

Unit 2 Creating Systems to Manage Information – 1906



**Level 3 National in
Information Technology**

**May 2019
Marking Guidance**

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Introduction

This solution provided is only **one** example. Candidates could have approached it several different ways. It is important to read this guidance with each activity. If you are in any doubt whether the method a candidate has used is valid, please refer to your team leader. Do not assume a method that differs from solution is incorrect. Overall, we are looking for a database that works, has been well customised and is sensible in terms of the scenario and what should be considered in terms of that.

Activity 1 – Database Relationship Screenprint

How examiners must approach marking this activity

Trait 1	<ul style="list-style-type: none"> Candidates should be using all and only attributes given in data file. 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 	Example Solution Page 3
Trait 2	<p>Relationship lines</p> <ul style="list-style-type: none"> Do not need to check the fields they link to, referential integrity or anything else, only the lines are important for this <p>Relationship types</p> <ul style="list-style-type: none"> Check referential integrity Must be links on correct fields and referential integrity present <p>Band 2 minimum of two relationship lines correct (ignore relationship type)</p> <p>Band 3 two out of three relationships and relationship types correct (exactly four tables, three relationships and three relationship types present)</p> <p>Band 4 all relationship lines and relationship types correct (exactly four tables, three relationships and three relationship types present)</p>	Example Solution Page 3

Note foreign key evidence for activity 2 taken from this screenprint.

Activity 2 – Table Structures and Validation

How examiners must approach marking this activity

Trait 1	<p>Look for naming conventions and whether fields are sensible</p> <ul style="list-style-type: none"> • 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 then cannot get higher than band 2 for trait 1. 																																
Trait 2	<p>Check against their structure in activity 1.</p> <ul style="list-style-type: none"> • 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	<p>Look at data types.</p> <ul style="list-style-type: none"> • Class same datatype incorrectly used as one error. • Any suitable data type acceptable for primary keys • Limited means more than two different datatypes are incorrect. 																																
Trait 4	<p>Look at validation, length, presence, range, value lookups, table lookups. Presence checks, and range checks also needs validation text.</p> <p>Watch out for screenprints that do not show the actual field the validation is applied to.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Just acceptable for keys</p> <p style="text-align: center;">Would need to see name of table and field name tblSeatSales-EventID</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">General Lookup</th> </tr> </thead> <tbody> <tr> <td>Display Control</td> <td>Combo Box</td> </tr> <tr> <td>Row Source Type</td> <td>Table/Query</td> </tr> <tr> <td>Row Source</td> <td>SELECT (tblEvent].[EventID], [tblEvent].[Event D</td> </tr> <tr> <td>Bound Column</td> <td>1</td> </tr> <tr> <td>Column Count</td> <td>3</td> </tr> <tr> <td>Column Heads</td> <td>No</td> </tr> <tr> <td>Column Widths</td> <td>1.35cm;3.254cm;2.54cm</td> </tr> <tr> <td>List Rows</td> <td>16</td> </tr> <tr> <td>List Width</td> <td>7.143cm</td> </tr> <tr> <td>Limit To List</td> <td>Yes</td> </tr> </tbody> </table> </div> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p style="text-align: center;">Just acceptable for non-keys</p> <p style="text-align: center;">Would need to see the name of the field SeatType</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">General Lookup</th> </tr> </thead> <tbody> <tr> <td>Display Control</td> <td>Combo Box</td> </tr> <tr> <td>Row Source Type</td> <td>Value List</td> </tr> <tr> <td>Row Source</td> <td>"Table";"No Table"</td> </tr> <tr> <td>Bound Column</td> <td>1</td> </tr> </tbody> </table> </div> <p>Presence Checks (at least 1)</p> <ul style="list-style-type: none"> • Should have a screen-print of one sensible presence check • Should list the rest of the checks that have been applied. So long as some are sensible. • Primary keys do not need presence checks applying to them • Foreign keys should • Note not all non-foreign keys have to be present. They could possibly be but don't have to be. 	General Lookup		Display Control	Combo Box	Row Source Type	Table/Query	Row Source	SELECT (tblEvent].[EventID], [tblEvent].[Event D	Bound Column	1	Column Count	3	Column Heads	No	Column Widths	1.35cm;3.254cm;2.54cm	List Rows	16	List Width	7.143cm	Limit To List	Yes	General Lookup		Display Control	Combo Box	Row Source Type	Value List	Row Source	"Table";"No Table"	Bound Column	1
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Length Checks (3 needed)

- This form of validation applies to text fields
- Lengths put forward for any other data type is a weakness
- Sensible field sizes shown for **three** fields
- Fields sizes on foreign keys should match their primary keys if shown

Value Lookups (at least 1)

- May use SeatType – Table, No Table
- May use EventDate - Between #20/12/2019# and #22/12/2019#
>=#20/12/2019# and <=#22/12/2019#
>19/12/2019# and <#23/12/2019#
- May have range on NumAdults – 1 to 8 or 1 to 7
- May have range on NumChild – 0 to 7 or 1 to 7
- Range on EventDate, NumAdults or NumChild can be put forward as range checks too – if limit to list has been set to Yes
- So long as one is sensible

Table Lookups (all 3)

- Should have been applied to **all three** foreign keys (or their foreign keys)
- tblSeatSales – Event ID to tblEvent – EventID
- tblSeatSales – CustomerID to tblCustomer – CustomerID
- tblSeatSales – SeatTypeID to tblSeatType – SeatTypeID
- Limit to list should be set to Yes
- Anything else is not suitable

Range Checks**EventDate**

Between #20/12/2019# and #22/12/2019#
>=#20/12/2019# and <=#22/12/2019#
>19/12/2019# and <#23/12/2019#

May use:

Num Adults	Num Child
Between 1 and 8 >=1 and <=8 >0 and <9	Between 0 and 7 >=0 and <=7 >=0 and <8
Between 1 and 7 >=1 and <=7 >0 and <8	Between 1 and 7 >=1 and <=7 >0 and <8

Format Checks (at least 1)

- Two to look for
- Postcode - input mask, >LL0\ 0LL
- TelephoneNumber – input mask, "+44 "000000000"
- These are only examples. Any that you think are appropriate and would work are acceptable

Activity 3 - Interface and Functionality

Trait 1	<ul style="list-style-type: none"> Look at the range of objects Tables are not assessed in this Activity as assessed in Activity 2 										
	<table border="1"> <thead> <tr> <th>Queries</th> <th>Forms</th> <th>Reports</th> </tr> </thead> <tbody> <tr> <td> qry1Dilmouth qry2UpdateMarsden qry3ParameterDateAndType qry4SeatsLeft* qryReport** </td> <td> frmAddCustomer frmAddSeatSales frmMenu </td> <td> rptSales </td> </tr> </tbody> </table>	Queries	Forms	Reports	qry1Dilmouth qry2UpdateMarsden qry3ParameterDateAndType qry4SeatsLeft* qryReport**	frmAddCustomer frmAddSeatSales frmMenu	rptSales				
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*may include another query based on this one **may not include this one											
<table border="1"> <thead> <tr> <th>Band</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Limited Three or more objects missing. No need to check fields.</td> </tr> <tr> <td>2</td> <td>Adequate No more than two objects missing. Some fields are relevant to purpose</td> </tr> <tr> <td>3</td> <td>Thorough No more than one relevant object missing. Most fields are relevant to purpose</td> </tr> <tr> <td>4</td> <td>Thorough All relevant objects present Majority of fields are what you would expect to see. (Do not need to consider extra information for sales form)</td> </tr> </tbody> </table>	Band	Description	1	Limited Three or more objects missing. No need to check fields.	2	Adequate No more than two objects missing. Some fields are relevant to purpose	3	Thorough No more than one relevant object missing. Most fields are relevant to purpose	4	Thorough All relevant objects present Majority of fields are what you would expect to see. (Do not need to consider extra information for sales form)	
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Trait 2	<ul style="list-style-type: none"> Look at the queries for criteria and calculations Look at the report for criteria and calculations 										
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Trait 3	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 <ul style="list-style-type: none"> Automation and error trapping do not come into this, that is trait 4. Sale form may use single form, may use form with subform It is the appearance and ease of use that is assessed 										
	<p>Customer Form</p> <ul style="list-style-type: none"> CustomerID field disabled <p>Seat Sale Form</p> <ul style="list-style-type: none"> SaleID disabled Being able to select Event Being able to select Customer Being able to select Seat Type Showing relevant information from other tables eg when Customer selected their details shown, when event selected event details shown, when seat type selected Cost Per Seat shown, with all these details disabled 										

- Calculated fields (the actual calculations not assessed here)
 - Total cost for adult seats
 - Total cost for children (10% less than adults)
 - Overall cost
 - All disabled

Report

- Learners do not need to use grouping but may have chosen to. There is one customer (Customer ID 1, Ian Bell) who has bought seats for more than one event. He has purchased 2 table and 2 non-table for two events. So long as report takes this into account then grouping need not be used. If they have used grouping, then for the higher bands it must be appropriate.

Band	Description	
1	Names	Names of forms, queries and report not sensible (maintenance hard)
	Forms	<ul style="list-style-type: none"> • Do not reflect their purpose • Are mostly/all default • Are not user friendly: <ul style="list-style-type: none"> ○ default titles, labels and field widths ○ no data input aids ○ no disabled fields ○ grouping and alignment default ○ house style does not exist
	Queries	<ul style="list-style-type: none"> • Generated/calculated field names default • Not very friendly input messages for parameters
	Report	<ul style="list-style-type: none"> • Does not reflect purpose • No calculations • Little customisation and layout poor
2	Names	Some object names sensible (maintenance easier)
	Forms	<ul style="list-style-type: none"> • Better matched to purpose • Not all default based on wizard • Are more user friendly (will include some of these): <ul style="list-style-type: none"> ○ titles relevant to purpose ○ data input aids present eg asterisks, instructions though may not use combo boxes where they would be appropriate ○ field widths not left at default ○ some labels amended from default where appropriate ○ generated fields disabled ○ may not include calculated fields or will have some missing ○ grouping and alignment is not default and is appropriate in places ○ House style is present
	Queries	<ul style="list-style-type: none"> • Generated/calculated field names default • Better input messages for parameters
	Report	<ul style="list-style-type: none"> • Better matched to purpose with some weaknesses • Will have had some attempt at customisation • Layout more sensible

Band	Description	
3	Trait 1	Bands 2, 3 or 4
	Names	Majority of names sensible (easier maintenance)
	Forms	<ul style="list-style-type: none"> • Mostly user friendly (do not need all of these but a very good attempt): <ul style="list-style-type: none"> ○ titles relevant to purpose ○ some data input aids eg asterisks, instructions and some appropriate combo boxes for selection, though may not have them all ○ field widths fully sensible ○ will include most calculated fields (not looking at the calculations themselves) ○ will include nearly all generated fields and all used will be disabled ○ grouping and alignment good ○ house style exists but may be slight inconsistencies ○ fields present for some extra information requested in task eg customer information
	Queries	<ul style="list-style-type: none"> • Attempt at naming generated/calculated fields • User friendly input messages for parameters
	Report	<ul style="list-style-type: none"> • Reflects purpose • Grouping correct • Customisation good • Layout mainly good
4	Trait 1	Band 3 or 4
	Names	Names of forms, queries and report sensible (maintenance easy).
	Forms	<ul style="list-style-type: none"> • Are very user friendly: <ul style="list-style-type: none"> ○ relevant titles ○ good data input aids including being able to select from combo boxes where their use would be appropriate, asterisks, instructions etc ○ all field widths sensible ○ all generated fields disabled ○ grouping alignment fully fit for purpose ○ appropriate house style used throughout ○ will include all calculated fields (not looking at the calculations themselves) ○ fields present for the extra information requested in task eg customer information will show after item selected
	Queries	<ul style="list-style-type: none"> • Named generated/calculated fields • User friendly input messages for parameters
	Report	<ul style="list-style-type: none"> • Reflects purpose (what they were asked to do in the paper) • If grouping has been applied then it must be correct • Calculations in report header or footer if no grouping applied / if grouping applied, calculations in customer grouping header or footer and in report header or footer • Customisation and layout very good

Trait 4

This is all about validation and automation.

Menu

- Opens relevant forms, queries and report

Forms Opening

- Would open ready for data entry. For example:
 - data entry mode set to Add
 - code to move to a new record
 - macro to move to a new record
 - uses an unbound form

Primary Keys

- CustomerID/SeatSaleID generated automatically. For example:
 - AutoNumber used (have included screenprint from Activity 2 or can see 'New' in form view)
 - DMax, Max
 - If using unbound form must see evidence that the generated ID would be stored in the CustomerID/SaleID field
 - any appropriate method that would work

Saving Records

- Save button would:
 - cancel save if record is invalid and display suitable error message(s)
 - save a valid record, display a save message and move to a new record ready
 - if bound form used, must be confident the code/macro would save the record
 - if unbound form used, must see how the save would take place eg append query in full and running the query in the code/macro

Seat form

- Customer information appears after customer selected, event information after event selected, seat sale information after seat type selected
- Form calculations:
 - correct calculation for total cost of adult seats
 - correct calculation for total cost of child seats (10% cheaper than adult seat)
 - correct calculation for overall cost
- Number of seats:
 - cannot have more than 56 non-table seats
 - cannot have more than 46 table seats
 - must be at least 1 adult seat bought
 - cannot be more than 8 seats bought

Band	Description	
1	Scenario not considered	
	Table validation is the only validation and error checking used. No automation present in terms of customer and seat sale form	
2	Tries to take scenario into account but is not entirely suitable. Menu may be missing. Expect some suitable code for at least one of the three forms. Can be wizard based so long as see code/macro	
	Customer	<ul style="list-style-type: none"> • May only be able to see some form of automation of save process but: <ul style="list-style-type: none"> ○ cannot determine fully what happens when save button is pressed (eg if using append query, append query missing/truncated, has not shown macro code or VBA code or code is not fully correct etc) ○ could not be sure the save would cancel if save should not take place ○ could not be sure customer data would save in the correct table
	Seat Sales	<ul style="list-style-type: none"> • May only be able to see see some form of automation of save process but: <ul style="list-style-type: none"> ○ cannot determine fully what happens when save button pressed (eg if using append query, append query missing, has not shown macro code or VBA code)
3	A decent attempt at menu, customer and sales form	
	Customer	<ul style="list-style-type: none"> • Should open ready for data entry • Only valid records would save and into the correct table. Use of good error messages for invalid records. Save message or clearing form would occur
	Seat Sales	<ul style="list-style-type: none"> • Should open ready for data entry • Some extra information requested in task eg customer information will show after item selected • Some calculations will be accurate • Will take into account at least 1 adult ticket must be purchased and no more than 8 tickets can be purchased
4	A very good attempt at automating menu, customer and sale forms	
	Customer	<ul style="list-style-type: none"> • Will open for data entry • CustomerID will be automatically generated • Only valid records would save and into the correct table. Use of good error messages for invalid records. Save message and clearing form would occur
	Seat Sales	<ul style="list-style-type: none"> • Will open for data entry • SaleID will be automatically generated • Extra information requested in task eg customer information will show after item selected • Majority of calculations correct • Will take into account at least 1 adult ticket must be purchased and no more than 8 tickets can be purchased

			<ul style="list-style-type: none"> • Very top of the band - Take into account cannot have more than 56 non-table seats and cannot have more than 46 table seats.
Trait 5	Automatically calculated in examiner record. It is the average of the bands awarded for traits 2 to 4.		

Activity 4 – Testing

How examiners approach marking this activity

Types of Test

Customer Form N = 1,4 R = 2,3
 Seat Sale Form N= 1,4,5,6 X=2,3

Band 1	<p>Testing will be narrow</p> <ul style="list-style-type: none"> • Test data limited or incorrect • Type of test may be missing or incorrect • Expected results limited or incorrect • Will be hard to prove database works • Actual results may be missing or will not show the database working • Errors may not be shown or comments may be wrong
Band 2	<p>Testing will include some good tests that prove database works in some cases</p> <ul style="list-style-type: none"> • Some types of test correct • Some test data detailed • Some expected results detailed • Will be able to see some aspects of database working properly including some erroneous/extreme • Some actual results will be present and will be quite detailed • Errors may not be shown or comments may be wrong
Band 3	<p>Testing will have many good tests proving the database works</p> <ul style="list-style-type: none"> • Lower end (9-10) <ul style="list-style-type: none"> ○ Majority of types of test correct ○ Majority test data detailed ○ All expected results detailed ○ Can see database will only save valid customer (must have CustomerID, Forename, Surname, Address, Postcode, TelephoneNumber with good error messages etc) ○ Customer information will show when customer selected ○ Event information will show when event selected ○ Cost Per Seat will show for seat type selected ○ Calculations will be tested but may only test 1 adult and 0 child. • Higher End (11-12) <ul style="list-style-type: none"> ○ All types of test correct ○ All test data detailed ○ All expected results detailed ○ Can see database will only save valid customer with detailed errors where applicable ○ Can see database will only save valid rental <ul style="list-style-type: none"> ▪ Can see database will only save valid customer (must have CustomerID, Forename, Surname, Address, Postcode, TelephoneNumber with good error messages etc) ○ Customer information will show when customer selected ○ Event information will show when event selected ○ Cost Per Seat will show for seat type selected ○ Calculations will be tested using more than 1 adult and more than 1 child

Activity 5 - Evaluation

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

Band 1	<p>Activity 1 Limited technical language in terms of:</p> <ul style="list-style-type: none"> • normalisation • entities • keys • relationships <p>Activity 2 Limited technical language in terms of:</p> <ul style="list-style-type: none"> • There are two types of seat: seats without tables and seats with tables. • Will not realise that 8 seats is better validated on form or that they would need/would have had to implement table level validation <p>Activity 3</p> <ul style="list-style-type: none"> • Little of relevance to say about forms and how they cater for needs <p>General</p> <ul style="list-style-type: none"> • Will have little to say about changes or changes may not make sense
Band 2	<p>Activity 1 Some good use of technical language in terms of:</p> <ul style="list-style-type: none"> • normalisation • entities • keys • relationships <p>Activity 2 Some good technical language in terms of:</p> <ul style="list-style-type: none"> • There are two types of seat: seats without tables and seats with tables. • May not realise that 8 seats is better validated on form or that they would need/would have had to implement table level validation <p>Activity 3</p> <ul style="list-style-type: none"> • Customer form will be discussed quite well • Some relevance in terms of sale form. <p>General</p> <ul style="list-style-type: none"> • May have little to say about changes or changes may not make sense
Band 3	<p>Activity 1 Good use of technical language in terms of:</p> <ul style="list-style-type: none"> • normalisation • entities • keys • relationships <p>Activity 2 Good technical language in terms of:</p> <ul style="list-style-type: none"> • There are two types of seat: seats without tables and seats with tables. • Should realise that 8 seats is better validated on form or that they would need/have had to implement table level validation <p>Activity 3</p> <ul style="list-style-type: none"> • Customer form will be discussed well • Sale form will be discussed quite well <p>General</p> <ul style="list-style-type: none"> • Comments about changes will be relevant

Band 4**Activity 1**

Good use of technical language in terms of:

- normalisation
- entities
- keys
- relationships
- higher end *could* comment on weakness they perceive with data file.

Activity 2

Good technical language in terms of:

- There are two types of seat: seats without tables and seats with tables.
- Will realise that 8 seats is better validated on form or that they would need/have had to implement table level validation

Activity 3

- Customer form will be discussed well
- Sale form will be discussed well including:
 - Ensuring relevant information is shown
 - Calculations
 - Considering restrictions on seats

General

Comments about changes will be detailed and relevant