Unit 2 Creating Systems to Manage Information
1901 adapted to new format

BTEC

Level 3 National in Information Technology

January 2019 – New Format Marking Guidance

Contents

Introduction

This document should not be used in isolation. It should be used in conjunction with the solution document and Scripts A and B.
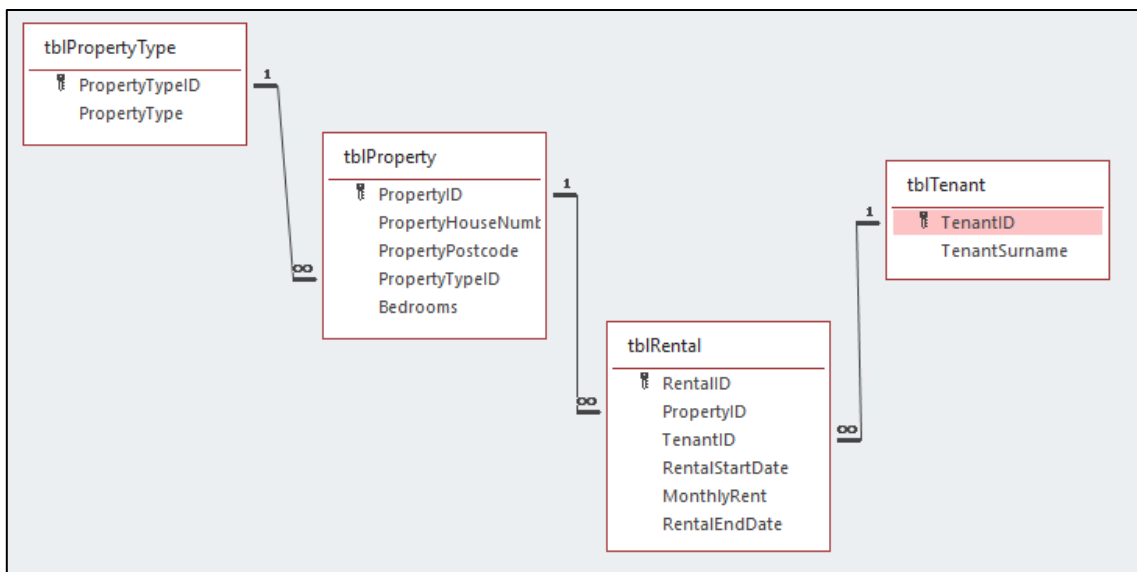
Part A

Activity 1 – Database Relationship Screenprint (45 minutes)

How examiners must approach marking this activity

Trait 1	• Candidates should be using **all and only** attributes given in data extract. • More than two attributes (including keys) in wrong table class as significant data redundancy. • Two attributes in wrong table/missing – Band 2 • One attribute in wrong table/missing – Band 3 • If truncated see how many missing from what you expect to see

Solution

Trait 2	**Relationship lines** • Do not need to check the fields they link to, referential integrity or anything else, only the lines are important for this **Relationship types** • Check referential integrity • Must be links on correct fields and referential integrity present

	Band 1	• One relationship line correct • Ignore relationship type
	Band 2	• Minimum of two relationship lines correct • Ignore relationship type
	Band 3	• Exactly four tables, three relationships and three relationship types present • Two out of three relationships and relationship types correct
	Band 4	• Exactly four tables, three relationships and three relationship types present • All relationship lines and relationship types correct

Activity 2 – Table Structures and Validation (45 minutes)

How examiners must approach marking this activity

Trait 1	Look for naming conventions and whether fields are sensible • tbl for table • Fields should be consistent either have spaces or do not, camel case etc, so long as consistent. Fine for IDs to have no spaces even if other fields have spaces • If standard naming conventions are not used and inconsistencies with field names then cannot get higher than Band 2 for trait 1. • If standard naming conventions are not used for table but naming conventions consistent for fields then Band 3
Trait 2	Check against candidate's structure in activity 1 • Primary and foreign keys should match • No new foreign keys should be introduced • No activity 1 then check against ERD given in solution. • Band 3 can also be read as "all foreign and most primary"
Trait 3	Look at data types. PropertyHouseNumber: Short Text • Bedrooms: Number • RentalStartDate: Date/Time • RentalEndDate: Date/Time • MonthlyRent: Currency • Primary keys – TenantID: Short Text. The rest any sensible data type • Foreign keys – TenantID: Short text, the rest must match primary (e.g. AutoNumber primary, Number foreign, Number primary, Number foreign etc.) • **Limited** means **more than two** different datatypes are incorrect.
Trait 4	**Scenario requirements** • Bedrooms between 1 and 5 • **Activity/testing requirements** • a record will not save without the house number **(presence)** and a valid postcode **(format)** • a record for a new property will not save if the property type is invalid **(table lookup – foreign key)** • a record will not save if the number of bedrooms is below the accepted range **(range check)** • a record will not save if the number of bedrooms is above the accepted range **(range check)** • a record for a rental will not save if it is for an invalid tenant **(table lookup – foreign key)** • a record will not save if it is for an invalid property **(table lookup – foreign key)**

Presence check	House number or any suitable other than primary keys	
Length check	Any suitable length check	
Range check	Bedrooms	
Value lookup	not asked to do one but may have done the range as a value lookup	
Table lookup	Any foreign key that **looks up** to primary key – not other way around	
Format check	Postcode	

Watch out for screenprints that do not show the actual field the validation is applied to.

Just acceptable for keys
Would need to see name of table and field name (could be written)

Just acceptable for non-keys
Would need to see the name of the field (could be written)

Band 1	• At least 1 type of validation has been attempted – though may be inaccurate
Band 2	• 2 types of validation are accurate • Lookups shown in data sheet view, validation text missing, limit to list not set to yes, presence check on primary key – can still be classed as being accurate in this band • If lookups shown in datasheet view must be showing the drop-down items in the combo box
Band 3	• 3 types of validation are accurate, **appropriate** and include at least one lookup • Lookups shown in data sheet view validation text missing, limit to list not set to yes, presence check on primary key – can still be classed as being accurate in this band • If lookups shown in datasheet view must be showing the drop-down items in the combo box
Band 4	• All validation accurate and appropriate including • Value or Table Lookups must be shown in design view. Table lookup shown must be on foreign key • Do not award full marks if limit to list not set to yes on table lookups • Do not award full marks if validation rules do not contain suitable validation text

Activity 3 – Queries and Report (40 minutes)

How examiners must approach marking this activity

(a) Create a query to display an alphabetically sorted list of the current rentals for properties that have at least 3 bedrooms. It must show the sorted property postcode and monthly rent only.	(b) Create a query for rentals that have ended, to calculate: • the duration of rentals in years for rentals that have ended • the income generated. Display: • the property postcode • the length of the rental in full years • the income generated.

(c) Report – Create a report that shows rentals for each property.
For each property calculate:
- The total number of rentals
- The highest monthly rent
- The lowest monthly rent.

Also calculate:
- the total number of rentals overall
- the highest monthly rent overall
- the lowest monthly rent overall.

Display:
- a suitable report title
- the property house numbers
- the property postcodes
- the property types
- the number of rentals for each property
- the highest monthly rent charged for each property
- the lowest monthly rent charged for each property
- the total number of rentals
- the highest monthly rent overall
- the lowest monthly rent overall.

The report must fit on one page.

Trait 1	Look for these fields in the query grid(s)/report. Do not check accuracy of calculations, do not look for criteria etc. Purely looking for the fields.	
	Query A	PropertyPostcode, Bedrooms, MonthlyRent, RentalEndDate
	Query B	PropertyPostcode, RentalEndDate **Generated fields** Field that could be used as part of the calculation for the rental duration e.g RentalEndDate, RentalStartDate Field that could be used as part of the calculation for TotalIncome e.g. MonthlyRent
	Report	PropertyHouseNumber, PropertyPostcode, PropertyType Field/label for number of rentals Field/label for highest monthly rent for each property Field/label for lowest monthly rent for each property Field/label for total number of rentals Field/label for highest monthly rent overall Field/label for the total number of rentals Field/label for the lowest monthly rent overall
	Band 1	**Three** relevant fields
	Band 2	**Six** relevant fields
	Band 3	**Nine** relevant fields
	Band 4	**Twelve** or more relevant fields + No inappropriate tables + No inappropriate fields
Trait 2		
	Query 1	Postcode has an ascending sort (1) RentalEndDate – is null or equivalent (1) Bedrooms - >=3 or equivalent (1)
	Query 2	RentalEndDate – is not null or equivalent (1) TotalIncome – MonthlyRent * 12 * RentalLength or equivalent (1) RentalLength – finds the difference between start and end date in full years (does not round up to include partial years) (1)
	Report	**For each property** Number of rentals calculated (1) Highest rent found (1) Lowest rent found (1) **Overall** Total rentals overall (1) Highest rent overall (1) Lowest rent overall (1)
	Band	Assign band **for this trait** for the number of points awarded Band 1 (1-3), Band 2 (4-6), Band 3 (7-9), Band 4 (10-12)

Trait 3	Award points as shown. The number of points determines the band and mark in the band for this trait.	
	Query A	Ordering of columns is appropriate (1) No truncation (field names or data) (1) Only fields that should be are displayed (1)
	Query B	Ordering of columns is appropriate (1) No truncation (field names or data) (1) Only fields that should be are displayed (1)
	Report	**From any view** Title is appropriate (1) Labels appropriate names and format e.g. spaces used (1) **PDF OF DATABASE REPORT ONLY (3D)** No truncation (1) Layout is appropriate (1)
	Additional	At least one generated field named sensibly (1) At least two instances of currency for monetary amounts (1)
	Band	Assign band **for this trait** for the number of points awarded Band 1 (1-3), Band 2 (4-6), Band 3 (7-9), Band 4 (10-12)

Activity 4 – Testing (20 minutes)
How examiners approach marking this activity

Tests to be carried out

- a record for a new property will not save without a postcode
- a record for a new property will not save if the property type is invalid
- a record will not save if the number of bedrooms is below the accepted range
- a record will not save if the number of bedrooms is above the accepted range
- a record for a rental will not save if it is for an invalid tenant
- a record for a rental will not save if it is for an invalid property

Band 1	• Not all the tests requested will be present or they may be inappropriate • Type of test may not be present or may be incorrect • There will be no test data, or it will not relate to the test being carried out • Expected results may be inappropriate • At least 1 test result will be appropriate • Errors may be present that have not been identified
Band 2	• All the tests will be present, but they may not be entirely appropriate • Type of test may not be present or may be incorrect • There will be test data, but it may be incomplete or general e.g. leave surname blank rather than stating exactly what data will be used in each field • Expected results will be sensible but may not be detailed e.g. 'error message' rather than 'error message saying surname has to be present' • Actual results will be present, but some may not be entirely appropriate • Errors may/may not have been found
Band 3	• All the tests will be present, and they will be appropriate • Test data will be specific for all fields • Type of test will be mostly accurate • Expected results will be specific • Actual results will show all the test data used and any relevant messages • Do not penalise if there are no errors and the testing is accurate

Activity 5 – Evaluation (20 minutes)

How examiners approach marking this activity

- Read evaluation and determine **best fit** for band based on understanding of technical concepts and technical vocabulary
- Assign position in **that** mark band based on evaluative content

What should be evaluated:

- how well your database structure has minimised data duplication
- how well your database structure meets these requirements:
  - properties are categorised by their type. For example a property can be a detached house
  - properties have at least one bedroom and a maximum of five.

Band 1	Will be very superficial with major omissions
Band 2	Will discuss some aspects sensibly though may not fully explain them or relate them very well to their own solution.
Band 3	**Indicative content** *May not cover these exactly. This is a guide. However, should not be discussing anything other than the tables. Ignore query, report and testing comments. Should not be a running commentary on how the candidate has completed the paper.* Will discuss data duplication in terms of: • repeated property data • repeated tenant data • repeated property type data • removing repeated data into tables whilst maintaining the links Needs to be clear they are talking about their solution and not just trying to slip technical vocabulary in. Need to see clear understanding. Meeting requirements Should also talk about their choice of validation and why it was the best.

Part B

Activity 6 – Interface and functionality (1 hour and 10 minutes)

How examiners must approach marking this activity

Trait 1	This is all about how the forms look, how easy they would be to use and how relevant they are to the scenario and tasks.

Add owner form

- Sensible title
- Instructions on how to use, asterisks where data entry is required
- Field widths appropriate for data they will hold
- Appropriate labels
- Layout good
- OwnerID disabled
- Relevant, consistent, easy to read labels (e.g. spaces)
- Combo box for branch
- Save button

Add Owner

Enter the owner details and then click the save button.
You must enter data where * appears

Owner ID	(New)	
Surname		*
Telephone		
Email		
Select the branch	0 ▾	*
Number of properties	1	between 1 and 10

Save

Update management fee form

- Sensible title
- Instructions on how to use
- Relevant, consistent, easy to read labels (e.g. spaces)
- Field widths appropriate for data they will hold
- Layout good
- Combo box to branch address
- These fields present
  - Town
  - Manager surname
  - Property management fee
- Control to input percentage of potential increase (as a whole number)
- All fields disabled other than combo for branch address and percentage of potential increase
- These generated controls should be on the form (ignore content of fields)
  - New management fee
  - Yearly income

Management Fee Increase

Select the branch and then enter the increase as a whole number e.g. 10

Select the branch		*
Town		
Manager		
Current management fee		
Potential increase %		*
New fee	#Type!	
Yearly income	#Type!	

Band	Comments
1	- Do not reflect their purpose - Are mostly default - Are not user friendly: - Default titles, labels and field widths - No data input aids - No disabled fields - House style does not exist - Layout poor
2	- Better matched to purpose - Not all default based on wizard - Are more user friendly (will include **some** of these): - titles relevant to purpose - data input aids present e.g. asterisks, instructions though may not use combo box for branch (owner form) or branch address (management fee form) - disabled fields - field widths not left at default though may not be entirely sensible - some labels amended from default where appropriate - may not include new management fee or yearly income (management fee form) - House style is present - Layout good in places
3	- Add owner form fully matches purpose - Mostly user friendly (**do not need all** of these but a very good attempt): - relevant titles - some data input aids e.g. asterisks, instructions and combo boxes, field widths sensible - new management fee included - yearly income generated included - all fields that should be automatically generated disabled - layout mostly good
4	- Both forms fully match their purpose: - relevant titles - data input aids present where suitable including combo boxes for branch (owner form) and branch address (management fee form) - all field widths sensible - all fields that should be automatically generated disabled - consistent house style for both forms - layout very good

	Owner form
Trait 2	• ID would be generated (default of AutoNumber is fine for this)
	Management fee availability form
	• Town, Manager surname, Property management fee links to branch address selected (should be current manager)
	• New management fee calculated (including the increase)
	• Yearly income calculated from the new management fee

Band	Comments
1	• OwnerID would be automatically generated
2	• OwnerID automatically generated
	• Management fee form
	○ Attempt at linking OR calculating (though may be entirely accurate)
	○ Linking
	■ Town
	■ Manager surname (does not need to be current manager's surname)
	■ Property management fee
	○ Calculating
	■ New management fee (including the increase)
	■ Yearly income calculated from the new management fee
3	• OwnerID automatically generated
	• Management fee form (3 correct)
	○ Attempt at linking
	■ Town
	■ Manager surname (does not need to be current manager's surname)
	■ Property management fee
	○ Attempt at calculating
	■ New management fee (including the increase)
	■ Yearly income calculated from the new management fee
4	• OwnerID automatically generated
	• Management fee form
	○ Correct links to
	■ Town
	■ Manager surname (must be the current manager's surname)
	■ Property management fee
	○ Correct calculations for
	■ New management fee (including the increase)
	■ Yearly income calculated from the new management fee

Trait 3	This trait is about validation and automation.

Add owner form
- Opens at a new record
- Validation to ensure the surname is present, BranchID has been selected/is present and valid, number of properties is within specified range (1 – 10) (do not accept validation at table level or validation for the presence check added to properties of field in form design. Must be macro or code)
- Saving includes:
  - appending valid data to the owner table
  - displaying a save message
  - clearing the form ready for next record
  - displaying suitable error message(s)

Management fee form
- After the branch address had been selected these details appear:
  - Town
  - Manager (should be the current manager)
  - Property management fee
- After the potential percentage increase has been input these details should be displayed
  - New management fee including the increase
  - Yearly income generated

Band	Comments
1	**Owner form** • OwnerID automatically generated and appended • Attempt at adding presence check to Surname, attempt at ensuring BranchID is selected/present or ensuring number of properties is within range • Save button present but no indication of save process

2	**Owner form**
	• May not open at new record
	• OwnerID automatically generated and appended
	• At least two from:
	  ○ suitable presence check for surname (ignore message)
	  ○ suitable validation to ensure BranchID is selected/present
	  ○ suitable validation to ensure BranchID is valid e.g. table lookup applied to source of field or equivalent
	  ○ suitable validation to ensure number of properties is within range
	• Valid record would save in Owner table

3	**Owner form**
	• Opens at a new record, OwnerID automatically generated and appended
	• At least three from:
	  ○ suitable presence check for surname (with suitable error message)
	  ○ suitable validation to ensure BranchID is selected/present (with suitable error message)

		o suitable validation to ensure BranchID is valid e.g. table lookup applied to source of field or equivalent
		o suitable validation to ensure number of properties is within range (with suitable error message)
		• Valid record would save in Owner table, save message displayed **or** form cleared
		Management fee form
		• After the branch address had been selected these details appear:
		   o Town
		   o Manager (does not need to be the current manager)
		   o Property management fee
		   o Do not penalise if the details displayed are not the correct ones – it is the automation that is being credited
		OR
		• After the potential percentage increase has been input these details should be displayed
		   o New management fee including the increase
		   o Yearly income generated
		   o Do not penalise if results of calculations are incorrect - it is the automation that is being credited

	4	**Owner form**
		• Opens at a new record
		• OwnerID automatically generated and appended
		• Suitable presence check for surname (with suitable error message)
		• Suitable validation to ensure BranchID is selected/present (with suitable error message)
		• Suitable validation to ensure BranchID is valid e.g. table lookup applied to source of field or equivalent
		• Suitable validation to ensure number of properties is within range (with suitable error message)
		• Valid record would save in Staff table, save message displayed, form cleared ready for next record
		
		Management fee form
		• After the branch address had been selected the correct details appear:
		   o Town
		   o Manager (must be the current manager)
		   o Property management fee
		• After the potential percentage increase has been input these details should be displayed correctly
		   o New management fee including the increase
		   o Yearly income generated

Trait 4	This trait is about functionality automatically awarded.	

Activity 7 – Interface and functionality testing (20 minutes)

How examiners must approach marking this activity

Tests to be carried out

1. The owner form is ready for data entry when the form opens.
2. An invalid branch cannot be selected.
3. The number of properties cannot be above the range.
4. The number of properties cannot be below the range.
5. A record will save in the owner table if the owner details are present and valid.
6. After a branch address has been selected on the management fee form these details should appear:
   - Town
   - Manager
   - Property management fee
7. After the potential percentage increase has been input these details should be calculated and displayed:
   - the new management fee including the increase
   - the yearly income generated from the new management fee.

Band 1	- Not all the tests requested will be present or they may be inappropriate - There will be no test data, or it will not relate to the test being carried out - Expected results may be inappropriate - At least 1 test result will be appropriate - Errors may be present that have not been identified
Band 2	- Tests 1 to 5 will be present and mostly appropriate - Tests 6 and 7 could be missing or inappropriate - Expected results will be appropriate but may not be specific - Actual results will be present, but some may not be entirely appropriate - Errors may/may not have been found
Band 3	- All tests will be present, and they will be appropriate - Test data will be specific for all fields - Expected results will be specific (including results of updated values that should appear etc.) - Actual results will show all the test data used and any relevant messages

Activity 8 – Interface evaluation (20 minutes)
How examiners must approach marking this activity

- Read evaluation and determine *best fit* for band based on understanding of technical concepts and technical vocabulary.
- Assign position in *that* mark band based on evaluative content

What should be evaluated:

Owner form

- The owner form is ready for data entry when the form opens.
- An invalid branch cannot be selected.
- The number of properties cannot be above the range.
- The number of properties cannot be below the range.
- A record will save in the owner table if the owner details are present and valid.

Management fee form

- After a branch has been selected on the management fee form these details should appear:
  - Town
  - Manager
  - Property management fee.
- After the potential percentage increase has been input these details should be calculated and displayed:
  - the new management fee including the increase
  - the yearly income generated from the new management fee.

Band 1	Will be very superficial with major omissions
Band 2	Will discuss both forms – some aspects sensibly though may not fully explain them or relate them very well to their own solution Or may discuss one form only
Band 3	Will discuss both forms. Will relate to scenario (they do not need to explicitly mention the scenario, but you should see what they are talking about relates to the scenario). Will be able to see evaluative comments relating their solution to the end user and what it will mean to them in terms of quality, usability etc.