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|  | ***North Lakes State College*** | | | | ***FA3***  *Formative Assessment* |
| **Student name:** | | | **Student number:** | |
| **Teacher name:** | | | | |
| **Date handed out:** | | | **Date due:** | |
| **Subject** | Digital Solutions | | | | |
| **Technique** | Project – Folio | | | | |
| **Unit** | 2: Application and data solutions | | | | |
| **Topic** | Topic 1: Data-driven problems and solution requirements  Topic 2: Data and programming techniques  Topic 3: Prototype data solutions | | | | |
| **Conditions** | | | | | |
| **Duration** | Up to 6 weeks | | | | |
| **Mode** | Multimodal | **Length** | * 6-8 A3 pages * 1-2 minute demonstration of the functionality of the prototype data solution by video recording * 1-3 A4 pages with annotations | | |
| **Individual/ group** | Individual | **Other** | * The reference list is not included in the page count * Schools implement authentication strategies that reflect QCAA guidelines | | |
| **Resources available** | Computers, internet and software including, but not limited to | | | | |
| **Checkpoints** | | | | | |
| * Term 3 Week 3 Friday 29th July 2022 Submit Part 1 Draft | | | | | |
| * Term 3 Week 5 Friday 12th August 2022: Submit Part 2 Draft plus Part 1 Draft if updated since Checkpoint 1 | | | | | |
| * Term 3 Week 7 Friday 26th August 2022: Final submission of all Parts. | | | | | |

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| **Context/Stimulus** |
| You have been hired by a new independent 6 theater cinema to create a new application that will allow guest and members to book and buy tickets to any session over the next 2 weeks.  You are to research, develop and create/program a prototype for ticket booking system (a Data Driven System). The prototype has to allow a customer to see tickets still available and to book tickets and to printout a ticket.  Refer to the competitor’s website at <https://www.eventcinemas.com.au> to assist in the research on type of options that can appear in the application. |

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| **Task** |
| You are to document the application of the problem-solving process in Digital Solutions in response to an identified real-world digital problem. It will require the application of a range of cognitive, technical and creative skills and theoretical understandings.  The response contains three parts that enable you to explore Data Driven Systems.   * Part 1: Research and Investigation   + You will research and investigate the elements needed for a data-driven solution.   + You will create documentation to analyse the interactivity (input/output), data models, algorithms and storage. * Part 2: **Prototype** of Data Driven System solution   + You will plan, develop and generate the interface and code to enable the user to insert, update, retrieve and delete data using an existing database via SQL. Prior to inserting the data, the system will validate the data being entered to ensure its integrity and reliability for use and storage. Retrieved data will be displayed to the user in an appropriate format, such as text or a symbolic visual form.   + The programming will be Python, html, css and the database will be provided using SQLite. * Part 3: Impact and Evaluation   + You will demonstrate functionality of your Prototype including comments, recommendations, etc.   + You will test and evaluate your Prototype against prescribed and self-determined criteria of accuracy and completeness for solution and data quality. |
| **To complete this task, you must:** |
| * recognise and describe   + elements needed for a data-driven solution including boundary or scope, environment constraints or limitations   + useability principles including accessibility, effectiveness, safety, utility and learnability   + system requirements, eg platforms, connections, hardware and data stores   + the data that is required from real-world sources, eg files, peripheral devices, online sources and users   + the prescribed and self-determined criteria to plan the user interface and programmed components of proposed solution * symbolise   + the links between external entities, data flow, processes and data storage in annotated context diagrams or data flow diagrams   + well-ordered and unambiguous algorithms using pseudocode for code that processes data for insertion into a database or manipulates or displays retrieved data, user interaction and data validation   + ideas for user interface and interconnecting systems using sketches, diagrams or mock-ups * analyse and identify   + problems associated with data insertion, including variations in data formats, data structures, validation rules and data requirements   + structure of data and data stores to reduce redundancy and ensure completeness, consistency and integrity for use and storage   + the prescribed and self-determined criteria to plan the user interface and programmed components of the Prototype * generate a prototype digital solution to access, manipulate and display data in an interactive media that   + enables data to be inserted, updated, retrieved and deleted from single and multiple tables   + validates the data to be entered for reliability to ensure that the data is valid for use and storage   + includes user interfaces that will enable the insertion, updating and selection of data from/to a database   + creates procedural code to control user interaction, data validation, execution of SQL queries, manipulation and display of query results through the user interface * evaluate against criteria relating to   + accuracy and efficiency of the coded components supported by a collection of annotated code segments in tables, diagrams and written paragraphs identifying errors and actions   + the prototype Data Driven System from a user-experience perspective supported by a collection of annotated images of the provided user interface components * make refinements and justified recommendations for current and future improvements. * communicate   + using digital technologies specific language   + using language conventions, textual features such as annotations, paragraphs and sentences, and referencing conventions to convey information and ideas about the problem and programmed digital solution   + using sketches or diagrams to present information and ideas about the problem and programmed digital solution   + using the modes of visual, written and spoken communication to present data and information about digital solution   + and clarify knowledge and understanding about the purpose of code statements using code comments |

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| **Authentication strategies** |
| * You will be provided class time for task completion. |
| * You will provide documentation of your progress at indicated checkpoints. |
| * Your teacher will collect and annotate a draft. |
| * Your teacher will conduct interviews or consultations as you develop the response. |
| * You must acknowledge all sources. |
| **Scaffolding** |
| Your response must include:   * 6-8 A3 pages that   + demonstrate all phases of the problem-solving process   + communicate knowledge and understanding by way of annotated sketches, diagrams, images or screenshots   + Mind Map/s, Data Flow Diagram/s, Entity-Relationship Diagram/s * a video   + 1 to 2 mins long   + In mp4 file format   + demonstrating the functionality of the prototype Data Driven System’s user interface and coded components * 1-3 A4 pages of code with annotations of analysis, synthesis and evaluation related to the code element or problem * headings that organise and communicate your thinking through the iterative phases of the problem-solving process in Digital Solutions * referencing of sources, using the school’s referencing style ie see Student Planner * written and visual features, as well as grammatically accurate language conventions, to communicate decision-making. |
| **Assessment Policy** |
| Understand and agree to meet the student responsibilities of the North Lakes State College Assessment Policy.  You will:   * Ensure all assessment tasks submitted are my original work. The submission of plagiarised work is a serious offence; work that is not my own and that is not referenced appropriately will not be marked. * Use the School Reference Policy: Harvard system. Examples can be found in the students’ Diary. * Complete drafts to a “final copy” standard before submitting to teachers for feedback on or before the draft due date. * Accept responsibility for collecting feedback from the classroom teacher. * Present two copies of the draft to teachers for each piece of assessment (at least one paper copy). * Submit all assessment tasks by the due date - this includes due dates for draft assessment. * Ensure all work is ‘backed up’ on a computer with a hard, written copy of the assessment tasks or saved in another location; (computer failure will not be accepted as a reasonable excuse for non- submission of assessment tasks). * Keep evidence of all electronic submission of drafts. (E.g. be able to print “sent email” of submission). |

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|  | ***North Lakes State College***  ***Digital Solutions***  ***Unit 2: Application and data solutions*** | | ***FA3***  *Formative Assessment* | | |
| **Student name:** | **Student number:** | | | |
| **Teacher name:** | | | | |
| **Date due:** | **Date Submitted:** | | | |
| **Criterion** | | | | **Result** | |
| **Retrieving and Comprehending -** Assessment Objectives 1, 2 | | | |  | |
| **Analysing -** Assessment Objectives 3, 4 | | | |  | |
| **Synthesising and Evaluating -** Assessment Objectives 5, 6, 7 | | | |  | |
| **Communicating -** Assessment Objective 8 | | | |  | |
| **Total** | | | |  | |
| **Assessment objectives – Retrieving and Comprehending** | | | | | |
| 1. recognise and describe programming elements, data and useability principles, and data management processes 2. symbolise and explain information, ideas and data flow relationships within and between systems related to programming problems | | | | | |
| * accurate and discriminating recognition and discerning description of key programming elements, data and useability principles, and data management processes. * adept symbolisation and discerning explanation of information, ideas and data flow relationships within and between systems related to programming problems. | | | | | A |
| * appropriate recognition and description of key programming elements, data and useability principles, and data management processes. * competent symbolisation and appropriate explanation of information, ideas and data flow relationships within and between systems related to programming problems. | | | | | B |
| * variable recognition and superficial description of key programming elements, data and useability principles, and data management processes * variable symbolisation and superficial explanation of information, ideas or data flow relationships within and between systems related to programming problems. | | | | | C |
| * does not satisfy any of the descriptors above. | | | | | E |
| **Assessment objectives – Analysing** | | | | | |
| 1. analyse problems and information related to the selected technology context 2. determine solution requirements and prescribed and self-determined criteria of a programming problem | | | | | |
| * insightful analysis of the problems and relevant information related to the selected technology context * astute determination of data driven system requirements, security strategy for data, code for the data interface program and essential prescribed and self-determined criteria. | | | | | A |
| * considered analysis of the data driven system problem and relevant information related to the selected technology context * logical determination of data driven system requirements, security strategy for data, code for the data interface program and effective prescribed and self-determined criteria. | | | | | B |
| * appropriate analysis of the data driven system problem and identification of information related to the selected technology context * reasonable determination of data driven system requirements, security strategy for data or code for the data interface program and some criteria. | | | | | C |
| * makes statements about aspects of problems and information related to the selected technology context * vague determination of some data driven system requirements, security strategy for data and some criteria. | | | | | D |
| * does not satisfy any of the descriptors above. | | | | | E |

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| **Assessment objectives – Synthesising and Evaluating** | |
| 1. synthesise information and ideas to determine possible digital solutions 2. generate user interface and programmed components of the prototype digital solution 3. evaluate impacts, components and solutions against criteria to make refinements and justified recommendations | |
| * coherent and logical synthesis of relevant information and ideas to determine selected data, algorithms and coded components of possible digital solutions * purposeful generation of efficient components of the prototype digital solution * critical evaluation of impacts, coded components and prototype digital solution against essential prescribed and self-determined criteria to make discerning refinements of code and astute recommendations justified by data. | A |
| * logical synthesis of relevant information and ideas to determine data, algorithms and coded components of possible digital solutions * effective generation of components of prototype digital solution * reasoned evaluation of impacts, coded components and prototype digital solution against effective criteria to make effective refinements of code and considered recommendations justified by data. | B |
| * simple synthesis of information or ideas to determine data, algorithms and coded components of possible digital solutions * adequate generation of components of the prototype digital solution * feasible evaluation of impacts, coded components and prototype digital solution against some criteria to make adequate refinements of code and fundamental recommendations justified by data. | C |
| * unclear combinations of information or ideas to determine data, algorithms or coded components of possible digital solutions * superficial evaluation of impacts, or prototype digital solution, against criteria. | D |
| * does not satisfy any of the descriptors above. | E |
| **Assessment objectives – Communicating** | |
| 8. make decisions about and use mode-appropriate features, language and conventions for particular purposes and contexts | |
| * discerning decision-making about, and fluent use of   + Written and visual features to communicate about a solution   + Language for a technical audience   + Grammatically accurate language structures   + Referencing and project conventions. | A  B |
| * Variable decision-making about, and inconsistent use of   + Written and visual features   + Suitable language   + Grammar and language structures   + Referencing or project conventions | C  D |
| * does not satisfy any of the descriptors above. | E |
| **Feedback** | |