



St Andrew's Catholic College Redlynch Valley (Redlynch)

# Digital Solutions

IA2

Student name

Student number

Teacher

Issued

16/03/2020

Due date

22/05/2020

## Marking summary

Criterion	Marks allocated	Provisional marks
Retrieving and comprehending	8	
Analysing	8	
Synthesising and evaluating	10	
Communicating	4	
<b>Overall</b>	<b>30</b>	

# Conditions

<b>Technique</b>	Project — digital solution
<b>Unit</b>	Unit 3: Digital innovation
<b>Topic/s</b>	Topic 1: Interactions between users, data and digital systems Topic 2: Real-world problems and solution requirements Topic 3: Innovative digital solutions
<b>Duration</b>	—
<b>Mode / length</b>	Source code with annotations: <ul style="list-style-type: none"><li>• Written: 4–6 A4 pages</li></ul> Documentation: <ul style="list-style-type: none"><li>• Multimodal: 8–10 A3 pages</li></ul> Demonstration of the functionality of the digital solution by video recording: <ul style="list-style-type: none"><li>• Multimodal: 2–4 minutes</li></ul>
<b>Individual / group</b>	Individual
<b>Other</b>	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.
<b>Resources</b>	<ul style="list-style-type: none"><li>• Computers</li><li>• Internet</li><li>• Software</li><li>• Stimulus (technical proposal)</li></ul>

# Context

A technical proposal is used to inform the development of a digital innovation. A technical proposal includes detailed user requirements, diagrams and algorithms that outline how a proposed web application will interact with users and data stores.

## Task

Develop a new web application according to the requirements outlined in the provided technical proposal. Document the problem-solving process in Digital Solutions and demonstrate the functionality of the components of the digital solution in a video recording.

To complete this task, you must:

- **recognise** and **describe**
  - programmed and user-interface components
  - useability principles, including accessibility, effectiveness, safety, utility and learnability
- **symbolise**
  - the user and developer problem using mind maps and one or more of constructed sketches, annotated diagrams, images or screenshots
  - algorithms communicated in pseudocode that demonstrate knowledge and understanding of programming features
  - interrelationships between user experiences and data in the prototype web application
- **explain**
  - internal and external data components and data structures using appropriate symbols, code, data samples and screenshots from the prototype web application with annotations
  - the prototype web application from a user-experience perspective communicated by way of a collection of annotated images of the user-interface components
  - how programming elements and user-interface components connect, communicated in an annotated diagram
  - the functionality, useability and efficiency of the coded components communicated through code comments and annotations on the 4–6 A4 pages
- **analyse** the prototype web application problem and information to **identify**
  - data inputs
  - data and programmed components and their relationships to the structure of the prototype web application

- the prototype web application’s potential personal, social and economic impacts
- **determine**
  - solution requirements that include
    - essential elements and features of the user interface based on useability principles
    - data structures and linkage to interface and code
  - prescribed and self-determined criteria
- **synthesise** ideas and information about solutions for
  - user interfaces
  - data and programmed components of the prototype web application, e.g. annotated diagrams identifying and describing proposed components of the prototype web application
  - data repositories
  - programming to generate a prototype web application
- **generate**
  - sample code for the digital prototype on the 4–6 A4 pages, demonstrating
    - selection
    - iteration
    - user input
    - data output
  - a prototype web application by combining the user interface, data and coded components
- **evaluate** against criteria
  - personal, social and economic impacts supported by a collection of data samples or representations
  - 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 to make refinements
  - the prototype web application from a user-experience perspective supported by a collection of annotated images of the user-interface components
- **make** refinements and justified recommendations for current and future improvements.

## Stimulus

See the attached technical proposal.

## Checkpoints

□

- ☐ Term 2 Week 3: Submission of data requirements, identification of algorithms and some code and user interface
- ☐ Term 2 Week 6: Complete draft submission
- ☐ Term 2 Week 8: Final submission

## Authentication strategies

- You must acknowledge all sources.
- You must submit a declaration of authenticity.
- Your teacher will collect copies of your response and monitor at key junctures.
- Your teacher will compare the responses of students who have worked together in groups.
- Your teacher will conduct interviews or consultations as you develop the response.
- You will provide documentation of your progress at 3 weeks and a complete draft after 6 weeks.

## Scaffolding

Your response must include:

- 8-10 A3 pages that:
  - demonstrate all phases of the problem-solving process
  - communicate knowledge and understanding by way of annotated sketches, diagrams, images or screenshots
- A 2-4min video:
  - in mp4 file format
  - no larger than 200 MB
  - demonstrating the functionality of the user interface, data and coded components of the prototype digital solution
- 4-6 A4 pages of code with annotations explaining analysis, synthesis and evaluation decisions related to the code element or problem.
- Referencing of sources following the school's referencing style.
- Written and visual features, as well as grammatically accurate language conventions, to communicate your decision-making.
- Headings that organise and communicate the iterative phases of the problem-solving process in Digital Solutions.

## Instrument-specific marking guide (IA2): Project — digital solution (30%)

### Criterion: Retrieving and comprehending

#### Assessment objectives

1. recognise and describe programming elements, user interface components and useability principles
2. symbolise and explain programming information and ideas, data structures and interrelationships between user experiences and data of the digital prototype

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"><li>• <u>accurate</u> and <u>discriminating</u> recognition and <u>discerning</u> description of <u>relevant</u> programming elements, user-interface components and useability principles</li><li>• <u>adept</u> 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.</li></ul>	7–8
<ul style="list-style-type: none"><li>• accurate recognition and <u>effective</u> description of relevant programming elements, user-interface components and useability principles</li><li>• <u>methodical</u> 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.</li></ul>	5–6
<ul style="list-style-type: none"><li>• <u>appropriate</u> recognition and description of some programming elements, user-interface components and useability principles</li><li>• <u>competent</u> symbolisation and appropriate explanation of algorithms and some information and ideas, and interrelationships between user experiences and data of the digital prototype.</li></ul>	3–4
<ul style="list-style-type: none"><li>• <u>variable</u> recognition and <u>superficial</u> description of programming elements, user-interface components or useability principles</li><li>• variable symbolisation and superficial explanation of information, ideas or interrelationships.</li></ul>	1–2
<ul style="list-style-type: none"><li>• does not satisfy any of the descriptors above.</li></ul>	0

### Criterion: Analysing

#### Assessment objectives

3. analyse the problem and information related to the technical proposal for a low-fidelity prototype digital solution
4. determine user interface, data, programmed and solution requirements of the digital solution and prescribed and self-determined criteria

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"><li>• <u>insightful</u> analysis of the problem and <u>relevant</u> 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</li><li>• <u>astute</u> determination of the user interface, data, programmed and solution requirements of the digital solution and <u>essential</u> prescribed and self-determined criteria.</li></ul>	7–8
<ul style="list-style-type: none"><li>• <u>considered</u> analysis of the problem and relevant contextual information to identify the relevant elements and features of user interface, data and programmed components and their relationships to the structure of the low-fidelity prototype digital solution</li><li>• <u>logical</u> determination of the user interface, data, programmed and solution requirements of the digital solution and <u>effective</u> prescribed and self-determined criteria.</li></ul>	5–6
<ul style="list-style-type: none"><li>• <u>appropriate</u> 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</li><li>• <u>reasonable</u> determination of the user interface, data, programmed and solution requirements of the digital solution and some prescribed and self-determined criteria.</li></ul>	3–4
<ul style="list-style-type: none"><li>• <u>superficial</u> analysis of the problem or <u>partial</u> information to identify <u>aspects</u> of elements or features of the low-fidelity prototype digital solution</li><li>• <u>vague</u> determination of some solution requirements of the digital solution and some criteria.</li></ul>	1–2
<ul style="list-style-type: none"><li>• does not satisfy any of the descriptors above.</li></ul>	0

### Criterion: Synthesising and evaluating

#### Assessment objectives

5. synthesise information and ideas to determine data elements, user interface and programmed components for a digital solution
6. generate user interfaces and programmed components of the digital solution
7. evaluate impacts, components and the digital solution against prescribed and self-determined criteria to make refinements and justified recommendations

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"> <li>• <u>coherent</u> and <u>logical</u> synthesis of <u>relevant</u> information and ideas to determine data elements, user interface and programmed components for a digital solution</li> <li>• <u>purposeful</u> generation of <u>efficient</u> user interface and programmed components of the digital solution</li> <li>• <u>critical</u> evaluation of impacts, user experience and coded components and the digital solution against essential prescribed and self-determined criteria to make <u>discerning</u> refinements and astute recommendations justified by data.</li> </ul>	9–10
<ul style="list-style-type: none"> <li>• logical synthesis of relevant information and ideas to determine data elements, user interface and programmed components for a digital solution</li> <li>• <u>effective</u> generation of user interface and programmed components of the digital solution</li> <li>• <u>reasoned</u> 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.</li> </ul>	7–8
<ul style="list-style-type: none"> <li>• <u>simple</u> synthesis of information and ideas to determine data elements, user interface and programmed components for a digital solution</li> <li>• adequate generation of user interface and programmed components of the digital solution</li> <li>• <u>feasible</u> evaluation of impacts, user experience and coded components and the digital solution against some prescribed and self-determined criteria to make <u>adequate</u> refinements and <u>fundamental</u> recommendations justified by data.</li> </ul>	5–6
<ul style="list-style-type: none"> <li>• <u>rudimentary</u> synthesis of <u>partial</u> information or ideas to determine data elements, user interface or programmed components</li> <li>• partial generation of user interface and programmed components of the digital solution</li> <li>• <u>superficial</u> evaluation of impacts, user experience components or the solution against some criteria.</li> </ul>	3–4
<ul style="list-style-type: none"> <li>• <u>unclear</u> combination of information, ideas or solution components</li> <li>• identification of a change to an idea or a solution.</li> </ul>	1–2
<ul style="list-style-type: none"> <li>• does not satisfy any of the descriptors above.</li> </ul>	0

### Criterion: Communicating

#### Assessment objectives

8. make decisions about and use mode-appropriate features, written language and conventions for a technical audience.

The student work has the following characteristics:	Marks
<ul style="list-style-type: none"> <li>• <u>discerning</u> decision-making about, and <u>fluent</u> use of <ul style="list-style-type: none"> <li>– written and visual features to communicate about a solution</li> <li>– language for a technical audience</li> <li>– grammatically accurate language structures</li> <li>– referencing and project conventions.</li> </ul> </li> </ul>	3–4
<ul style="list-style-type: none"> <li>• <u>variable</u> decision-making about, and <u>inconsistent</u> use of <ul style="list-style-type: none"> <li>– written and visual features</li> <li>– suitable language</li> <li>– grammar and language structures</li> <li>– referencing or project conventions.</li> </ul> </li> </ul>	1–2
<ul style="list-style-type: none"> <li>• does not satisfy any of the descriptors above.</li> </ul>	0