Level 3 - Unit 11 - Database Software (6 credits)

Platinum - Unit 11 - Database Software

Relevant LINKS

BACK TO ITQ UNITS **[1]**

Handbook home page

Overview (Under Development)

The candidate can plan, create and modify a relational database in order to meet the needs of a client. Once created, they will need to be able enter data and organise it so that it is accessible and user friendly. Once populated, the database will need to be searchable, so they will need to create useful queries in order to meet needs.

A work activity will typically be 'non-routine or unfamiliar' because the task or context is likely to require some preparation, clarification or research to separate the components and to identify what factors need to be considered. For example, time available, audience needs, accessibility of source, types of content, message and meaning, before an approach can be planned; and the techniques required will involve a number of steps and at times be non-routine or unfamiliar.

Example of context – an example might be creating a database for a local shop to help them with stock control. This can be combined with other units to create an on-line database combining some php coding with database design.

Activities supporting the assessment of this unit **[2]**

Example of work at this level **[3] (coming soon)**

Assessor's guide to interpreting the criteria

General Information

QCF general description for Level 3 qualifications

- Achievement at QCF level 3 (EQF Level 4) reflects the ability to identify and use relevant understanding, methods and skills to complete tasks and address problems that, while well defined, have a measure of complexity. It includes taking responsibility for initiating and completing tasks and procedures as well as exercising autonomy and judgment within limited parameters. It also reflects awareness of different perspectives or approaches within an area of study or work.
- Use factual, procedural and theoretical understanding to complete tasks and address problems that, while well defined, may be complex and non-routine.
- Address problems that, while well defined, may be complex and non-routine. Identify, select

and use appropriate skills, methods and procedures. Use appropriate investigation to inform actions. Review how effective methods and actions have been.

- Take responsibility for initiating and completing tasks and procedures, including, where relevant, responsibility for supervising or guiding others. Exercise autonomy and judgement within limited parameters information and ideas

Requirements

- Standards must be confirmed by a trained Platinum 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 and files 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 3 learner 50 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. Candidate will plan, create and modify relational database tables to meet requirements

1.1 I can explain how a relational database design enables data to be organised and queried

Candidates should explain the key elements of a relational database and it's advantages over other storage systems.

Evidence: Assessor observation, centre set test or task.

Additional information and guidance
Candidates should be able to explore the aspects of relational database design which make them superior to other ways of managing data. They should be able to give examples of the advantages of a relational structure over a flat data structure. They should also explore how this type of relational structure allows quality queries to be carried out.

1.2 I can plan and create multiple tables for data entry with appropriate fields and properties

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
Candidates will need to show a clear understanding of database design by creating a clear and well documented ERM [4] (Entity Relationship Model) to support their database design. Ideally this will be created and discussed with their client to ensure they are working to an agreed specification. They need to ensure that all possible fields are available as it is very difficult to go back later and modify what they have crated, especially once data is added.

1.3 I can set up and modify relationships between database tables
Candidates should create databases with relationships between tables and understand the key terms of one-one, many-to-one etc.

Evidence: Assessor observations, candidate created database tables.

Additional information and guidance
Assessors need to ensure that candidates can create their own databases for practical purposes with a relatively complex layout of related tables.

1.4 I can explain why and how to maintain data integrity

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

Evidence: Assessor observations, candidate created database.

Additional information and guidance
Where validation is clearly possible it should be used. Since this database is going to be used by a client, it needs to have significant data integrity checks to make sure it is functional. Data integrity is also important for successful queries since searching for disparate data is not usually possible or consumes unnecessarily large resources. Candidates can discuss and give examples of the way they will use integrity checks and how this enhances their design.

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.

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. Many database systems, such as MySQL, have active and supportive community forums that can be used.

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.

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. Candidate will enter, edit and organise structured information in a database

2.1 I can design and create forms to access, enter, edit and organise data in a database
Candidates should design and create forms to allow efficient entering, editing and organising of 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.

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. The type of forms created should be guided by client needs and the type of data input and output. The more collaboration with the client at this point, the better the end result.

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, client feedback.

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. Feedback from 3rd parties would be essential here.

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.

Additional information and guidance

Some consideration should be given to security, e.g. 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 for 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 and to learn from that experience.

3. Candidate will use database software tools to create, edit and run queries and produce reports

3.1 I can explain how to select, generate and output information from queries according to requirements

The candidate can explain the functioning of queries used in their database.
Evidence: Assessor observations, outputs from queries.

Additional information and guidance
Candidates should be explain in detail the design process of the queries used in their system. They should be able to detail how they operate and indicate some of the possible limitations.

3.2 I can create and run database queries to display, amend or calculate selected data

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

Evidence: Assessor observations, outputs from queries.

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 plan and produce database reports from a multiple-table relational database
Candidates can work with clients to plan and create reports which are fit for purpose.

Evidence: Reports produced, assessor observations.
Additional information and guidance
Candidates' reports should be as intended by their client.

3.4 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.

3.5 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
Client 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://www.theingots.org/community/ITQcourse1
[3] https://theingots.org/community/sites/default/files/uploads/user4/PupilFNC7.pdf
[4] https://en.wikipedia.org/wiki/Entity%E2%80%93relationship_model