Product assessment: Minor project — Information systems development (Year 11)

This sample has been compiled by the QSA to help teachers plan and develop assessment instruments for individual school settings. It demonstrates the following dimensions:

- Knowledge and application
- Analysis and synthesis
- Evaluation and communication

**Assessment instrument**

<table>
<thead>
<tr>
<th>Comments</th>
<th>Topic areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within a given context, the task requires:</td>
<td>- Relational information systems</td>
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<tr>
<td>- <strong>explaining and applying concepts and processes to an information technology problem</strong></td>
<td>- Human–computer interaction</td>
</tr>
<tr>
<td>- <strong>analysing a problem, planning and developing a solution that satisfies the relevant constraints involved</strong></td>
<td>- Structured Query Language (SQL)</td>
</tr>
<tr>
<td>- providing supporting evidence in making judgments of products and processes and to communicate to an audience.</td>
<td><strong>Context</strong></td>
</tr>
</tbody>
</table>

Databases are used by businesses to store, process and query information. For example, major airlines in Australia use a database for bookings and car manufacturing companies access a global parts database when designing new models. As a result, skilled information technology (IT) professionals are required to build relational database information systems.

**Task**

Given the sales scenario identified below, use the information system development cycle to design, develop and evaluate an information system for a video game retailer. The following guidelines will assist you to document the project and provide an accompanying explanation to the owner of the business. This explanation of 800–1000 words is to include the problem identification and the conceptualisation, formalisation, implementation, testing and evaluation of the database design.

**Guidelines**

**Stage 1: Identification**

Scenario: XYZ Firm is a prominent video game retailer that is opening a new store within the local area. To assist with keeping track of all sales records, the firm requires an information system. This will need to record details about customers, products and sales.

Users of the system must be able to:

- contact customers to inform them about products and special sales
- use the system to find games based on customer preferences, e.g. first person shooter (FPS), roleplaying game (RPG)

Note that in a minor project, students may be provided with the basic identification required for the information system development cycle.

This task is designed for implementation in Year 11. However, the design principles within the assessment instrument can also be used for a Year 12 product assessment.
**Comments**

Students are required to:
- interpret and analyse the problems and the situation requiring information technology use
- apply set processes to solve a simple and familiar information technology problem
- design and develop solutions to an unrehearsed and complex information technology problem.

**Stage 2: Conceptualisation**
- As the developer, consider the project’s goals and specific objectives, including:
  - How will the system’s success be assessed?
  - What are the specific objectives of the project given the requirements of XYZ Firm (the client)?
  - Consider the interface of the system’s design in terms of human–computer interaction (HCI) issues.

**Stage 3: Formalisation**
- Define the universe of discourse. Consider the following:
  - conceptual schema: elementary sentences, draft of conceptual schema diagram, surplus entities to eliminate, uniqueness constraints and mandatory roles to add
  - relational schema: apply Optimal Normal Form (ONF), list tables
  - HCI design: the screens the user will interface with.

**Stage 4: Implementation**
- Tables
- Queries
- Forms
- Reports

### Possible queries

<table>
<thead>
<tr>
<th>Find the cheapest game in stock</th>
<th>List all the games in the $50–$90 range from highest to lowest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Find all the RPG games in stock and list them by highest price</td>
<td>Find all the games produced by companies with the letters “enix” in their name</td>
</tr>
<tr>
<td>Find all the adventure games produced by the company Namco</td>
<td>Find all the games above $50 that were sold on a particular date, and provide the customers’ names and phone numbers</td>
</tr>
<tr>
<td>Find all the customers who bought a game on a specific day</td>
<td>Find all the customers who bought a game in a three-month block</td>
</tr>
<tr>
<td>Find all the customers who have signed up for a VIP card</td>
<td>List all the customers who bought an M-rated FPS game, starting with the cheapest price</td>
</tr>
<tr>
<td>List all the customers by their last names</td>
<td>List all the customers of the current month and the producer of the games they have purchased in alphabetical order of producer then customer name</td>
</tr>
<tr>
<td>List all the phone numbers and customers who have not bought a game in a month</td>
<td>List all the sales made in a particular work week, starting with the highest priced. Also display the game name, style, customer name and address</td>
</tr>
</tbody>
</table>
### Comments

Students are required to:

- test processes and solutions, apply prescribed criteria, reasoning or evidence to draw conclusions and make recommendations

- construct documentation and present information to convey meaning using communication conventions.

### Syllabus references

- Sections 2 and 4
- Sections 6.5.3 and 6.8.1

### Stage 5: Testing

- Produce a test plan, carry this out and provide clear evidence of this being undertaken (include test data, expected results, actual results).

### Stage 6: Evaluation

- Assess the degree of success achieved in terms of being able to meet the project’s goal and specific objectives as stated originally.
- Make recommendations about future developments.

### Note:

- Documentation of each stage is to be evident within a personal activity log. This includes your planning, interpretation and analysis of problems, design of solutions, conclusions and recommendations.
- Your accompanying written explanation of 800–1000 words is to include the problem definition, rationale, assumptions and evaluation of process and product.

### Quality assurance

The assessment instrument has been evaluated to ensure that it is effective in terms of the provision of opportunities to:

- cover the dimensions identified as part of the task
- demonstrate the syllabus standards descriptors from Standard A to Standard E.

The evaluation of this task can be accessed at [www.qsa.qld.edu.au/11678.html#assessment](http://www.qsa.qld.edu.au/11678.html#assessment).
### Instrument-specific criteria and standards

<table>
<thead>
<tr>
<th>Standard A</th>
<th>Standard B</th>
<th>Standard C</th>
<th>Standard D</th>
<th>Standard E</th>
</tr>
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<tbody>
<tr>
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<tr>
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<tr>
<td>- detailed and effective application of set processes (fact-oriented design method) to solve simple and familiar problems.</td>
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<td>- application of set processes (fact-oriented design method) to solve simple or familiar problems.</td>
<td>- elements of set processes (fact-oriented design method) to partially solve simple or familiar problems.</td>
<td>- elements of set processes (fact-oriented design method) used.</td>
</tr>
<tr>
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<td>- detailed interpretation and analysis of problems and situations from multiple perspectives, i.e. of the client and developer</td>
<td>- interpretation and analysis of problems and situations</td>
<td>- analysis of problems and situations</td>
<td>- identification and classification of problems or situations</td>
<td>- restated problems or situations</td>
</tr>
<tr>
<td>- designed and developed effective solutions to unrehearsed or complex problems within XYZ Firm.</td>
<td>- designed and developed solutions for unrehearsed or complex problems within XYZ Firm.</td>
<td>- designed and developed partial solutions for unrehearsed or complex problems within XYZ Firm.</td>
<td>- designed or developed elements of solutions for unrehearsed or complex problems within XYZ Firm.</td>
<td>- superficial elements of unrehearsed or complex problems within XYZ Firm.</td>
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</tbody>
</table>
| The student work has the following characteristics:  
- comprehensive testing of processes and solutions, application of self-determined and prescribed criteria, reasoning and evidence to draw conclusions and make supported recommendations  
- comprehensive construction of documentation and fluent presentation of information using suitable communication conventions to convey meaning appropriate to the information system development cycle. | The student work has the following characteristics:  
- reliable testing of processes and solutions, application of prescribed criteria, reasoning and evidence to draw conclusions and make supported recommendations  
- effective construction of documentation and effective presentation of information using suitable communication conventions to convey meaning appropriate to the information system development cycle. | The student work has the following characteristics:  
- testing of process or solutions, application of prescribed criteria, reasoning or evidence to draw conclusions and make recommendations  
- construction of documentation and presentation of information using communication conventions to convey meaning. | The student work has the following characteristics:  
- elements of testing of processes or solutions to draw inferences  
- presentation of information using elements of communication conventions. | The student work has the following characteristics:  
- elements of testing  
- presentation of information. |

**Acknowledgments**

The QSA acknowledges the contribution of Toolooa State High School in the preparation of this document.