Gold Unit 11 - Database Software

Relevant LINKS

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Overview

This is the ability to use a software application designed to organise and store structured information and generate reports.

The Gold level user can select and use database software tools and techniques to:

- enter information into databases, that is at times non-routine or unfamiliar;
- retrieve information by creating queries using multiple selection criteria; and
- produce reports by setting up menus or short cuts.

They will also be able to create and modify single table, non-relational databases. Any aspects that are unfamiliar may require support and advice from others.

Database tools, functions and techniques will be characterised at this level by:

- the software tools and functions involved will at times be non-routine or unfamiliar
- the choice and use of input, manipulation and output techniques will need to take account of a number of factors or elements.

Examples of Context: Creating a simple database of an athletics meeting with all the times, events and distances etc.; creating a database of sales; entering information into a database making decisions about which items to include from a wider range than the subject of the database.

Activities supporting the assessment of this award

Assessor's guide to interpreting the criteria

General Information

QCF general description for Level 2 qualifications

- Achievement at QCF level 2 (EQF Level 3) reflects the ability to select and use relevant knowledge, ideas, skills and procedures to complete well-defined tasks and address straightforward problems. It includes taking responsibility for completing tasks and procedures and exercising autonomy and judgement subject to overall direction or guidance.

- Use understanding of facts, procedures and ideas to complete well-defined tasks and address

straightforward problems. Interpret relevant information and ideas. Be aware of the types of information that are relevant to the area of study or work.

- Complete well-defined, generally routine tasks and address straightforward problems. Select and use relevant skills and procedures. Identify, gather and use relevant information to inform actions. Identify how effective actions have been.

- Take responsibility for completing tasks and procedures subject to direction or guidance as needed.

Requirements

- Standards must be confirmed by a trained Gold Level Assessor or higher

- Assessors must at a minimum record assessment judgements as entries in the on-line mark book on the INGOTs.org certification site.

- Routine evidence of work used for judging assessment outcomes in the candidates' records of their day to day work will be available from their e-portfolios and on-line work. Assessors should ensure that relevant web pages are available to their Account Manager on request by supply of the URL.

- When the candidate provides evidence of matching all the criteria to the specification subject to the guidance below, the assessor can request the award using the link on the certification site. The Account Manager will request a random sample of evidence from candidates' work that verifies the assessor's judgement.

- When the Account Manager is satisfied that the evidence is sufficient to safely make an award, the candidate's success will be confirmed and the unit certificate will be printable from the web site.

- This unit should take an average level 2 learner 40 hours of work to complete.

Assessment Method

Assessors can score each of the criteria N, L, S or H. N indicates no evidence. L indicates some capability but some help still required. S indicates that the candidate can match the criterion to its required specification. H indicates performance that goes beyond the expected in at least some aspects. Candidates are required to achieve at least a S on all the criteria to achieve the full award.

Expansion of the assessment criteria

1. Create and modify non-relational database tables

1.1 I can identify how to use an existing database design

Candidates should identify the types of information stored, how data can be entered, how routine queries are made, how data is structured in a single table, how indexes and key fields are used to organise data.

Evidence: Assessor observation, centre set test or task.

Additional information and guidance
Candidates should have the opportunity to examine typical existing databases. One way to do this in a group situation would be to get learners to create simple databases and share them with their peers as a starting point for general discussion. How might the design be enhanced or extended?

1.2 I can describe the field characteristics for the data required

Candidates should be able to describe the following characteristics of fields: Data type, field name, field size, format, validation; primary key
Evidence: Candidate diagrams identifying database characteristic, use of terminology in discussion with assessor and peers, centre set test or task.

Additional information and guidance
The assessor needs to be confident that the candidate can use the specified terms routinely and confidently when working with databases. This is a describe element, so the candidate needs to write a paragraph in their own words explaining the different fields and their characteristics.
Possible giving an example of why one type of field is chosen over another.

1.3 I can create and modify database tables using a range of field types
Candidates should create databases with field types that include text, numeric, and image types. They should show that they can add, amend and delete fields

Evidence: Assessor observations, candidate created database files, annotated screen shots. centre set test or task.

Additional information and guidance
Assessors need to ensure that candidates can create their own databases for practical purposes where a simple single table structure is sufficient.

1.4 I can describe ways to maintain data integrity

Candidates should be able to describe the primary key field in their table. They should be able to describe situation where data can be validated on entry. They should describe basic security such as passwords, as ways of protecting a database from malicious or accidental alteration;

Evidence: Assessor observations, candidate created database files, annotated screen shots. Centre set test or task.

Additional information and guidance
Where validation is clearly possible it should be used. Some of this is related to choosing the correct field type. For example, a date type will prevent invalid dates being entered whereas a text type would not. At this level guidance will be needed in more complex situations and the data base software itself may not provide a simple means of providing the most optimised validity checks.
Since it is a describe element, it may be useful for candidates to provide a simple ERD (Entity Relationship Diagram) to show how the primary key will link to and control the other data fields.
They can then describe how integrity would be maintained by the control key.

1.5 I can respond appropriately to problems with database tables

Candidates should recognise and remove redundant data, e.g. duplication of data. They should check table structure e.g. field content is associated with the correct heading, and that field characteristics and validation are appropriately set.

Evidence: Assessor observations, candidate created database files, annotated screen shots. Centre set test or task.

Additional information and guidance
Candidates should demonstrate that they can use any help system provided by the software to resolve problems. If they can't find the appropriate information in the help system they should refer to a more experienced user, including the use of forums and support lists for the software. They should be beginning to appreciate that they way they ask questions is important in getting the information that they need to resolve a problem.

1.6 I can use database tools and techniques to ensure data integrity is maintained

Candidates should build on identifying ways to maintain data integrity by implementing validity checking the database software's in-built facilities and setting passwords where appropriate.

Evidence: Assessor observations, candidate created database files, annotated screen shots. centre set test or task.

Additional information and guidance
This might be a good time to bring up data encryption and explain how a data base file can be encrypted so that even if the file is copied or lost it will be very difficult to get access to the information inside. Most internet web sites are databases with a web browser interface to access the information. These might have some public information that is freely available and other information that is only available through a password. The entire data base could be encrypted and require a key to access any of the information. Usually these databases consist of multiple very large files and so management is very different from simple single table files that might be used on a single machine or local network.

2. Enter, edit and organise structured information in a database

2.1 I can create forms to enter, edit and organise data in a database
Candidates should enter, edit and organise data in a data base including, selecting and updating fields, creating new records, locating and amending records, using wild cards, and simple search operators, carrying out error checking and data validation.

Evidence: Assessor observations, candidate created database files, centre set test or task.

Additional information and guidance
This work should be complementary to creating and modifying a database structure. Candidates should gain experience through editing and organising their own databases as well as those provided by other people.

2.2 I can select and use appropriate tools and techniques to format data entry forms
Candidates should be able to design data entry forms to be used by others that include all or a subset of the fields in the database table.

Evidence: Assessor observations, candidate created database files, centre set test or task.

Additional information and guidance

Forms should be appropriately laid out so that the relevant data can be entered efficiently and where possible validated on entry.

2.3 I can check data entry meets needs, using IT tools and making corrections as necessary
Candidates should check any data they enter for spelling, format, accuracy, consistency, completeness, and validity.

Evidence: Assessor observations, candidate created database files, centre set test or task.

Additional information and guidance

Some consideration should be given to security, eg who has permission to enter data into the database. This should be kept to simple principles as permissions can become vey complex in large scale databases that are intended fo wide range use.

2.4 I can respond appropriately to data entry errors
Candidates should build on the identification of any data errors to fixing them. They should use peer review, the software help and more experienced users for issues they are unsure about. They should fix routine errors such as spelling, entries in the wrong field, invalid data or malicious entries, routinely.

Evidence: Assessor observations, candidate created database files, centre set test or task.

Additional information and guidance
While routine issues should be resolved self-sufficiently, an appropriate response to something unexpected or non-routine is to ask others ad to learn from that experience.

3. Use database software tools to run queries and produce reports

3.1 I can create and run database queries using multiple criteria to display or amend selected data

The candidate can plan a query based on the need for information from a database. This can be one of their own databases or a database created by someone else. Queries can include alphanumeric sort, filter, single criteria searches and multiple criteria. Candidates should show that they can save the output from a query.
Evidence: Assessor observations, outputs from queries, centre set test or task.

Additional information and guidance
Candidates should be competent to search databases using a range of queries and produce output that they can use subject to amendment or other processing.

3.2 I can plan and produce database reports from a single table non-relational database

Candidates should implement queries to generate reports that are useful in informing some other aspect of work.

Evidence: Assessor observations, outputs from queries, centre set test or task.

Additional information and guidance
Reports should be produced in usable formats and can be used to feedback into editing and modifying the database.

3.3 I can select and use appropriate tools and techniques to format database reports
Candidates can produce reports with clear and logical field, page and section layout. They can add text or images if appropriate and adjust page setup for printing where printing is required.

Evidence: Reports produced, assessor observations, centre set test or task.
Additional information and guidance
Candidates' reports should be clear and accessible.

3.4 I can check reports meet needs, using IT tools and making corrections as necessary
Candidates should check their reports for spelling, format, accuracy, consistency, completeness, and validity.

Evidence: Reports produced, assessor observations, centre set test.

Additional information and guidance
Peer review should be encouraged. Final reports should be free from errors since quality assurance

checks should pick up problems and the candidate should fix them.

Moderation/verification

The assessor should keep a record of assessment judgements made for each candidate and make notes of any significant issues for any candidate. They must be prepared to enter into dialog with their Account Manager and provide their assessment records to the Account Manager through the on-line mark book. They should be prepared to provide evidence as a basis for their judgements through reference to candidate e-portfolios and through signed witness statements associated with the criteria matching marks in the on-line markbook. Before authorizing certification, the Account Manager must be satisfied that the assessors judgements are sound.

Links
[1] http://theingots.org/community/ITQ_UNIT_development
[2] http://theingots.org/community/handbook2