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**Internal Assessment Resource**

**Digital Technologies & Hangarau Matihiko Level 3**

This resource supports assessment against Achievement Standard 919021

**Standard title:** Use complex techniques to develop a database

**Credits:**  4

**Resource title:** Lost and Found

**Resource reference:**  Digital Technologies & Hangarau Matihiko 3.3A

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| This resource:   * Clarifies the requirements of the achievement standard * Supports good assessment practice * Should be subjected to the school’s usual assessment quality assurance process * Should be modified to make the context relevant to students in their school/kura environment and ensure that submitted evidence is authentic |

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| Date version published by Ministry of Education | December 2018 Version 1  To support internal assessment from 2019 |
| Authenticity of evidence | Teachers/kaiako must manage authenticity for any assessment from a public source, because students may have access to the assessment schedule or student exemplar material.  Using this assessment resource without modification may mean that students’ work is not authentic. The teacher may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Achievement Standard 91902 is derived from both *The New Zealand Curriculum* and *Te* *Marautanga o Aotearoa.*

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**Teacher/Kaiako guidelines**

The following guidelines are supplied to enable teachers/kaiako to carry out valid and consistent assessment using this internal assessment resource.

Teachers/kaiako need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing students/ākonga against it.

**Context/Te Horopaki**

The assessment activity requires students to use complex techniques to create a refined relational database with a web interface to allow students (and teachers) to report found items and locate items that they have lost at school.

Note: The web page interface component will be assessed for its ability to manage and present the data effectively. This could be assessed as part of larger website activity for evidence of AS91903 *Use complex techniques to develop a digital media outcome.*

Teachers are encouraged to edit this default task to make it suitable for their student community.

**Conditions/Ngā Tikanga**

It is recommended that students should have at least two identified checkpoints with their teacher as they work through this assessment activity to ensure they have an opportunity to ask questions and gather feedback.

Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>

**Resource requirements/Ngā Rauemi**

Students will need access to the web, digital devices and a database hosting environment (e.g. XAMPP).

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**Student/Akonga instructions**

**Introduction/Kupu Arataki**

This assessment activity requires you to design the structure of the data and create a relational database linked to a web interface for managing and presenting the data. The purpose of the database is to allow students and teachers to log, and search for, lost and found items around the school.

You are going to be assessed on how successfully you:

* apply complex techniques to logically structure, organise and query the data
* use efficient tools and techniques while producing your database
* demonstrate iterative improvement throughout the design, development and testing process, to refine and improve the quality of your database outcome
* present data effectively for the purpose and end users through the web interface
* address relevant implications (e.g. functionality, usability, security).

Teacher note: Insert due dates and timeframes

**Task/Hei Mahi**

1. Design the structure of the data and create a database which allows students and teachers to log ‘lost and found’ items.
2. The database must include the following functionality:

* Any user should be able to add an item to the database and edit their own entries.
* Only those with admin access should be able to delete or edit any entry other than their own database entries.
* The database needs to be easy to search based on key fields (see below).
* Once an item has been found or claimed, it is marked as such. Administrators can later on inspect the database to find out things like who lost the most items, where items were lost, how long things went missing for.

**The web interface must:**

* Allow users to create a user identity and add items to the database.
* Ensure that users can’t add obviously incorrect data (perform some data validation).
* Allow users to search the database for:
  + Specific items (by name/part of a name)
  + Date that the item was lost/found (this could be a date range)
  + Category (where results are sorted alphabetically)
  + Value of item (where value can be more than/less than, or equal to a given amount).
* Allow users to update their own entries (when they recover a previously lost item or the owner of a found item claims the item).
* Allow admins to:
  + edit and delete items from the database
  + search for items that are older than 6 months so that unclaimed items can be donated to charity and deleted or archived from the database as appropriate.
* Present the data appropriately for the task and the end users.

1. You also need to provide documentation showing:
   * **Purpose and End-Users.** Describe the purpose of your database, who your end users are and how that will affect your design decisions regarding both the structure and interface.
   * **Web interface** **design**. This would generally include wire frames showing the layout for
     + the form(s) used to input data and delete items
     + the forms used to search for objects
     + the required admin forms
     + the page showing the results of a successful search.
   * **Designing the structure of the data**.

Provide:

* + - an analysis of the data requirements of your chosen context, to help you decide upon appropriate fields, tables and data types
    - a description of the table/s and data types used
    - a diagram showing how the tables are linked together (i.e. a UML diagram or similar), and a second diagram showing how the pages of the site/database are related
    - a list of queries/features to be implemented with test data for each query (i.e. how will you ensure that the query/feature works correctly?).
  + **Relevant Implications**. There are a range of implications that are relevant to your outcome. You need to provide evidence of how you have identified and addressed these in the process of developing the database and web interface. For example:
    - Is your web interface accessible; via multiple devices or screen sizes.
    - Does your database address functionality;
      * items are displayed correctly, relevant categories can be queried
      * items added and deleted easily.
    - Is your interface readable and usable;
      * proofing of spelling
      * grammar
      * appropriate font sizes and colour contrast
      * buttons, menus are intuitive.
* **Database Refinement**. During the development of the database and interface, you will be expected to apply ongoing trialling and testing procedures to iteratively improve the quality and functionality of the database, throughout the design, development and testing of the database and web interface. Ensure that the data is logically structured, organised and queried.

You should be testing to ensure you have addressed the implications that you identified above and for the required functionality:

* + - the data input/delete form(s) works successfully and updates the database
    - error messages appear when users attempt to enter invalid data
    - the various queries work as expected and display the correct data for the end users
    - permissions work as intended.

You should include ‘before’ and ‘after’ screenshots with an explanation what you did and why, and how this improved the quality and functionality of the database.

* + Testing of the final outcome may include screenshots with a table of what has been tested or a screencast with an explanation showing that the database and interface have been tested and works as expected. You should provide annotations to explain what is being shown in the screenshots or screencast.

**Assessment schedule/Mahere Aromatawai: Digital Technologies & Hangarau Matihiko 91902 – Lost and Found**

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| **Evidence/Judgements for Achievement/Paetae** | **Evidence/Judgements for Achievement with Merit/Kaiaka** | **Evidence/Judgements for Achievement with Excellence/Kairangi** |
| Use complex techniques to develop a database.  The student has:   * designed the structure of the database * used appropriate tools and techniques to organise, query and present data for a purpose and end users   **For example (partial evidence)**  They have:   * a database plan which includes at least two linked tables, shows the structure of the tables, shows the designs for the interfaces and a plan for linking the tables * used appropriate data types and data formatting * written a custom query to filter and/or sort data * created a form which allows users to add data to the database via the website * allowed different levels of authorised users to add, edit and delete information in the database.   The student has:   * applied appropriate data integrity and testing procedures   **For example (partial evidence)**   * data is validated before it is added to the database to prevent obviously invalid material from being inserted (e.g. blank records) * evidence of testing has been supplied showing that adding material to the database works correctly and that the various queries return the expected results * a password is required to access the admin area – if the incorrect password/username is entered, access to that area is denied (i.e. database has appropriate permissions).   The student has:   * explained relevant implications   **For example (partial evidence)**  The student has explained why:   * copyright/IP need to be honoured * the database/website needs to be easy to use * the information needs to be accessible (e.g. works on various screen sizes) * the database needs to be secure.   *The examples above are indicative samples only* | Use complex techniques to develop an informed database.  The student has:   * used information from testing procedures to improve the quality of the database * structured, organised and queried the data logically   **For example (partial evidence):**  The student has attempted to remove redundant data from the database.  The student has asked a volunteer to test the website/database to ensure that they can search for the items, enter and correct their data. They have made improvements/changes based on this testing.  The student has tested the website/database with the Admin person to ensure they can log on and delete/edit database entries.  The database output is displayed in a logical order that is easy to read and understand.  The queries make it easy to find items in the database both for users looking for lost items and for admins who might want to delete/edit a given item.  Students supply narrated video or annotated screen shots demonstrating how they logically structured, organised and queried the data.  *The examples above are indicative samples only* | Use complex techniques to develop a refined database.  The student has:   * evidence of iterative improvement throughout the design, development and testing process   **For example (partial evidence):**  They improved the database structure and design following feedback on trial designs.  They used results from trialling and testing to improve the functionality and reliability of the database.  For instance:   * they modified the input form to make it easier to enter data after testing showed that users made errors * they improved the query results after trialling and testing to make them easier to read and understand * after testing showed some problems, they made it easier for users and admins to easily find and use the search bar * they modified the structure of the tables to make the most common queries run more efficiently.   The database has minimal redundant data.  The student has:   * used efficient tools and techniques in the outcome’s production   **Fo**r **example (partial evidence):**  They planned the structure of the database and wire framed the interface before developing the outcome. They applied version control methods. Their testing was planned and systematic, not trial and error.  The student has used “includes” to make efficient use of PHP scripts.  The student created relationship diagrams before implementing the table structure.  The student created queries that use input parameters so that scripts do not have to be duplicated.  The student has:   * presented data effectively for the purpose and end users   **For example (partial evidence):**  They ensured that the data was presented in such a way that it was able to be effectively analysed and searched (e.g. drop-down lists where appropriate, check boxes) and easily understood. There are very few grammatical or typographical errors. The layout demonstrates effective application of design principles.  *The examples above are indicative samples only* |

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the achievement standard