routines. Perform all validation as required for the design. Any assumptions you make about the design must be documented.

2 Some error codes have already been defined for the software and are shown below with their associated message.

Error Code	Error Message
1	1: Entrant's Number is not numeric
2	2: Entrant's Number is not 6 digits
3	3: Entrant's Number is not a valid modulus 11 number
4	4: Camera Type must be D or F
5	5: Check Date of Entry and enter as dd/mm/yyyy
6	6: Category Code must be People, Landscape, Garden or Close-up
7	7: File not open

The error codes 8-12 are unassigned and if required can be used for extra error messages for your routines. Document any new error messages used.

3 Appendix B shows a sample code snippet containing references to Internal and External filenames. You are required to identify these as instructed.

Task B

Check that you have followed the criteria below when producing the design for the validation routines:

1 The design conforms to the design specification.

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

3 The design is consistent and complete.

4 The program design language clearly shows variable names and data types, constants, argument names and data types, return value data types and any data structures used.

5 The program design language clearly shows the beginning and end of each iteration, selection and routine.

Task C

The software has now been developed and includes the routines for file creation, validation and printing.

In this task you are required to carry out functional testing of the Photo.exe software.

Each time the Save Record button is pressed the record is validated and if the record is correct the Save As dialog appears so that the filename can be selected/entered and then the file is opened as append and the displayed record is appended to the end of the file. The records are written to the file in text format (.txt) with each individual field as string data terminated with a carriage return. The file can be opened, read and printed using a text editor (eg Notepad).

The file layout for the append file is as follows:

999999
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
99/99/9999
XXXXXXXXX
X

The print layout for the printed records is shown below.

Entry Records Page Z9
99/99/9999

Entrant's Number:	999999
Name of Entrant:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Picture Title:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Picture Location:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Date of Entry:	99/99/9999
Category Code:	XXXXXXXXX
Camera Type:	X

Entrant's Number:	999999
Name of Entrant:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Picture Title:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Picture Location:	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Date of Entry:	99/99/9999
Category Code:	XXXXXXXXX
Camera Type:	X

(Where 9 represents a digit, X represents an alphanumeric character and Z represents zero suppression.)

Four entry records must be printed per page and then a new page thrown with a heading.

1 Prepare a test plan to carry out functional testing of the software.

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

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

4 Maintain a safe working environment for self and others. Use and maintain equipment, materials and accessories to a safe standard.

5 Write a brief report which identifies two possible hazards that could cause accidents to occur in the IT work area.

Task D

Check that you have followed the criteria below when producing the testing documentation:

1 The test plan contains a test number, date, purpose and type of test and expected outputs for stated inputs.

2 The test data tests the software execution under normal and exceptional circumstances.

3 Evidence of printed output, screen prints and file output must be cross referenced to the correct test number.

Notes

- Candidates should produce the following for their assessor:
    - program design language algorithms for the validation routines
    - appendix B completed as instructed (filenames)
    - test plan, test data and test log for the testing
    - Cross referenced evidence of testing ie screen prints, printed output and file output as necessary to show test results.
- At the conclusion of this assignment, hand all paperwork and removable storage media to the test supervisor.
- Ensure that your name is on the removable storage media (if used) and all documentation.
- If the assignment is taken over more than one period, all removable storage media and paperwork must be returned to the test supervisor at the end of each sitting.

Modulus 11 check

A modulus 11 check is carried out as follows:

Multiply each digit in the Entrant's Number, staring at the right, by the number 1, then 2, then 3 etc.

Multiply by	**6**	**5**	**4**	**3**	**2**	**1**
Entrant's Number	1	3	5	2	7	5
Result	6	15	20	6	14	5

The result of each multiplication is added together.

6 + 15 + 20 + 6 + 14 + 5 = 66

The result of the addition is then divided by the modulus (11).

66 divided by 11 = 6 remainder 0

If the remainder from the division is 0 the Entrant's Number is a valid modulus 11 number otherwise the Entrant's Number is not a valid modulus 11 number.

The remainder is 0 so the Entrant's Number 135275 is a valid modulus 11 number.

Appendix B

External and Internal Filenames

The following is a sample code snippet containing reference to an External and an Internal filename.

```
Open “Member.dat” For Append As MemberFile
        Print MemberFile, txtMembersNumber.Text
         .....
         .....

 Close MemberFile
```

Write down the external filename given in the code snippet shown above

.....

Enter your name below this sheet for your submission

Name… … … … … … … … … … … … … … … … …..

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