MIDDLETON GRANGE SCHOOL

COVER SHEET

FOR EVERY INTERNAL ACHIEVEMENT STANDARD OR UNIT STANDARD

(This cover sheet must be attached to your submitted work)

Subject *Digital Technologies: Computer Science*

Achievement Standard/Unit Standard Number and Title *AS91892v1 (2.3)*

Use advanced techniques to develop a database (2.3)

Date Submitted _____

Name of Pupil _____

NOTE: If work is non-authentic in any aspect, no credit will be given regardless of the quality. This will apply to **ALL** pupils involved in the misconduct. There will be no opportunities given for further assessment in the current year.

I confirm that the work I have submitted is all my own work.

*Signature of pupil*_____

Achievement Standard No.	No Achievement	Achievement	Merit	Excellence
AS91892 v1 (2.3)				

The pupil must sign **one** of the boxes below within 2 school days of receiving this result.

I accept these grades.

*Pupil Signature:*_____ *Date:* _____

If you wish to appeal the grade after discussing with the teacher see the Appeals procedure in your pupil information book and sign below.

I intend to appeal this grade because.

_____

_____

_____

_____

_____

Pupil Signature: _____ *Date:* _____

Internal Assessment Resource

Achievement Standard: 91892v1 (2.3)

Standard title:

2.3 Use advanced techniques to develop a database

Credits: 4

Resource title: Te Awamutu College Police database

Student instructions

Introduction

Read through all of the information given to you. Make sure you understand what you are being asked to do and at what level you must perform to obtain Achievement, Achievement with Merit or Achievement with Excellence.

Conditions

- This is an individual assessment task.
- It is an open book assessment so you may reference the internet as well as any of the teaching and learning resources used in this topic.
- You must submit electronic copies of, not only the final outcome, but everything you used in your development of that outcome.
- The due date for completion of this assessment is: _____

Assessment Criteria

You will be assessed on how well you:

- describe the purpose of the outcome and address and justify the requirements of the end users
- design the structure of your data
- use feedback gained from user testing to improve the design
- use appropriate tools and advanced techniques to logically structure, organise, query and effectively present the supplied data for the specified purpose and the end user(s)
- apply appropriate data integrity and testing procedures and use these to continually improve the database solution though out the development and testing process
- explain and address implications relevant to the database and its development

Documentation

You must also record your progress, including evidence of your design, development, testing and refinement of the database. To do this you could keep a record of everything in an Evidence document. Screen shots are a useful way of capturing stages in the development.

You may choose to use the provided PowerPoint evidence template as the basis of your documentation.

Brief / Scenario

The Te Awamutu College Police need to put criminal offences into a database.
The database they require you to build is a prototype, so they only need you to enter the data in the following table to test that the database works.

Specifications

The database needs to keep track of criminal incidents.

- Dates to display as dd/mm/yyyy (short date in the database).
- All drop downs should be sorted alphabetically.
- You must have
    - at least 2 "required" fields,
    - at least 2 "No duplicates allowed" fields,
    - at least 1 validation rule or input mask, and
    - at least 2 default values.
- A **form** to allow entry of new offences.
  They have provided their logo to put on the form.
  They want a sub form that lists all offences associated with each offender.
- An "Open Cases **Report**" that lists all offenders and the cases which are open. The report needs to show the offender's name, offence date, type and location. It should be:
    - Grouped by offender's last name (and first name if possible but not essential).
    - Offenders names should stand out clearly (as they will cut the report up and hand out to each probation officer)
    - Sort cases by date of offence, with the oldest cases the top.
- The form and report should use a similar dark blue and orange **colour** to the logo.
- They need the following queries:
    - **Assault or Theft** : All offence types that have "assault" or "theft" in them, sorted by offence type.
    - **Female Firearms Male No Firearms** : Female offenders where firearms were involved, or male offenders where firearms were not involved. Sort the results by gender, then date of last offence.
    - **Age** : Calculate offender's ages using the formula. Sort result from Youngest to Oldest
      Int((Now()-[DateOfBirth]) /365.25)
    - **Enforcement Fee**: Show all offenders who have a penalty to pay for their unpaid fines. Multiply the amount of the fine by the penalty factor to get the total amount outstanding. Sort result from largest to smallest amount.
- **Report:**
  Open cases, sorted by date
- **Other Specifications**
  They require all files to be saved in one directory, and files need to be named so that anyone from their administration team can easily figure out which file is which.

Data Provided by Te Awamutu Police for the Database.

NOTE: The field headings shown below are on multiple lines so they can fit on this paper – you don't have to use multiple lines when setting up your table.

Offence Type	Date Of Offence	Offender's Last name	Offender's First name	Date of Birth	Gender	Location of Offence	Status of Offence	Firearm Involved	Penalty factor	Outstanding fines	Height (CMS)	Arresting officer
Vandalism	01-May-2021	Dal	Van	01-Jan-1980	M	Factory Rd	Closed	FALSE	.25	$780	175	Smith
Auto theft	03-May-2021	Steele	Karr	06-Jun-2005	F	Tawhiao St	Closed	TRUE	.25	$260	180	Jones
Threats to do bodily harm	05-May-2021	Killham	Will	08-Aug-2015	M	Alexandra St	Open	FALSE	0	$60	159	Brown
Simple assault	07-May-2021	Crooks	Luvvy	03-Mar-1990	F	Mutu St	Closed	FALSE	0	$580	188	Brown
Theft	09-May-2021	Banks	Robin	07-Jul-2010	F	North St	Open	TRUE	.15	$160	132	Jones
Drugs	11-May-2021	Metheney	Crystal	04-Apr-1995	F	College St	Open	FALSE	.10	$480	185	Maple
Aggravated assault	13-May-2021	Killham	Will	08-Aug-2015	M	Mutu St	Open	TRUE	0	$60	182	Smith
Disorderly conduct	15-May-2021	Purve	Ima	05-May-2000	M	Alexandra St	Open	FALSE	.20	$380	178	Brown
Harassment	17-May-2021	Purve	Ima	05-May-2000	M	Alexandra St	Open	FALSE	0	$380	178	Maple
Burglary	19-May-2021	Berry	Rob	02-Feb-1985	M	College St	Open	FALSE	.25	$680	167	Jones

Task 1 – Planning

Use the provided *2.3 Evidence Document* PowerPoint

1. Give your evidence PowerPoint an appropriate name
2. Then describe the purpose of the database in your Evidence document
3. Describe the requirements of the end users

Task 2 – Relevant implications

Explain any implications **relevant** to the database or its development. Check the implications in the list below that are relevant to the database that you have explained. You could do your explanation in a separate file, on paper, in a planning Journal, planning blog or blog etc.

Note: you should include **all** relevant implications you can think of. It is expected that you will include implications related to privacy/confidentiality, functionality and usability, as well as at least **two** other relevant implications.

These may include a selection from the following:

- social and cultural
- legal and ethical
- intellectual property
- privacy and/or confidentiality
- accessibility
- usability
- functionality
- aesthetics
- sustainability and future proofing
- end-user considerations
- health and safety

Task 3 – Design

Generate design ideas for form(s) and report(s)

Design the structure of the database

1. Create an initial design for each of your tables and add this to your Evidence document.
   You may use a template like the one provided
2. Use drawio (or paper) to come up with at least 2 different ideas for your data structure showing the fields and types of relationship (e.g. one-to-many) between tables. Add these to your evidence document.
3. Consider the following:
   a. What forms will you need to input the data?
   b. What reports will you need to build to display the data required by the end-users?
   c. What queries will be needed to generate the information required?

   Produce brief notes/sketches to record evidence of the things you considered in your design.
   Ask a friend to look over your ideas and consider any suggested improvements you could make to your design.

Task 4 – Create the database

Use appropriate tools and advanced techniques to organise, query and present data

You need to use ALL of the following advanced techniques

- Link data and related tables using queries and/or primary in foreign keys
- create at least two custom queries to filter and/or sort data
- use custom forms to add user input to the database

You also need to use at least ONE of the following advanced techniques

- use logical, mathematical and/or wild card operators
- customize the presentation of data
- set validation rules for data entry

Make sure you structure, organize and query the data in a logical way

Task 5 – Data integrity and testing

Apply appropriate data integrity (e.g., field length, data types and/or validation rules) and testing procedures to the database to ensure the following:

- Data is accurately entered and stored in the database
- Tables have been correctly linked (correct field links and relationship types)
- Any queries, sorts, filters and/or calculated fields produce expected and accurate results
- Database objects (e.g., reports) are legible and presented according to the end-user requirements
- Data integrity techniques are functioning as expected

Make sure you keep evidence (in your Evidence document) of all the above

MERIT

- Use the information you gathered from testing to improve the database.
- Address each of the implications explained in Task 2 that are relevant to the database and/or its development. To show you that you have addressed these implications you could add the explanation you did for Task 2 by indicating how you have addressed the implications. Put this in your Evidence document.

EXCELLENCE

Make sure the data from your database solution is presented effectively for the specified purpose in end user(s).

Make sure you keep evidence (in your Evidence document) of how you achieved the above, for example:

- trialing different ways to format and present the data, to check which is the most effective
- getting feedback from the end users.

Task 6 – Iterative improvement

EXCELLENCE

Continually improve your database throughout the process of its design, development, and testing.
Below are some examples:

Example 1

- Enter just a few records (enough to ensure efficient testing).
- Make any changes necessary.
- When you are happy that all data is being stored, filtered, queried and/or calculated correctly, import or enter the reminder of the records.
- Finally, check that all these records have been entered correctly.

Example 2

- Get feedback from your end user(s) or others on the database and the way in which data is organized, structured, queried, and presented.
- Use this feedback to make improvements to the database.
- Ask your user(s) for further feedback once improvements have been made, etc.

Important: Use your Evidence document to keep records of how you have tested and made improvements to your database on an ongoing basis. Keep records of everything! These records could be in the form of screenshots, images or notes, etc.