Gymea Technology High School
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9 Computing Technology

Task 1: Datasets and Databases

Due Date: 14 May 2024

Distributed: 9 Apr 2024 **Weighting:** 10%

Task Type: Practical Task **Syllabus Outcome/s:** CT5-DAT-02, CT5-SAF-01

Unit: Modelling networks and social connections

Task Description

Using networks and social networks, users are generating and interacting with data on a daily basis. Understanding the wide range of data that is publicly available and ways this data can be interpreted are key 21st century skills.

Scenario:

Gymea Technology High School has a weather station, monitoring range of inputs such as temperature, wind speed, rain rate and humidity. At the moment, the data is only available in a raw export as a CSV file. For this task, you will be looking at how we gather data from the Weather Station here at school, building and loading this data into a database, and then accessing, updating and generating reports based on this data, to allow for visual representation of the data and analysis of trends, patterns and relationships.

PART A - Access Database

You'll be using Microsoft Access to create the database, which will need to show the following:

- A number of entities (tables) with appropriate fields and data types
- Importation of external data
- A form that allows for manual data entry and correction
- Reports to show data, graphs and other visuals for interpreting the data including:
    - Monthly summary showing separate graphs/tables for each below:
        - Max and Min Temperatures displayed as a line graphs
        - Average Humidity for each month displayed as a scatter plot
        - Total Rainfall for each month displayed as a column graph
        - Max Wind Speed for each month displayed in a table
    - Daily summary showing separate graphs/tables for each below:
        - Max and Min Temperature for the selected day displayed as a column graph
        - Pressure readings throughout the day displayed as a line graph
        - Max Wind Speed for the day displayed as a figure
- SQL Queries that will be needed to extract the data required for the reports and form.

PART B - Presentation

Using the data and graphs from the Access Database completed in Part A, you need to select **ONE** measurement (max, min, humidity, wind speed etc), showcase the appropriate graph and discuss the trend/relationship between the data that is being shown in the graph selected. Your discussion should follow the PEEL format -

P - Identify the trend or relationship you're showcasing

E - Outline the evidence for this observation by referring back to the graph and data provided

E - Explain how this evidence supports your trend/relationship identified and why

L - Link your concluding statement back to your opening sentence

Glossary of Key Words

These verbs will provide an understanding of the detail needed to successfully complete this task:

- **Construct:** Make; build; put together items or arguments
- **Demonstrate:** Show by example
- **Describe:** Provide characteristics and features
- **Justify:** Support an argument or conclusion
- **Outline:** Sketch in general terms; indicate the main features of

Details of Submission

PART A - Access Database
The database should be created using **Microsoft Access** and saved with the **.accdb** file extension. It should then be submitted on Google Classroom by the due date.

PART B - Presentation
Your completed presentation (either .PPTX PowerPoint or Google Slides) should be submitted to the task on Google Classroom by the due date.

Teacher Feedback and Student Self-Reflection

The task will be returned to students within **14 days** of the due date. Information on how to improve will be provided through written teacher feedback and the marking criteria. Students can clarify or seek further feedback by speaking with their teacher.

Upon return of the task and teacher feedback, students will also be expected to complete the following self-reflection form, to provide them with the opportunity to reflect on the strength of their performance, as well as areas that have been identified to strengthen in future tasks - https://forms.gle/Ck4y1jid49x7sKfq7

How does this link to my learning?

This task will allow students to:

- Demonstrates knowledge and skills in using a database program (Microsoft Access) to manage and manipulate data
- Ability to visualise and report on data via a variety of methods including tables, graphs and formalised reports

Assessment Procedures

Students should be fully aware of the School Assessment Procedures for their year group. These were provided at the beginning of the school year and are available off the school website under the Learning menu for each year group.

Marking Criteria

Criteria	0 - 1	2	3	4	5
PART A - Access Database					
Data Transfer	Has made some attempt to transfer data into the database or student has not attempted the task	Data transferred is mostly accurate and entered into some of the appropriate fields & entities	Accurately transferred the data into the appropriate fields & entities in the relational database		
Data Entry Form	Created a data entry form using the automated tool that meets minimal scenario requirements or student has not attempted the task	Created a data entry form using some appropriate design elements that meet part of the scenario requirements	Created a data entry form using appropriate design elements that meet the scenario requirements		
Report	Created a report using the automated tool that meets minimal scenario requirements or student has not attempted the task	Created a report using some appropriate design elements that meet part of the scenario requirements	Created a report using appropriate design elements that meet the scenario requirements	Creates a number of reports to visualise the data in a variety of formats that meet the scenario requirements	Creates all required reports to visualise data using highly appropriate ways that meets all the requirements of the scenario.
Query	Identifies a feature of a query **OR** attempts a query or student has not attempted the task	Constructs a query that shows an understanding of SQL that meets most of the scenario requirements. Includes some features such as field names, tables, relational and logical operators	Constructs a query that shows a sound understanding of SQL. Includes all the features such as field names, tables, relational and logical operators	Constructs multiple queries that show a good sound understanding of SQL. Includes all the features such as field names, tables, relational and logical operators	Constructs multiple queries that show an excellent understanding of SQL including use of ORDER BY and LIMIT clauses. Queries include all other relevant features such as field names, tables, relational and logical operators

Criteria	0 - 1	2	3	4	5
PART B - Presentation					
Presentation	Limited presentation provided with no relation to the data or database evident	Presentation shows a related graph/data set from the database provided	Presentation shows a related graph/data set from the database provided, outlines the trend /relationship in some detail	Presentation shows a related graph/data set from the database provided with basic discussion around the trend /relationship evident	Presentation shows a related graph/data set from the database provided with detailed discussion around the trend /relationship evident
				TOTAL / 21	