

Digital Solutions – Unit 1

FIA1 Assessment Instrument

Investigation – Technical Proposal (25%)

Unit Objectives

UO1: Recognise and describe programming features and useability 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.
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.
Resources available	Computers, Internet Prototype tools – PowerPoint or Keynote Non- prototyping tools – Xmind, Microsoft Word		
Context			
<p>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.</p> <p>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.</p>			

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
 - useability 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.tiimoapp.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

<p>Authentication strategies</p> <ul style="list-style-type: none"> • 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.
<p>Authenticity Statement</p> <p>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.</p> <p>Student Name:</p> <p>.....</p> <p>Student Signature:</p> <p>.....</p> <p>Date:</p>
<p>Scaffolding</p> <p>Use the following headings in your response:</p> <ul style="list-style-type: none"> • Introduction (up to 1 minute) • The user story (4 minutes) • The proposed solution (4 minutes) • Conclusion (up to 1 minute) <p>In regards to variables used in pseudocode and Swift:</p> <ul style="list-style-type: none"> • Assume sensors can be read using the variable format <i>sensorValue</i> Example: Heart rate would become <i>heartRateValue</i> <p>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.</p> <p>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.</p>

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 – Useability 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 – Useability 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 – Useability 	1
<ul style="list-style-type: none"> • The student response does not match any of the descriptors above. 	0

Analysing	Marks
<p>AO3: Analyse the problem and information related to the selected technology context.</p> <p>AO4: Determine programming and user experience requirements of the identified problem and success criteria.</p> <p>The student response has the following characteristics:</p>	
<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
<p>AO5: Synthesise information and ideas to develop the possible solutions for user interface and algorithmic components.</p> <p>The student response has the following characteristics:</p>	
<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
<p>AO6: Generate a low-fidelity non-coded prototype digital solution.</p> <p>The student response has the following characteristics:</p>	
<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