Achievement Standard

Subject Reference	Digital Technologies 3.41				
Title	Implement complex procedures to develop a relational database embedded in a specified digital outcome				
Level	3	**Credits**	6	**Assessment**	Internal
Subfield	Technology				
Domain	Digital Technologies				

"Developing a web-based database system for the

Pukerua Bay Toy library"

Achievement	Achievement with Merit	Achievement with Excellence
Implement complex procedures to develop a relational database embedded in a specified digital outcome.	Skilfully implement complex procedures to develop a relational database embedded in a specified digital outcome.	Efficiently implement complex procedures to develop a relational database embedded in a specified digital outcome.

Student Instructions

You will create a database management system for the Pukerua Bay Toy Library. You will develop a database of toys and memberships that can be used to generate a list of toys available, overdue toys and expiring memberships. The database will be hosted online so members can join and view toys online. A cash handling system is not required at this stage.

- This is an **individual** assessment task.
- You will have approximately six to eight weeks of in-class and out-of-class time to complete the task.

During this time you will also be introduced to the requirements of the Level 3 Digital Media Web assessments and be taught complex layout skills with CSS and other interactive features such as JQuery. You may wish to start implementing these into your outcome although your Digital Media web skills are not directly assessed at this point .

You will be assessed on how well (how skilfully and efficiently) you implement complex procedures to develop a relational database for the Toy library. You will need some basic HTML and CSS skills to customise input forms and tables to be able to pass this assessment. Your PHP programming can also count towards to the Digital Media standard.

- As you work on the task, keep a record of what you do, including results of testing.
- Always back up your HTDOCS folder to your H drive each lesson.
- Take regular dumps of the SQL data.

Scenario

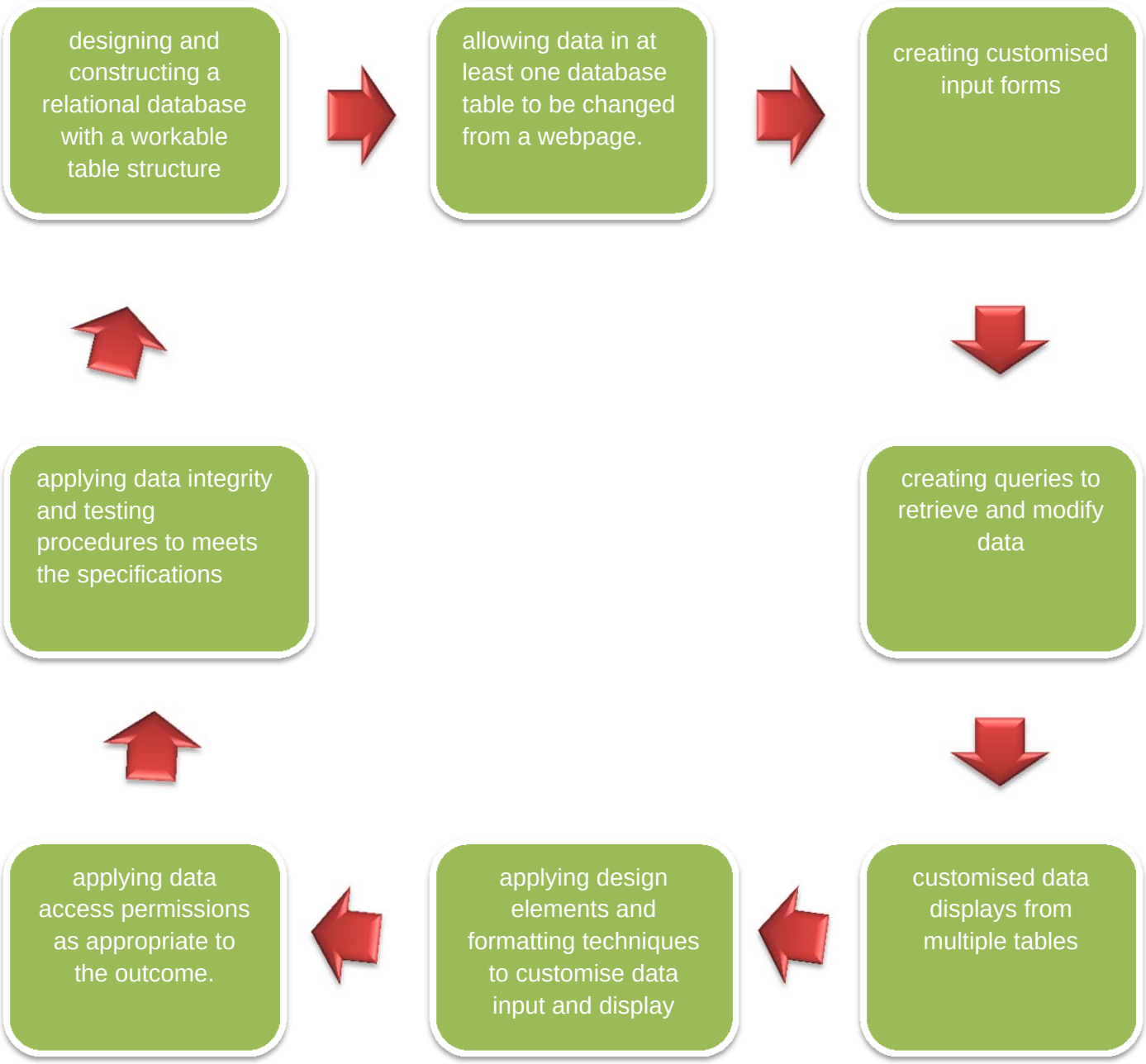
The toy library opens every Thursday in Pukerua Bay from 9:30 – 11:30. It costs $20 a year for membership. All the toys have an identifier engraved on them which is a mixture of letters and numbers. The toys are charged by the fortnight and the cost varies between 50c and $1. Some customers pay as they go and others load up $10 or $20 in advance and have a running balance. They have a range of toys for infants, toddlers and pre-schoolers including bikes, trucks, railway sets, jigsaws, dolls etc.

Pukerua Bay Toy Library is still using a card based system to organise its members and toys. This means customers do not know what toys are in stock when they arrive on Thursday mornings, the booking in and out process takes a while and often people don't bring toys back on time .

The toy library would also like to increase membership by having an online presence so members can join online, browse (and/or reserve) the toys available before visiting the toy library. They would like to capture a range of contact details from customers when they join online so they can be easily contacted to send reminders, newsletters etc

Specifications

- **Customers be able to:**
  - Join the Toy Library online and provide a range of contact details [4]
  - Search for toys online
    - They can search for toys in categories [6]
      - *Ideally search for specific toys using a search box*
    - Customers can clearly see what toys are out on loan and when they are due for return/will next be available [1, 2]
      - *A reservation system is desirable even if it is simply emailing the toy library to request a toy to be booked out the next Thursday.*
- **Only volunteers from a web interface are able to:**
  - Book toys in and out to customers. [1, 5]
  - Run a query at the start of Thursday mornings that displays all the toys that are due back that Thursday.
    - The list should clearly show the toy, the customer and a contact detail. [2]
    - The record should easily be editable to update the status to "Available". [3]
    - The status for all toys not returned at the end of session should be changed to "Overdue" for all the toys. [3]
      - *An automated reminder system is desirable although not essential for the pending return/overdue toys.*
- **The toy library manager using the PHPMyadmin or Web interface can:**
  - Update customer details such as contact details, annual subscription (owing or paid) and current balance.
  - Add new toys when they arrive.
  - Delete old toys that have broken.
- **The database must:**
  - include data access permissions for staff [8]
  - be robust and have been thoroughly tested [7]
  - have a user-friendly format for staff. [6]


designing and constructing a relational database with a workable table structure
allowing data in at least one database table to be changed from a webpage.
creating customised input forms
creating queries to retrieve and modify data
customised data displays from multiple tables
applying design elements and formatting techniques to customise data input and display
applying data access permissions as appropriate to the outcome.
applying data integrity and testing procedures to meets the specifications

Assessment schedule

Achieved	Merit	Excellent
Implement complex procedures to develop a relational database embedded in a specified digital outcome involves:	*Skilfully implement complex procedures to develop a relational database embedded in a specified digital outcome* involves:	*Efficiently implement complex procedures to develop a relational database embedded in a specified digital outcome* involves:
1. designing and constructing a relational database with a workable table structure 2. customised data displays from multiple tables (for example, reports, PDFs, webpages, program interfaces). 3. creating queries to retrieve and modify data 4. creating customised input forms 5. allowing data in **at least one** database table to be changed from a webpage. 6. applying design elements and formatting techniques to customise data input and display 7. applying data integrity and testing procedures to ensure the outcome meets the specifications 8. applying data access permissions as appropriate to the outcome.	• showing accuracy in designing and constructing the table structure, applying design elements, techniques and procedures • showing independence with regard to decision making when producing the outcome.	• designing and constructing a database with a well-organised table structure (e.g. elimination of redundant data, effective data validation, effective use of data properties) • producing the outcome in a manner that economises the use of resources (e.g. optimisation of data input, and effective use of shortcuts such as macros and buttons).

Develop your database

Independently develop a plan for your database to meet the specifications in Student Resource A. The relational database design plan includes the table structure, interface design, and a plan for linking data between applications.

The database needs to be developed with a well-organised table structure and in a way that produces the outcome that economises the use of resources.

Your teacher will provide a list of toys and customers if needed.

Test your database as you develop it. Your teacher will provide you with some suggestions on how to do this.

Final submission

When you have finished your database and thoroughly tested it, save the final version of your outcome onto the class server.

In your clear file or online you will need to submit.

- Any design/planning work.
- A print screen of all the tables in your database (both from structure and browse view) with suitable records
- A print screen of the security area showing the various slevels of security in SQL.
- A print screen of the new member form.
- A print screen of a search for toys and the relevant status of the toy e.g. Available, On Loan , Overdue
- A print screen showing which toys are due back that Thursday.
- Your record (log) of what you did and what happened at each stage
- any other documents that you created as you developed your final outcome.

Achieved – Make (with some guidance)

"With some guidance" means the teacher (or peers) may:

- respond to student-initiated requests for assistance – for example, where to find suitable material or what tool to use
- sometimes prompt the student to – for example, consider other options, think about the wisdom of a choice or reread the brief.

The teacher (or peers) may **NOT**, however:

make any decisions for a student
assist a student in any hands-on way (do any part of the project for them)
respond to frequent questions or requests for step-by-step guidance.

Merit – Make "with independence and accuracy"

"With independence" means the student:

- owns the practice (acts as if responsibility for achieving a quality outcome sits with them)
- plans effectively, thinks ahead, is well organised, self starting, and self managing
- does their own decision-making
- books any equipment or machines they need in a timely fashion
- purchases and/or brings the required materials in timely fashion
- stores their work carefully so that it is easily retrieved at the start of the next period
- carries out appropriate checking and testing and takes corrective actions as necessary
- recognises and deals with issues promptly instead of allowing them to blow the timeline
- is always able to describe what they are doing and why, and describe where their project is up to.

It does **NOT** mean that the student:

- is unable to ask for help with technical or safety issues (for example, faulty equipment)
- is responsible for the consequences of inadequate project storage facilities
- is responsible for supplying resources that the school should be providing.

Economy

Economy of time relates to personal organisation.

- Do students look after their resources between periods so that they can quickly pick up where they left off?
- Do they spend time wandering and chatting to classmates?
- Do they find something to go on with if the machine they need is in use or out of order?
- Do they think before they act and so avoid time-consuming undoing and redoing?

Economy of effort is about working efficiently. It is a function of knowledge, thinking, planning, and skill.

- Does the student know what to do and get on and do it, or do they rely on trial and error?
- Do they use data from testing to guide next practice?
- Do they use the correct tool for the task?

Economy of resources is about minimising the use of materials (paper, ink) and raw data.

- For example compressing files or using jpegs so that they are efficient sizes.

Economy of time, effort, and resources are often linked. For example, choosing the correct tool will save time and effort and minimise wastage.