IT APPLICATIONS

UNIT 3 OUTCOME 2



DATA MANAGEMENT  
REVISION NOTES

**Unit 3 Outcome 2**

Design & develop, using a relational database management system, a solution to an information problem, and discuss why and how data is acquired via websites

**Key Knowledge**

**1.** Reasons **why organisations acquire data via websites**

**2.** Reasons **why individuals and organisations supply data via websites**

**3.** **Techniques used** by organisations **to acquire data on websites** and reasons for their choice

**4. Techniques used** by organisations **to protect the rights of individuals and organisations supplying data**

**5.** Stages of the **problem-solving methodology**

**6.** Purposes and structure of an **RDBMS**

**7.** **Naming conventions** to support efficient use of an RDBMS

**8.** **Data types**, including text (string), number, date/time, currency, Boolean

**9.** **Data formats** used for display, including fixed decimal places, various date formats, 12 hour/24 hour time, true/false, yes/no

**10.** A methodology for **creating an RDBMS structure**

**11. Design tools** for describing data types, and the **value of entity relationship (ER) diagrams** for representing the structure of an RDBMS

**12. Design tools** for representing solutions

**13.** Functions and techniques within an RDBMS to efficiently and effectively **manipulate** and **validate data**

**14.** Functions and techniques to retrieve required information through **searching**, **sorting**, **filtering** and **querying** data sets

**15.** Methods and techniques for **testing** that the solutions perform as intended

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| **1.** Reasons **why organisations acquire data via websites** |

**1. Discuss** a common method used by organisations to acquire data via a website

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**2. Explain** two advantages for an organisation of collecting data via a website

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**3. Describe**, in terms of both efficiency and effectiveness, the advantage for an organisation by allowing customers to enter their details directly

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Effectiveness

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| **2.** Reasons **why individuals and organisations supply data via websites** |

**1. List** four reasons why individuals supply data via websites

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**2. Discuss** advantages for individuals to shop online

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**3. Discuss** disadvantages for individuals when shopping online

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**4. List** three pieces of data individuals usually supply when joining a social networking site

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| **3.** **Techniques used** by organisations **to acquire data on websites** and reasons for their choice |

**1. List** four techniques organisations uses to acquire data via a website

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**2. Discuss** the advantages of using a form to collect data via a website

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**3. Explain** why an organisation may use a Poll on a website – even though users are not required to enter any personal details to vote

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**4. Discuss** two advantages for an organisation to have a forum associated with their website

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| **4. Techniques used** by organisations **to protect the rights of individuals and organisations supplying data** |

**1. Explain** how the protocol HTTPS works

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**2. Describe** the purpose of a ‘Privacy Policy’

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**3. Explain** the type of information that would be found in a ‘Shipping & Returns Policy’

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**4. Discuss** how ‘policies’ help protect both individuals & organisations

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| **5.** Stages of the **problem-solving methodology** |

**1. List** two activities involved in the design stage of the PSM

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**2. Explain** why criteria to evaluate the solution are created in the design stage

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**3. List** four activities involved in the development stage of the PSM

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**4. Explain** how validation is different to testing

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| **6.** Purposes and structure of an **RDBMS** |

**1. Explain** the purpose of a Relational Database Management System (RDBMS)

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**2. Explain** how a database differs from a RDBMS

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| **Username** | **First**  **Name** | **Surname** | **Discount** | **Cost per**  **Month** | **Months** | **Total**  **Cost** |
| ant@pond.com | Anthony | James | N | $10 | 6 | $60 |
| pete@dogs.com | Peter | Smith | Y | $8 | 3 | $24 |

**3. Explain** the purpose of a table in a database

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**4.** From the table above **list** how many fields and how many records are shown

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**5. Identify** which field is the ‘Primary Key’ and explain the purpose of a ‘Key field’

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| **7.** **Naming conventions** to support efficient use of an RDBMS |

**1. Explain** why naming a database table as ‘Table1’ would not be appropriate

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**2. Define** the term ‘Hungarian Notation’

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**3. Discuss** two advantages of naming a table ‘tblMembers’

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**4. List** an appropriate name for each of the following database objects

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| **Database Element** | **Appropriate Name** |
| A table holding details about books |  |
| A form used to enter book details |  |
| A query which sorts books alphabetically |  |
| A query which searches for all books by author |  |

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| **8.** **Data types**, including text (string), number, date/time, currency & Boolean |

**1. Define** the term ‘data type’

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**2.** **Explain** why it’s important to select the correct type for each field

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**3. Explain** why the Primary Key does not have to be an Auto Number

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**4. Complete** the following table

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| **Field Name** | **Data Type** | **Description** |
| Member ID |  | First three letters of the member’s surname and three numbers |
| Name |  | Name of member |
| Phone |  | (03) 9412 1234 |
| Date Joined |  | Date member joined the club |
| Years of Membership |  | Number of years of continuous membership |
| Membership Fee |  | Annual Membership fee payable |
| Membership Fee Paid? |  | Whether the member has paid or not |

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| **9. Data formats** used for display, including fixed decimal places, various date formats, 12 hour/24 hour time, true/false, yes/no |

**1. Explain** how a data format differs from a data type

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**2. Explain** why is it important to select the correct data format for each field

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**3. Complete** each column in the table below by selecting from the following options:

Data Type: Text, Number, Date/Time, Currency or Boolean

Data Format: Integer (Whole Number), Two Decimal Places, Short Date,

Medium Date, Long Date, 12 Hour Time, 24 Hour Time, True/False or Yes/No

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Data Format** | **Description** |
| Student ID |  |  | Unique Six Number ID e.g. 012345 |
| Name |  |  | Name of Student |
| Average Mark |  |  | Out of 100, rounded to 2 decimal places |
| Fees Paid? |  |  | Are School Fees up to Date? |
| Date of Enrolment |  |  | dd/mm/yyyy |
| Time of Next Lecture |  |  | 19:00 |

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| **10.** A methodology for **creating an RDBMS structure** |

**1. Explain** the purpose of Normalisation

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**2. Explain** how Normalisation assists to improve “Data Integrity”

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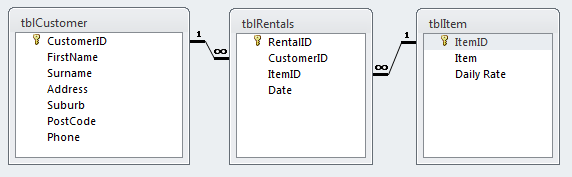
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**3. Explain** why the table below is not in Second Normal Form (2NF)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Student ID** | **Surname** | **Tutor Group** | **Tutor** | **Tutors Office** |
| 20120001 | Jones | 12 SM | Mr Smith | S 17 |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**4. Identify** in which table Item ID is the Primary Key and which table Item ID is the Foreign Key

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**5. Explain** the relationship between the Customer & Rentals tables

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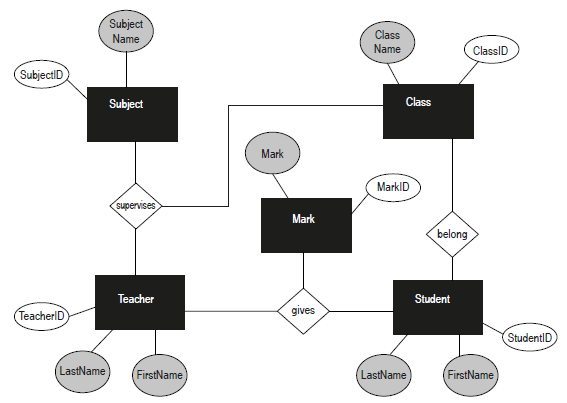
|  |
| --- |
| **11. Design tools** for describing data types, and the **value of entity relationship (ER) diagrams** for representing the structure of an RDBMS |

**1. Complete** the following data structure table:

**Data Structure Data**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Field Name** | **Data Type** | **Data Format** | **Length**  **(If Text)** | **Description** |
| Username |  |  |  | Email address |
| Name | Text |  |  | Name of Student |
| Age |  | Integer |  |  |
| OnlineNow? |  |  |  | Is user online now? |

**2. List** the threebasic elements of entity relationship diagrams and **provide** an example of each from the diagram below



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| **12. Design tools** for representing solutions |

The table below stores details of the suppliers for Harry’s Hamburger Shop

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Supplier ID** | **Company** | **Contact** | **Title** | **Address** | **City** | **Postcode** |
| 1 | ABC Meats | Bill | Accountant | 12 High Street | Elwood | 3184 |

**1. Draw** an input form for Harry’s to add a new supplier and save the record

Harry’s standard font is Calibri size 14 and background colour is white

|  |
| --- |
|  |

A query is required to sort all Products into categories and then sort by price – then show only Name; Price & Location fields

**2. Complete** the query design below

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Field** | Name | Category | Price | Quantity | Location |
| **Table** | tblProducts | tblProducts | tblProducts | tblProducts | tblWarehouse |
| **Sort** |  |  |  |  |  |
| **Show** |  |  |  |  |  |
| **Criteria** |  |  |  |  |  |

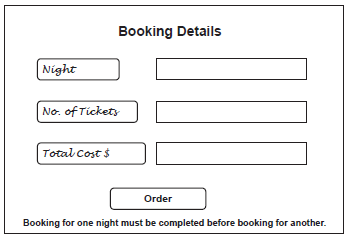
|  |
| --- |
| **13.** Functions and techniques within an RDBMS to efficiently and effectively **manipulate** and **validate data** |

**1. Describe** the term validation and **explain** the purpose of validating data

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**2. Recommend** an electronic technique for the Night field to enhance the likelihood of inputting accurate data. **Justify** your choice

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|  |  |  |  |
| --- | --- | --- | --- |
| **Employee** | **Hours Worked** | **Hourly Rate** | **Gross Pay $** |
| Jenkins | 20 | 15 | 300 |

**3. Define** the term ‘calculated field’. **Identify** which item is calculated field and **state** the formula used in the calculated field

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

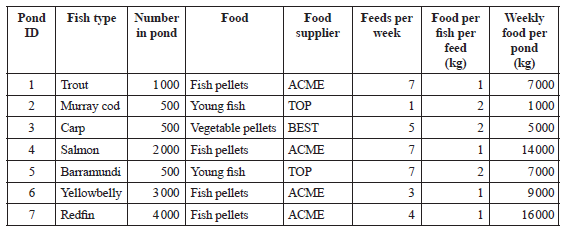
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| **14.** Functions and techniques to retrieve required information through **searching**, **sorting**, **filtering** and **querying** data sets |

**1. List** the records that would be selected if the following query was designed:

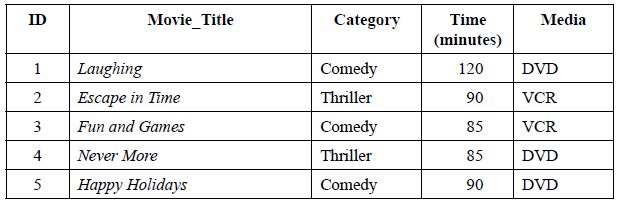
Food supplier = “TOP” OR Feeds per week = 7



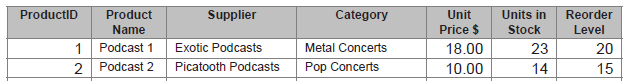
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. List** the movie ID(s) that would be returned if the query below was entered?

Category < > Thriller and Time < 90



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**3. Write** a rule for a query that will return a list of all items needed to be

Re-ordered

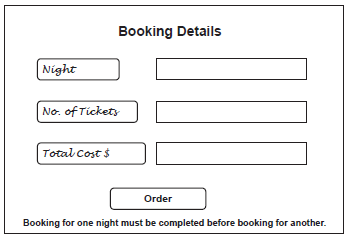
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| **15.** Methods and techniques for **testing** that the solutions perform as intended |

**1. Explain** how testing is different to validation

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**2. Identify** which field from the above database form requires testing. **Calculate** the expected outcome if tickets cost $5 and 4 tickets are being purchased

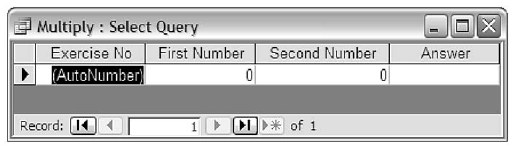
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The IPO chart below is set up to represent part of a database is shown below:

|  |  |  |
| --- | --- | --- |
| **Input** | **Process** | **Output** |
| Quantity  Unit Cost | Total Cost = Quantity x Unit Cost | Total |

**3. Indicate** which fields would be validated and which tested

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4. To test the calculate field above, **identify** which fields require test data

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