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| **A close up of a sign  Description automatically generated** | BTec_Logo-Orange  **UNIT 2: CREATING SYSTEMS TO MANAGE INFORMATION** |

# CASE STUDY 1: ESTATE AGENCY DATE SET: 24 September 2021

# Overall Aim

This exercise has been written for you to:

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| **Unit 2** |
| * Demonstrate knowledge of database development terminology, standards, concepts and processes * Apply knowledge and understanding of database development terminology, standards, concepts and processes to create a software product to meet a client brief * Analyse information about database problems and data from test results to optimise the performance of a database solution * Evaluate evidence to make informed judgements about the success of a database’s design and performance * Be able to develop a database solution to meet a client brief with appropriate justification |

During this exercise (and for the summative assessment to have a successful outcome) you must submit work for all tasks highlighted **red** in this document. However, the college expects you to submit work relating to the **red** **and** **orange** text. You will be able to achieve the **best outcome** if your work covers the **red, orange** and **green** text. This exercise and the internal summative assessment (Mock Exam) are given in preparation for you taking the Externally Assessed Exam in this Unit.

Please note that all work must be submitted to Godalming Online by the published deadlines. **All deadlines are Friday 1.15pm unless otherwise stated**. All work submitted **must be your own work**. Any reference to others’ work must be referenced in a Harvard style bibliography (see Godalming Online IT BTEC Level 3 RQF Resources Page). During this assignment, any work submitted must be uploaded to your Godalming Online IT BTEC RQF Upload area. Do remember the upload area on GOL has an upload limit of 20 files with file size limitation. Remember to confirm your uploaded files.

Throughout this activity you will be provided with theoretical concepts and practical exercises that will form the basis of knowledge and skills required during your mock and external unit exam. The Mock and External Exam will be conducted under exam board conditions and these will be separately published.

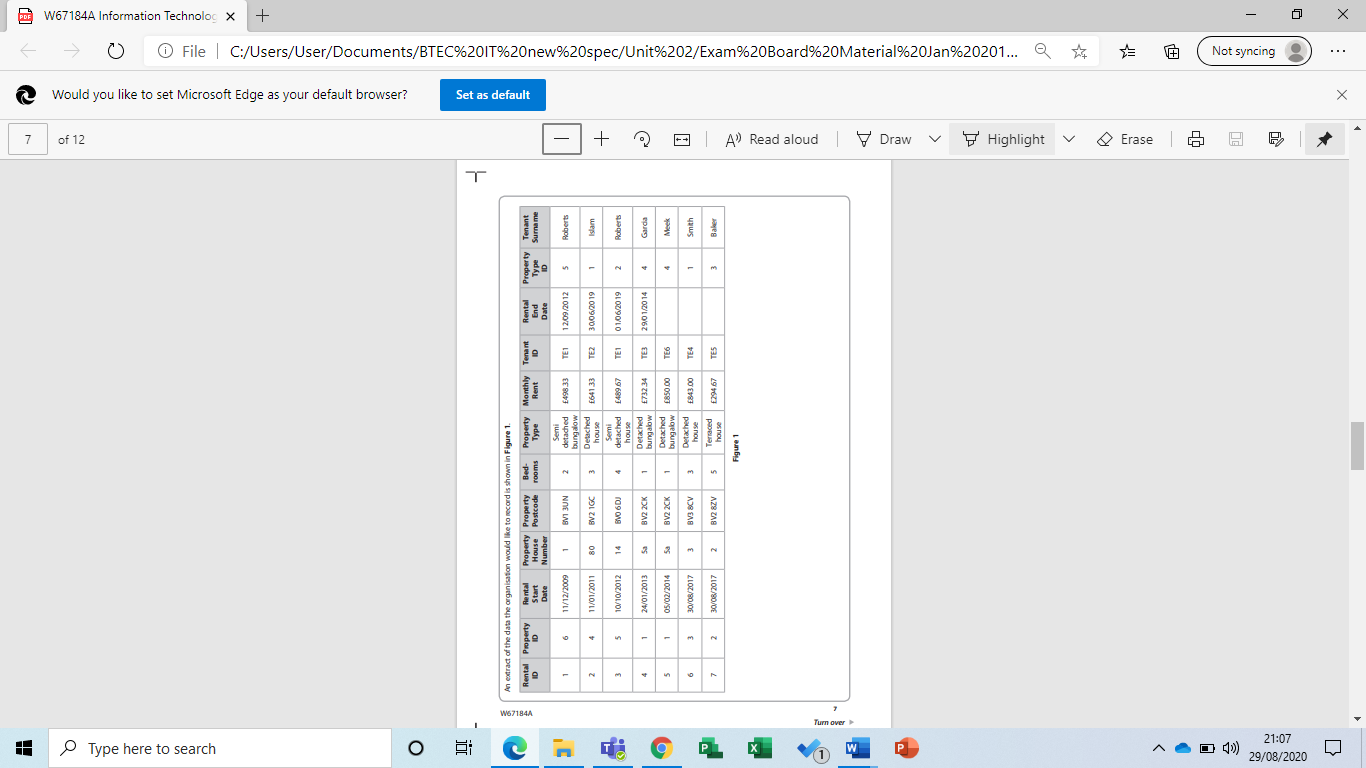
Each activity leads towards College Benchmarks. Benchmarks are then used to assess your target grades and annual review grades.

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| **Scenario**  Task Scenario You have been asked to create a database for Mason and Thompson Letting Agency. The agency manages the renting of properties in various towns around the country.  The database will record information about:  • the properties  • tenants who rent the properties  • property rentals.  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. Rent is charged per calendar month. |

**PART A**

**Activity 1 Business Requirements & Entity Relationship Diagrams** *Benchmark 1*

Study the selected business data extract provided in Figure 1.



Create an efficient database structure that:

• minimises data duplication

• accepts the data provided

• uses recognised naming conventions

• ensures data integrity.

Ensure you use all and only the fields shown in Figure 1. Screen print your database relationships.

Save and upload your database relationships screenprint as a PDF in your folder for submission. You are advised to spend 45 minutes on this activity.

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| No rewardable material | ERD shows an attempt at normalisation with significant data redundancy and has some correct relationships shown | ERD shows that most data is correctly normalised with some data redundancy and has some correct relationships and some correct relationship types | ERB shows that most data is correctly normalised with minimal data redundancy and ERD has mostly correct relationships and mostly correct relationship types shown | ERD shows that the data is correctly normalised with no data redundancy & the ERD has correct relationships and relationship types shown |

**UPLOAD:** *(to Godalming Online)* **Activity 1 Deadline Date: 1st October 2021**

*Filename:*

❶ Activity1\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 2: Table Structure and Validation** *Benchmark 1*

Create efficient table structures based on Activity 1 and the data shown in Figure 1.

The table structures must use suitable validation to meet these requirements:

• a record for a new property will not save without house number & a valid 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.

Input the data given in Figure 1 into your relational database. Evidence your table structures and validation as screenprints using the given activity2.rtf template.

Display your screenprints to show:

• the design view of each table showing the structure, including fields & data types

• validation including a suitable example for each of these:

• presence check

• length check

• range check

• table lookup

• format check.

Save & upload your evidence of the database structure as a PDF in your folder for submission. You are advised to spend 45 minutes on this activity.

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| No rewardable material | Uses some meaningful field and table names with some inconsistencies.  The table structure identifies some primary and foreign key fields.  The table structure has limited use of correct data types.  Limited use of validation which may be inaccurate. | Uses meaningful field and table names with minor inconsistencies.  The table structure identifies most primary and foreign key fields.  The table structure has correct data types for most fields.  Accurate validation rules for some of the fields that require validation. | Uses a recognised naming convention with minor inconsistencies for fields and tables.  The table structure identifies all primary and most foreign key fields.  The table structure has correct data types for most fields including matching primary and foreign key fields.  Accurate validation rules for most of the fields that require validation | Uses a recognised naming convention consistently for fields and tables.  The table structure identifies all primary and foreign key fields.  The table structure has correct data types for all fields.  Accurate validation rules for all fields that require validation |

**UPLOAD:** *(to Godalming Online)* **Activity 2 Deadline Date: 1st October 2021**

*Filename:*

❶ Activity2\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 3: Queries and Reports** *Benchmark 1*

**Queries**

1. 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.
2. 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.

Evidence your queries as screenprints using the given activity3.rtf template.

Your screenprints must show:

• the DESIGN view of the 2 queries specified that you created, including fields and criteria

• the DATASHEET view of the two queries specified that you have created.

**Report**

1. Create a report that shows rentals for each property. For each property calculate:

• the 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.**

Evidence your report as screenprints using the given activity3.rtf template.

Your screenprints must show:

• the DESIGN view of the report you have created, including grouping and calculations

• the DESIGN view of any queries you created & used with the report, including fields & criteria

• the DATASHEET view of any queries you have created and used with the report.

Save and upload your query and report evidence as a PDF in your folder for submission.

(d) Save & upload your database report (not a screenprint) as a PDF in your folder for submission.

You are advised to spend 40 mins on this activity.

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| No rewardable material | Queries and report include limited relevant fields.  Queries and report include details of some criteria and calculations required, which may include inaccuracies.  Presentation of data in queries and report will not aid readability and understanding of data. | Queries and report include some relevant fields.  Queries and report include accurate details of some criteria and calculations required.  Presentation of data in queries and report will, in places, aid readability and understanding of data. | Queries and report include mostly relevant fields.  Queries and report include accurate details of most criteria and calculations required.  Presentation of data in queries and report will mostly aid readability and understanding of data. | Queries and report include all relevant fields only.  Queries and report include accurate details of all criteria and calculations required.  Presentation of data in queries and report will aid readability and understanding of data. |

**UPLOAD:** *(to Godalming Online)* **Activity 3 Deadline Date: 1st October 2021**

*Filenames:*

❶ Activity3\_RegistrationNo\_Surname\_FirstLetterOfFirstName

❷ Activity3d\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 4: Structure Testing** *Benchmark 1*

Test the structure and the validation of your relational database using suitable test data (normal, erroneous and extreme as appropriate).

You must provide evidence of table level testing that proves:

1. a record for a new property will not save without a postcode

2. a record for a new property will not save if the property type is invalid

3. a record will not save if the number of bedrooms is below the accepted range

4. a record will not save if the number of bedrooms is above the accepted range

5. a record for a rental will not save if it is for an invalid tenant

6. a record for a rental will not save if it is for an invalid property.

Complete the test log to show how you have tested the structure of your database using the given activity4.rtf template.

Save and upload your test log as a PDF in your folder for submission.

You are advised to spend 20 minutes on this activity.

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| No rewardable material | Testing is too narrow to confirm a working solution, including limited normal, erroneous and/or extreme data.  Expected results are generic or mostly inaccurate. Test data may not be present.  Test results prove that the database operates under some normal circumstances relevant to the scenario. Test result comments are present when errors have been found. These comments show a limited understanding of any errors that were found. | Testing is adequate to confirm a working solution, including some normal, erroneous and/or extreme data.  Expected results are mostly accurate and based on identified test data but may lack detail.  Test results prove that the database operates under some normal circumstances and that the interface can cope with some erroneous and extreme data relevant to the scenario. Test result comments are present when errors have been found. These comments show partial understanding of any errors that were found. | Testing is thorough, including a range of normal, erroneous and extreme data.  Expected results are specific and accurate based on identified test data.  Test results prove that the database operates under all circumstances relevant to the scenario. Test result comments are present when errors have been found. These comments show a clear understanding of any errors and how they were found. |

**UPLOAD:** *(to Godalming Online)* **Activity 4 Deadline Date: 8th October 2021**

*Filenames:*

❶ Activity4\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 5: Structure Evaluation** *Benchmark 1*

Evaluate your database structure and validation.

You should consider:

• 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.

Save and upload your evaluation as a PDF in your folder for submission.

You are advised to spend 20 minutes on this activity.

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| No rewardable material | Superficial understanding of relevant technical concepts shown with some inaccuracies.  Limited or unsupported justification of the relational database structure selected.  Limited links between aspects of the solution and the requirements of the scenario.  Technical vocabulary is used but it is not used appropriately to support arguments. | Some accurate and relevant understanding of technical concepts shown.  Some valid justification, which may lack support of the relational database structure selected.  Some logical links between aspects of the solution and the requirements of the scenario but may lack clarity.  Mostly accurate technical vocabulary is used to support arguments. | Accurate and detailed understanding of relevant technical concepts shown throughout.  A valid and fully supported justification of the relational database structure selected.  Makes logical coherent links ­­between aspects of the solution and the requirements of the scenario throughout.  Fluent and accurate technical vocabulary is used to support arguments. |

**UPLOAD:** *(to Godalming Online)* **Activity 5 Deadline Date: 8th October 2021**

*Filenames:*

❶ Activity5\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**PART B**

**Activity 6: Interface and Functionality** *Benchmark 1*

**Forms**

Note: • The structure of the tables provided should not be changed in any way e.g. do not add validation, do not change data types.

• You will be required to use all of the tables.

(a) Create an efficient interface that will facilitate database input by producing:

(i) an input form to add an owner.

• The form should be ready for data entry.

• The user should be able to select a branch.

• The owner’s surname and branch ID must be present.

• The number of properties must be within the specified range.

• Valid data should be appended to the owner table and a save message displayed.

• A suitable error message should appear where invalid data has been used.

(ii) input form to update the property management fee for a branch.

• The form should not include validation for any fields.

• The form should not include an automated routine to save the data.

• The user should be able to select the branch address.

• These details should then be displayed:

• Town

• Manager surname

• Property management fee.

• The user should be able to input the percentage of potential increase for the property

management fee as a whole number. For example 3

• These details should then be displayed:

• the new management fee including the increase.

• the yearly income generated from the new management fee.

Evidence your interface as screenprints using the given activity6.rtf template.

Your screenprints must show:

• the DESIGN view and FORM view of all the forms you have created

• the DESIGN view of any queries you have created and used with the forms including fields and criteria

• the DATASHEET view of any queries you have created and used with the forms

• details of any calculations, validation and macros/code you have created and used with the forms

Ensure sufficient information is provided to allow a competent third party to maintain the database.

Save and upload the evidence of your interface as a PDF in your folder for submission.

You are advised to spend 1 hour and 10 minutes on this activity.

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| No rewardable material | Interface is unclear or provides limited information and there are inconsistencies and inaccuracies in formatting, so a user would experience difficulty in using the database and making maintenance by a third party difficult.  Interface may not have details of criteria/calculations required, or these may include inaccuracies.  Interface uses minimal validation, checking procedures and automation resulting in a system with limited capacity to reduce errors or handle unexpected events.  Interface may not be fully functional and/or may have major errors that present the interface from meeting the given criteria. | Interface is clear but there are inconsistencies and inaccuracies in formatting allowing a user to use the database with minor difficulties and allowing maintenance by a third party with minor difficulties.  Interface includes accurate details of some criteria/calculations required.  Interface uses some accurate validation, checking procedures and automation resulting in a system that minimises the most common errors and handles some unexpected events.  Interface is functional and meets some of the given criteria with minimal errors. | Interface is clear with minimal inconsistencies and inaccuracies in formatting allowing a user to use the database easily and allowing maintenance by a third party with minor difficulties.  Interface includes accurate details of most criteria/calculations required.  Interface uses some accurate validation, checking procedures and automation resulting in a system that minimises the majority of errors and handles most unexpected events.  Interface is functional with minimal errors and meets the given criteria. | Interface is clear and intuitive, consistently and accurately formatted allowing a user to easily use the database and allowing it to be maintained by a third party.  Interface includes accurate details of all criteria/calculations required.  Interface uses accurate validation, checking procedures and automation throughout, resulting in a robust system that minimises errors and handles unexpected events.  Interface is fully functional and fully meets the given criteria. |

**UPLOAD:** *(to Godalming Online)* **Activity 6 Deadline Date: 4th November 2021**

*Filenames:*

❶ Activity6\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 7: Interface Testing** *Benchmark 1*

Test the interface of your relational database using suitable test data (normal, erroneous and extreme as appropriate).

You must provide evidence of form level testing that proves:

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.

Complete the test log to show how you have tested your input forms using the given activity7 template.

Save and upload your test log as a PDF in your folder for submission.

You are advised to spend 20 minutes on this activity

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| No rewardable material | Testing is too narrow to confirm a working interface, including limited normal, erroneous and/or extreme data.  Expected results are generic or mostly inaccurate. Test data may not be present.  Test results prove that the database operates under some normal circumstances relevant to the scenario. Test result comments are present when errors have been found. These comments show a limited understanding of any errors that were found. | Testing is adequate to confirm a working interfacce, including some normal, erroneous and/or extreme data.  Expected results are mostly accurate and based on identified test data but may lack detail.  Test results prove that the database operates under some normal circumstances and that the interface can cope with some erroneous and extreme data relevant to the scenario. Test result comments are present when errors have been found. These comments show partial understanding of any errors that were found. | Testing is thorough, including a range of normal, erroneous and extreme data.  Expected results are specific and accurate based on identified test data.  Test results prove that the database operates under all circumstances relevant to the scenario. Test result comments are present when errors have been found. These comments show a clear understanding of any errors and how they were found. |

**UPLOAD:** *(to Godalming Online)* **Activity 7 Deadline Date: 4th November 2021**

*Filenames:*

❶ Activity7\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Activity 8: Interface Evaluation** *Benchmark 1*

Evaluate your interface.

You should consider the quality, performance and usability of the interface you have created in terms of how well it ensures:

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.

Edit branch 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.

Save and upload your evaluation as a PDF in your folder for submission.

You are advised to spend 20 minutes on this activity.

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| --- | --- | --- | --- |
| No rewardable material | Superficial understanding of relevant technical concepts shown with some inaccuracies.  Limited or unsupported justification of the quality, performance and usability of the interface.  Limited links between aspects of the solution and the requirements of the scenario.  Technical vocabulary is used but it is not used appropriately to support arguments. | Some accurate and relevant understanding of technical concepts shown.  Some valid justification, which may lack support of the quality, performance and usability of the interface.  Some logical links between aspects of the solution and the requirements of the scenario but may lack clarity.  Mostly accurate technical vocabulary is used to support arguments. | Accurate and detailed understanding of relevant technical concepts shown throughout.  A valid and fully supported justification of the quality, performance and usability of the interface.  Makes logical coherent links ­­between aspects of the solution and the requirements of the scenario throughout.  Fluent and accurate technical vocabulary is used to support arguments. |

**UPLOAD:** *(to Godalming Online)* **Activity 8 Deadline Date 11th November 2021**

*Filename:*

❶ Activity8\_RegistrationNo\_Surname\_FirstLetterOfFirstName

**Mock: 1st, 2nd and 3rd December 2021**

**In your normal lessons.**

**UNIT 2: CREATING A SYSTEM TO MANAGE INFORMATION**

