

Digital Solutions – Unit 1

FIA1 Assessment Instrument

Investigation – Technical Proposal (25%)

Unit Objectives

- UO1: Recognise and describe programming features and usability principles.
- UO2: Symbolise and explain information, ideas and interrelationships related to digital problems.
- UO3: Analyse problems and information related to a selected technology context.
- UO4: Determine user experience and programming requirements, and success criteria of a digital problem.
- UO5: Synthesise information and ideas to develop possible prototype digital solutions.
- UO6: Generate user interface and programmed components of the prototype digital solution.
- UO8: Make decisions about and use mode-appropriate features, language and conventions particular purposes and contexts.

Technology Context	Programming Language
Mobile application	Swift

**Brisbane State High School****Student name:****Student number:****Teacher name:****Date handed out:****Date due:**

Subject	Digital Solutions
Technique	Investigation – Technical Proposal
Unit	Creating with Code
Topic	Topic 1. Understanding Digital Problems Topic 2. User Experiences and Interfaces Topic 3. Algorithms and Programming Techniques Topic 4. Programmed Solutions

Assessment**Conditions****Duration** 4 Weeks – 13 lessons of class time allocated

Mode	Multimodal	Length	Multimodal Presentation up to 10 minutes. Including annotations up to 2000 words.
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Individual / group	Individual	Other	<ul style="list-style-type: none">The reference list is not included in the presentation time.Schools implement authentication strategies that reflect QCAA guidelines.
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Resources available	Computers, Internet Prototype tools – PowerPoint or Keynote Non- prototyping tools – Xmind, Microsoft Word
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Context

You have been asked by **FocusED**, an educational wellbeing technology company, to present a technical proposal for a **student focus and wellbeing companion app** compatible with the latest Apple Watch.

FocusED has identified that senior secondary students often struggle with **concentration, stress management, screen habits, and time awareness**, particularly during assessment periods. The company believes wearable technology is underutilised in helping students **understand their cognitive load and wellbeing patterns** throughout the school day.

Task

Prepare a technical proposal for the CEO of **FocusED** that offers an **innovative digital solution** to support student focus and wellbeing.

FocusED would like to develop an Apple Watch app that collects relevant sensor and user-input data to help students **reflect on focus levels, stress indicators, breaks, and daily routines**, and provide meaningful feedback.

The proposed Apple Watch app should:

- collect relevant data from the user and/or device sensors
- perform calculations or comparisons on that data
- present feedback that supports improved focus, wellbeing, or time management

You will present a **multimodal technical proposal** to your teacher, using communication appropriate for a **technical audience**.

Specifications

This task requires students to:

- recognise and describe
 - user-interface components
 - existing solutions to similar problems
- symbolise ideas for user interfaces using one or more constructed sketches, annotated diagrams, images or screenshots
- explain
 - interrelationships between user experiences
 - usability considerations
- analyse the problem to identify
 - scope of the problem
 - constraints and limitations
 - possible personal, social and economic impacts
 - possible solutions
 - programming and user-interface relationships
- analyse information to determine
 - user experience requirements from the user perspective
 - programming requirements from the developer perspective
 - success criteria
- synthesise information and ideas to develop the possible solutions for
 - the proposed solution
 - algorithmic components
- generate a low-fidelity (non-coded) prototype solution that demonstrates the proposed relationship between user interfaces.
- communicate information and ideas to inform a technical audience.

It is recommended that this task is designed so that students can develop a response in approximately 15 hours of class time.

Stimulus

<https://www.apple.com/au/watch/>
<https://www.timoapp.com/>
<https://developer.apple.com/design/human-interface-guidelines/designing-for-watchos>
<https://www.apple.com/au/watchos/>
<https://support.apple.com/en-au/HT204666>
<https://apps.apple.com/us/app/stress-monitor-for-watch/id1510429086>
<https://www.betterhealth.vic.gov.au/healthyliving/keeping-active>
<https://www.verywellfit.com/rating-of-perceived-exertion-scale-3119445>

Checkpoints

- Handout + 1 Week: Progress Check – Explore
- Handout + 2 Weeks: Progress Check - Develop
- Handout + 3 Weeks: Progress Check - Generate
- Handout + 4 Weeks: Final Submission

Assessment objective/s

Criterion	Marks Allocated	Result
Comprehending Objectives: 1, 2	5	
Analysing Objectives: 3, 4	7	
Synthesising Objective: 5	6	
Generating Objective: 6	5	
Communicating Objectives: 8	2	
Total	25	

Feedback

Authentication strategies

- Students will provide documentation of their progress at indicated checkpoints.
- The teacher will collect copies of the student response and monitor at key junctures.
- Students must acknowledge all sources
- Students must submit a declaration of authenticity.
- The teacher may conduct interviews after submission to clarify or explore aspects of the response.

Authenticity Statement

The technical proposal I have submitted is my own work. I acknowledge that if any doubt regarding its authenticity presents itself I must be able to provide a detailed explanation of my work. If I am unable to adequately answer questions, I will be referred to the HOD for plagiarism.

Student Name:

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Student Signature:

..... Date:

Scaffolding

Use the following headings in your response:

- Introduction (up to 1 minute)
- The user story (4 minutes)
- The proposed solution (4 minutes)
- Conclusion (up to 1 minute)

In regards to variables used in pseudocode and Swift:

- Assume sensors can be read using the variable format *sensorValue*
Example: Heart rate would become *heartRateValue*

The presentation of this investigation is multimodal. A multimodal presentation is the dynamic convergence of two or more communication modes within the same response and where all modes are attended to as part of meaning-making. Multimodal presentations can be delivered via different media or technologies. A variety of technologies are used to create or present the response. Replication of a written document into an electronic or digital format does not constitute a multimodal presentation.

Multimodal presentations are to be recorded and presented to the teacher electronically. In cases where a presentation cannot be recorded by the student it will be recorded by the teacher and presented to the class.

Instrument-specific marking guide (FIA1)

Comprehending	Marks
<p>AO1: Recognise and describe user-interface components and existing solutions.</p> <p>AO2: Symbolise user interfaces and explain ideas and interrelationships between user experiences.</p>	
<p>The student response has the following characteristics:</p>	
<ul style="list-style-type: none"> • Discerning recognition and description of <ul style="list-style-type: none"> - User-interface components - Existing solutions • Adept symbolisation of <ul style="list-style-type: none"> - User interfaces • Discerning explanation of <ul style="list-style-type: none"> - Interrelationships between proposed user experiences - Usability considerations 	4–5
<ul style="list-style-type: none"> • Adequate recognition and description of <ul style="list-style-type: none"> - User-interface components - Existing solutions • Competent symbolisation of <ul style="list-style-type: none"> - User interfaces • Adequate explanation of <ul style="list-style-type: none"> - Interrelationships between proposed user experiences - Usability considerations 	2–3
<ul style="list-style-type: none"> • Makes statements about features of <ul style="list-style-type: none"> - User-interface components - Existing solutions • Incomplete symbolisation of <ul style="list-style-type: none"> - User interfaces • Superficial explanation of <ul style="list-style-type: none"> - Interrelationships between proposed user experiences - Usability 	1
<ul style="list-style-type: none"> • The student response does not match any of the descriptors above. 	0

Analysing	Marks
AO3: Analyse the problem and information related to the selected technology context.	
AO4: Determine programming and user experience requirements of the identified problem and success criteria.	
The student response has the following characteristics:	
<ul style="list-style-type: none"> • Insightful analysis of the problem and contextual information to identify features and relationships of <ul style="list-style-type: none"> - Programming - User interface • Astute determination of <ul style="list-style-type: none"> - Programming requirements - User-experience requirements - Success criteria 	6–7
<ul style="list-style-type: none"> • Adequate analysis of the problem and contextual information to identify features and relationships of <ul style="list-style-type: none"> - Programming - User interface • Reasonable determination of <ul style="list-style-type: none"> - Programming requirements - User-experience requirements - Success criteria 	4–5
<ul style="list-style-type: none"> • Superficial analysis of the problem or information to identify some features or relationships of <ul style="list-style-type: none"> - Programming - User interface • Vague determination of <ul style="list-style-type: none"> - Programming requirements - User-experience requirements - Success criteria 	2–3
<ul style="list-style-type: none"> • Unclear analysis of the problem or information to identify features or relationships of components. 	1
<ul style="list-style-type: none"> • The student response does not match any of the descriptors above. 	0

Synthesising	Marks
AO5: Synthesise information and ideas to develop the possible solutions for user interface and algorithmic components.	
The student response has the following characteristics:	
<ul style="list-style-type: none"> Logical synthesis of information and ideas to develop the possible solutions for <ul style="list-style-type: none"> User interfaces Algorithms data 	5–6
<ul style="list-style-type: none"> Adequate synthesis of information and ideas to develop the possible solutions for <ul style="list-style-type: none"> User interfaces Algorithms data 	3–4
<ul style="list-style-type: none"> Simple synthesis of information or ideas to develop the possible solutions for <ul style="list-style-type: none"> User interfaces Algorithms data 	1–2
<ul style="list-style-type: none"> The student response does not match any of the descriptors above. 	0

Generating	Marks
AO6: Generate a low-fidelity non-coded prototype digital solution.	
The student response has the following characteristics:	
<ul style="list-style-type: none"> Effective generation of a non-coded low-fidelity prototype digital solution that demonstrates the proposed relationship between <ul style="list-style-type: none"> User interfaces 	4–5
<ul style="list-style-type: none"> Adequate generation of a non-coded low-fidelity prototype digital solution that demonstrates the proposed relationship between <ul style="list-style-type: none"> User interfaces 	2–3
<ul style="list-style-type: none"> Generation of elements of the non-coded low-fidelity prototype digital solution that demonstrates the proposed relationship between some <ul style="list-style-type: none"> User interfaces 	1
<ul style="list-style-type: none"> The student response does not match any of the descriptors above. 	0

Communicating	Marks
<p>AO8: Make decisions about and use mode-appropriate features, language and conventions for written and spoken communication for a technical audience.</p> <p>The student response has the following characteristics:</p>	
<ul style="list-style-type: none"> • Effective decision-making about, and fluent use of <ul style="list-style-type: none"> - Visual, spoken and/or written features to communicate about a solution - Language for a technical audience - Grammatically accurate language structures - Referencing conventions 	2
<ul style="list-style-type: none"> • Simple decision-making about, and inconsistent use of <ul style="list-style-type: none"> - Visual, spoken and/or written features to communicate about a solution - Language for a technical audience - Grammatically accurate language structures - Referencing conventions 	1
<ul style="list-style-type: none"> • The student response does not match any of the descriptors above. 	0