# 

Mansfield State High School

Digital Solutions

FIA2

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| **Student name** |  |
| **Student number** |  |
| **Teacher** |  |
| **Issued** | Term 3, Week 1 Monday |
| **Due date** | Term 3, Week 8 Friday |

### Marking summary

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| --- | --- | --- | --- | --- |
| **Criterion** | **Marks allocated** | | **Provisional marks** | |
| Retrieving and comprehending | 8 |  | |
| Analysing | 5 |  | |
| Synthesising and evaluating | 8 |  | |
| Communicating | 4 |  | |
| **Overall** | **25** |  | |

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| Conditions |  |
| **Technique** | Project |
| **Unit Topic/s** | Unit 2: Application and data solutions  Topic 1: Data-driven problems and solution requirements  Topic 2: Data and programming techniques  Topic 3: Prototype data solutions |
| **Duration Mode / Length** | Source code with annotations:   * Written: 4–6 A4 pages   Documentation:   * Multimodal: 8–10 A3 pages   Demonstration of the functionality of the digital solution by video recording:   * Multimodal: 2–4 minutes |
| **Individual / group** | Individual |
| **Other** | Title and contents pages, reference list and appendixes are not included in the page count.  Students may use class time and their own time to develop a response. |

### Context

In Australia the average age of a gamer is 34 years old, 43% of gamers are aged 65 and over, 86% of parents play games with their children and 46% of players are female (Brand, 2017). Developing a successful user experience that incorporates a range of useability principles is increasingly important for the range of users that engage with online games.

Online gaming platforms often require participants to login so that their information can be stored on a central server. The details collected by different gaming sites range from a simple pseudonym and password to a wide range of details including date of birth, email contact and even credit card details. Australian Privacy Law requires that web applications that store personal information need to include functions to maintain personal data and security features that ensure that only authorised users are permitted to make changes to the personal data of others.

### Task

# In order to complete this task, you are required to modify a CRUD (create, read, update, delete) application that allows a user to Login, Signup and you must develop an additional component that stores data about the users video game library (game title, hours played, etc).

# The project will include the following assessable evidence:

* Introduction of your proposed prototype application
* Identify the user problem your digital solution will address from the User Personas provided
* Determine Prescribed and Self-Determined Criteria based on the user needs you identified in your Evaluation Table
* Recognise and describe the Useability Principles
* Develop a Mind Map exploring the problem including:
  + validation rules for input data and possible error messages
  + data privacy considerations for data collected from users
  + constraints/limitations of the project
  + data types
  + required data for Login/Signup process
* Develop a Data Flow Diagram to show the interrelationship between data and programmed components
* Develop a Data Dictionary that is inclusive of all tables, data types, constraints used for the prototype application
* Develop Algorithms for the processes in your Data Flow Diagram present them in an IPO chart
* Generate Wireframes of the User Interface including annotations identifying User Interface Components and Elements and Principles of Visual Communication
* Generate Mock-ups of the User Interface including annotations identifying where Useability Principles are incorporated
* Generate a coded prototype application that responds to the Technical Proposal and meets all Prescribed and Self-Determined Criteria
* Obtain User Feedback to make justified Recommendations to improve the prototype application
* Evaluate the generated prototype application against the Prescribed Criteria and Self-Determined Criteria
* Evaluate the Social, Economic and Personal Impacts of the prototype application
* Generate a Technical Demonstration

# A4 Sample Code

* annotated sample code for each component of the generated solution including:
  + HTML/CSS code for the user interface template
  + SQL statements used to select, insert, update and delete data from a MySQL database
  + Jinja commands used present data on a web page
  + Python code used to link the user interface to the database

# Technical Demonstration

* a technical demonstration of the generated solution including:
  + examples of how the solution responds to correct and incorrect user input
  + examples of how the solution presents data to the user
  + evidence that the solution interacts with the database to insert, update and delete data
  + evidence that all prescribed and self-determined criteria are met

### Checkpoints

Term 3 Week 5 (Friday 3pm): Draft

Term 3 Week 7 (Friday 3pm): Monitoring

Term 3 Week 8 (Friday 3pm): Final Submission

### Authentication strategies

* You will be provided class time for task completion.
* Your teacher will observe you completing work in class.
* You must acknowledge all sources.
* Your teacher will conduct interviews or consultations as you develop the response.

### Scaffolding

All sources must be referenced using the referencing style explained in your student handbook.

The following report conventions are expected:

* Your title page should include the name of the assessment task, your teacher, your name and the final submission date
* Headings should be used to identify the different parts of the assessment
* Printed and handwritten text should be legible and no smaller than 10 pt font. (black or dark blue text on a white background is preferred)
* All sketches and diagrams must be inserted in the document as a legible image
* All pages must be in the correct order and oriented correctly (no upside down or sideways pages)
* Annotated source code pages and A3 documentation should be combined into a single PDF file
* Source code with annotations 4 – 6 A4 pages
* Documentation 6 – 8 A3 pages

The video demonstration should:

* be in .MP4 format
* 2 – 4 minutes
* have a file size no greater than 500MB
* include clear audio voice overs
* be accompanied by speakers notes (PDF) (optional)

It is recommended that students use the list of assessable evidence outlined under the Task heading as a checklist when organising their response.

### Stimulus Technical Proposal

This is a technical proposal for a CRUD data interface that allows gamers to create an online account using their name and email address and to update their own personal information.

### Prescribed Criteria

The prototype digital solution must:

PC1. Requires a successful login before retrieving and displaying the users personal account information

PC2. Ensure data entered by the user is validated before it is added to the database

PC3. Meet all Data Requirements

PC4. Meet all User Interface Requirements

### User Personas

The user personas outlined below represent typical users of the digital solution.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User Profile Picture** | **Name** | **Education** | **Goals** | **Needs & Expectations** |
| C:\Users\ljste0\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\98D7D704.tmp | Cheryl | High School | Improve cognitive skills and maintain memory | I want to be able to store my gaming data  It needs to be simple |
| **Age** | **Occupation** | **Interests** | **Pain Points/Frustrations** |
| 73 | Retiree | Grand Children  Dogs  Gaming | I keep forgetting how much I play my games |
| **Location** | **User Problem Summary** | | |
| Brisbane, AUS | I am wanting to keep my cognitive skills sharp but also keep track of how many hours I play and what games I play so I can show my doctors | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **User Profile Picture** | **Name** | **Education** | **Goals** | **Needs & Expectations** |
| 5 Ways Married Couples Can Love a Single Man | Geoff | University | Beat every game 100% | Simple easy to use interface to quickly put my data in |
| **Age** | **Occupation** | **Interests** | **Pain Points/Frustrations** |
| 25 | Accountant | Being the best at different games  Getting all achievements | Not having my own datastore and have to navigate through a million different menus on each game to see how good I am |
| **Location** | **User Problem Summary** | | |
| Brisbane, AUS | Store achievements and completion rates | | |

### Component specifications

The prototype digital solution will include data, user and coded components.

# Data Requirements

The data interface must include:

1. The database must be able to store user details
2. The database must be able to be accessed/edited through HTTP requests
3. The database must be able to store game library data. E.g. Name, Rating, Purchase Date, Hours Played

# User Interface Requirements

The user interface must include:

1. The Hero/Landing page must have a Signup and Login button
2. The Signup button links to a Signup form
3. The Login button links to a Login form
4. The Signup and Login form must have validation rules
5. Once a successful Signup or Login has been completed it goes to the User Profile that displays the user information such as gamer tag, email, etc and allows to update and delete that information

# Code Requirements

An exemplar has been provided on Qlearn. Additional research may be required to meet all prescribed and self-determined Criteria. The prototype web application will be developed using:

* Python
* Flask
* SQLite3 or MySQL database
* Jinja2
* HTML
* CSS

# References

Brand, J. E., Todhunter, S. & Jervis, J. (2017). Digital Australia 2018. Eveleigh, NSW: IGEA

# Instrument-specific marking guide (FIA2): Project (25 marks)

**Criterion: Retrieving and comprehending**

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| --- | --- |
| **The student work has the following characteristics:** | **Marks** |
| * accurate and discriminating recognition and discerning description of relevant programming elements, user-interface components and useability principles * adept symbolisation and discerning explanation of algorithms and relevant programming information and ideas, data structures and interrelationships between user experiences and data of the digital prototype. | 7–8 |
| * accurate recognition and effective description of relevant programming elements, user-interface components and useability principles * methodical symbolisation and effective explanation of algorithms and relevant programming information and ideas, data structures and interrelationships between user experiences and data of the digital prototype. | 5–6 |
| * appropriate recognition and description of some programming elements, user-interface components and useability principles * competent symbolisation and appropriate explanation of algorithms and some information and ideas, and interrelationships between user experiences and data of the digital prototype. | 3–4 |
| * variable recognition and superficial description of programming elements, user-interface components or useability principles * variable symbolisation and superficial explanation of information, ideas or interrelationships. | 1–2 |
| * does not satisfy any of the descriptors above. | 0 |

**Criterion: Analysing**

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| --- | --- |
| **The student work has the following characteristics:** | **Marks** |
| * insightful analysis of the problem and relevant contextual information to identify the essential elements and features of user interface, data and programmed components and their relationships to the structure of the low-fidelity prototype digital solution * astute determination of the user interface, data, programmed and solution requirements of the digital solution and essential prescribed and self-determined criteria. | 4–5 |
| * appropriate analysis of the problem and contextual information to identify some elements and features of user interface, data and programmed components and their relationships to the structure of the low-fidelity prototype digital solution * reasonable determination of the user interface, data, programmed and solution requirements of the digital solution and some prescribed and self-determined criteria. | 2- 3 |
| * superficial analysis of the problem or partial information to identify aspects of elements or features of the low-fidelity prototype digital solution * vague determination of some solution requirements of the digital solution and some criteria. | 1–2 |
| * does not satisfy any of the descriptors above. | 0 |

**Criterion: Synthesising and evaluating**

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| **The student work has the following characteristics:** | **Marks** |
| * coherent and logical synthesis of relevant information and ideas to determine data elements, user interface and programmed components for a digital solution * purposeful generation of efficient user interface and programmed components of the digital solution * critical evaluation of impacts, user experience and coded components and the digital solution against essential prescribed and self-determined criteria to make discerning refinements and astute recommendations justified by data. | 7–8 |
| * logical synthesis of relevant information and ideas to determine data elements, user interface and programmed components for a digital solution * effective generation of user interface and programmed components of the digital solution * reasoned evaluation of impacts, user experience and coded components and the digital solution against effective prescribed and self-determined criteria to make effective refinements and considered recommendations justified by data. | 5–6 |
| * simple synthesis of information and ideas to determine data elements, user interface and programmed components for a digital solution * adequate generation of user interface and programmed components of the digital solution * feasible evaluation of impacts, user experience and coded components and the digital solution against some prescribed and self- determined criteria to make adequate refinements and fundamental recommendations justified by data. | 3–4 |
| * rudimentary synthesis of partial information or ideas to determine data elements, user interface or programmed components * partial generation of user interface and programmed components of the digital solution * superficial evaluation of impacts, user experience components or the solution against some criteria. | 1–2 |
| * does not satisfy any of the descriptors above. | 0 |

**Criterion: Communicating**

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| **The student work has the following characteristics:** | **Marks** |
| * 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. | 3–4 |
| * variable decision-making about, and inconsistent use of * written and visual features * suitable language * grammar and language structures * referencing or project conventions. | 1–2 |
| * does not satisfy any of the descriptors above. | 0 |