

Year 12 Information Processing and Technology

Assessment Item J

Information and Intelligent Systems 4 Relational Information Systems, Database Theory & Practice **Major Project**

Semester 4, 2009
Summative Assessment

Time: 6 weeks
No Teacher Input

Date Issued: 28 July

Date Due, Part A: Tue 11 August

Date Due, Part B: Wed 2 September

STUDENT NAME: _____

TEACHER: Mr. Longoria



RESULTS

CRITERIA	STANDARD
Knowledge	/35
Research & Development	/35

TASK:

You have been approached by an entrepreneur who is starting a new home-based, direct selling, cosmetics business. Your client wants a database application that will assist her with the management of her clients, appointments, inventory, and sales.

Using the Systems Development Life Cycle methodology, design and implement a Database Management System (DBMS) using MS Access. You are required to keep a daily log recording the date, activity and time spent in and out of class.

PART A

Requirements, Analysis, and Planning

In the project folder there are samples of the various forms, tools, and sales aids that your client uses. There are also tables of significant data that you can use to build elementary facts. Your teacher will act as the Universe of Discourse (UoD) expert. Direct all questions about business requirements, business details, data, and client needs to your teacher. As the UoD expert, your teacher knows everything about the business but little about software development.

Write a general Problem Description that describes and explains what needs to be done on this project. The “describes” is from the view point of your client. It describes what the client needs and desires. Include a brief overview of the business.

The “explains” is from the view point of the analyst (you). It explains the aims and objectives of the application. It is a Mission Statement on what is to be accomplished and what the DBMS will provide.

Next, perform a Needs Analysis to clarify the UoD and define the problem. Out of your Needs Analysis will come a Specifications Document. These three items: the Problem Description, the Mission Statement, and Specifications Document form the brief, the proposal, and the deliverables sections of the contract that you and your client are entering into. Your teacher needs to review this contract before you proceed.

Conceptualisation and Formalisation

❖ **Data Flow Diagram**

- Develop a data flow diagram showing the flow of data through the system.

❖ **Conceptual Schema Design (CSD)**

- identify the entities used,
- develop elementary sentences that describe the relationships in the UoD,
- convert these elementary sentences into a CSD,
- apply uniqueness and mandatory role constraints,
- apply derived entities,
- apply frequency constraints, and
- apply any other constraints you deem necessary.

❖ **Relational Schema**

- apply the Optimal Normal Form algorithm, and
- develop the relational schema.

Part “A” is the analysis and design part of the project. Your design documents should be of sufficient detail that a MS Access programmer could create your DBMS without further input from you.

Due date for this section is Tuesday the 11th of August. The minimum submission is your contract and the Relational Schema. All entities from the significant data tables must be accounted for in your Relational Schema.

Deliverables part “A”

- 1 Client Contract, which is comprised of:
 - Problem Description,
 - Mission Statement, and
 - Specifications document..
- 2 Data Flow Diagram.
- 3 Conceptual Schema.
- 4 Relational Schema.

PART B

Implementation and Testing

- Use Microsoft Access to develop your DBMS and populate it with the supplied data.
- Generate the required forms. Ensure that a screen print of all forms appears in your user manual. Include a listing of the SQL query for all forms in your evaluation report. Ensure that each form can be easily matched to its query (see your teacher for naming conventions that can accomplish this automatically).
- Create the required reports. Submit a copy of each report using sufficient data to show all features of your report such as subtotals, subsections, report totals, sorting, etc. Attach a listing of the SQL query used by the report. Attach a brief evaluation about the report that discusses the context in which the report will be used.

User Manual

Write a simple user manual that shows all the forms in your DBMS, how to perform the various tasks, and what the user needs to do to produce the desired reports.

Evaluation

Write a short report evaluating your DBMS. Comment on:

- How closely the system achieves the objectives.
- The ease of use.
- Possible alterations and improvements that can be made.

Deliverables part “B”

- 1 A CD with a copy of your DBMS burned to it.
- 2 A User Manual which will contain screen snapshots of all forms.
- 3 A copy of each report with its evaluation.
- 4 A listing of all SQL queries used. Queries used in report and form generation need to be clearly marked, or named, so that they can be married up with their respective report or form.
- 5 Your daily log.

Note: your database will be evaluated on how well it addresses the needs of the client.

Marking Scheme Part A - Summary

Aspect	A	B	C	D	E	K	R & D
Identification: Client Contract: Problem Description and Mission Statement	5	4	3	2	1	5	
Conceptualisation: Specifications	15	12	9	6	3		15
Conceptualisation: Data Flow Diagram	15	12	9	6	3		15
Formalisation: (CS) Conceptual Schemas	5	4	3	2	1	5	
Formalisation: (RS) Relational Schemas	10	8	6	4	2	10	
Totals						20	30

Marking Scheme Part B - Summary

Aspect	A	B	C	D	E	K	R & D
Forms.	15	12	9	6	3	15	
Reports	15	12	9	6	3	15	
MS Access	15	12	9	6	3		15
Evaluation	5	4	3	2	1		5
Totals						30	20

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Marking Scheme Part A

Aspect	A	B	C	D	E	Marks
Identification: Problem Description and Mission Statement	5	4	3	2	1	K
Problem Description and Mission Statement (the contract brief and proposal) give a clear and complete understanding of what needs to be achieved.	The reader will not need further input from the client. The problem and objectives are clear.	The reader will need some clarification from the client on a few details.	The reader is left with a general impression of what needs to be done. Assistance from the client will be needed to progress the project. .	The supplied material serves as an initial brief to the problem. The project cannot be started at this time.	An attempt to submit was made.	
Conceptualisation: Specifications	15	12	9	6	3	R & D
The Needs Analysis is detailed and exhaustive. The overall aims and specific objectives of the DBMS are clear, well stated, and complete.	The reader has a clear and complete understanding of what the DBMS will do.	The reader has a good picture of what the DBMS will do. Some minor clarifications are needed to ensure that all needs are met.	The reader has a general concept of what the DBMS will do. Further discussions are needed with the client.	The reader is left with many questions and is unsure if the DBMS will provide the required services.	An attempt to submit was made..	
Conceptualisation:	15	12	9	6	3	R & D

Aspect	A	B	C	D	E	Marks
Data Flow Diagram						
The Data Flow diagram accurately depicts the required entities, processes, flow of data, and data stores.	The interactions of data and processes are well documented at a sub-system level. The reader can see how entities and processes interact and produce the required results identified in the Needs Analysis.	Most of the entities and processes are documented. Most of the items in the Needs Analysis have been addressed. Processes and data interaction are diagrammed at a sub-system level.	The Data Flow diagram addresses only some of the data flows and processes. The diagrams stop at the Context or Parent level when a sub-system level is needed to fully understand the process.	Many processes and data entities are missing. Only a high level view of data and processes is provided. How the objectives of the Needs Analysis will be met is unclear.	An attempt to submit was made.	
Formalisation: (CS) Conceptual Schemas	5	4	3	2	1	K
The 6 steps of building CSs have been accurately followed. The CS accurately accounts for all entities in the significant data tables.	The CS has all of the required entities and accurately models the significant data. The model includes: <ul style="list-style-type: none"> ▪ Elementary facts ▪ CS diagram ▪ Derived facts ▪ Uniqueness constraints ▪ Mandatory roles ▪ Value constraints ▪ Frequency 	Most of the required entities have been modelled and most features of CS diagrams have been used.	The data model is incomplete. The model is missing important constraints needed for an accurate representation.	An attempt has been made to model data using CS diagrams. Only a few of the constructs needed for creating CS diagrams have been used.	An attempt to submit was made.	

Aspect	A	B	C	D	E	Marks
	constraints					
Formalisation: (RS) Relational Schemas	10	8	6	4	2	R & D
The ONF algorithm has been applied correctly to achieve the Relational Schema (RS). The mapping to the RS has been done accurately and completely. The RS can be fully relied on to build the MS Access tables.	Tables have brief but descriptive names (usually plural). Each entity has been mapped to a field with a brief descriptive name (usually singular). The primary key is written first and underlined. Optional columns are identified.	The naming convention is not consistent. The choice of Names could lead to confusion when used. Most entities are accounted for. The primary key has been identified.	The RS is sufficiently accurate to start building MS Access tables but reference to other sources (elementary facts, CS diagram, or significant data) will be needed to in order to complete the table creation.	An attempt has been made to create RS. MS Access tables cannot be reliably created.	An attempt to submit was made..	

Marking Scheme Part B

Aspect	A	B	C	D	E	Marks
<i>Forms.</i>	15	12	9	6	3	K
Forms address all of the needs of the Needs Analysis and fulfil the requirements of the Mission Statement.	Forms are easy to understand and pleasing to the eye. Fields are laid out in logical groups. Groups are visually separated with shaded boxes. The layout and operation is consistent across all forms. Fields with embedded functions are colour coded. Value constraints are catered for.	Forms are uniform in their construction. Location of data and functionality are not immediately obvious. Some study is required to learn how to use the forms.	Microsoft wizards were used to generate forms and then modified. The forms are not intuitive to use. The forms are not set out to maximize the convenience of the user.	Microsoft wizards were used to generate forms, very little customization was done.	An attempt to submit was made.	
<i>Reports</i>	15	12	9	6	3	K
Reports address all of the needs of the Needs Analysis and fulfil the requirements of the Mission Statement. Report Evaluation is included.	Reports are easy to understand and pleasing to the eye. Fields are laid out in logical groups. Multi-level sorting is used where needed. Sub-	Reports are generally easy to understand. Layout and style could be modified to improve readability. The evaluation report	Microsoft wizards were used to generate reports and then modified. Reports need study to understand.	Microsoft wizards were used to generate reports, very little customization was done. A description of the	An attempt to submit was made..	

Aspect	A	B	C	D	E	Marks
	<p>groups with subtotals are used where needed. Report totals are used where needed.</p> <p>The evaluation report gives a complete understanding as to purpose of the report and the how, when, and why the report will be used.</p>	<p>gives a good description of the purpose of the report but there are a few points that need clarification.</p>	<p>The evaluation report gives a general idea of why the report was written but its use is unclear.</p>	<p>report has been given. The reader will have to study the report in order to understand its relevance to the running of the business.</p>		
MS Access	15	12	9	6	3	R & D
<p>DBMS fulfils all of the clients needs. All aspects of the Needs Analysis have been catered for.</p>	<p>The DBMS demonstrates an advanced knowledge of MS Access. Excellent use of many of the features of MS Access. The naming convention is clear and consistent. Fields in tables show thought in: naming, type, size, internal documentation, and embedded lookups (where appropriate).</p>	<p>The user only rarely needs to work at the query or table level. Most tasks are able to be done from the forms and menus. The use of the system is largely intuitive. Ease of Use has been well thought out. Many advanced features are used.</p>	<p>The user occasionally needs to do tasks at the query, table, or report level. Some practice and experimentation is needed to figure out how the system works. Wizards were occasionally used to build components.</p>	<p>The system appears to have been created largely with MS Access wizards. The user frequently has to drop out of the menu system and work at the design level. Only basic functions of MS Access have been used. Forms and reports are not easy on the eye.</p>	<p>An attempt to submit was made.</p>	

Aspect	A	B	C	D	E	Marks
	Queries show an advanced knowledge and skill. Forms, queries, and reports are integrated and work seamlessly. Macros and VB code are used to automate tasks. A Main Menu or Switch Board is used for the system overview. The Relationship tool is used to establish relationships between tables.					
<i>Evaluation</i>	5	4	3	2	1	R & D
The Mission Statement and the Needs Analyst are compared against the delivered product and an assessment is made on how well the DBMS achieves the goals of the project. Suggestions and improvements to the application are discussed. Ease of use is evaluated.	The evaluation is thorough and well written with no errors (excepting the occasional typo) in grammar, spelling, or writing. A title page and header and footers are used in the report. Excellent presentation.	The evaluation addresses most of the criteria and contains few errors in grammar, spelling, or writing. Good presentation.	The evaluation discusses the project and DBMS. Some insights are offered. The quantity of errors suggests that proof reading has not been rigorous. Presentation needs work.	The evaluation offers an opinion with little critical analysis. Many errors in writing.	An attempt to submit was made..	