**Stage 1 Digital Technologies**

**Assessment Type 2: Digital Solutions**

**Programming: Solving a Local Issue**

**Purpose**

*Dob in a Litterer* is an app launched in February 2017 by the Environment Protection Authority (EPA) of South Australia that attempts to harness people power and technology in the fight to solve the state’s problem of littering.

By considering your local area or community, identify and solve a local issue using the combined power of technology and people.

**Assessment Description**

* Independently review the issues identified and the idea(s) proposed for digital solutions, from the previous task, *Investigating a local issue*. Select one of the issues to be solved.
* Read the information contained in following websites for advice on developing an innovative approach:
	+ *4 Key Steps to Generate Innovative Ideas*: <https://visual.ly/community/infographic/other/4-key-steps-generate-innovative-ideas>
	+ *Liquid Agency*, ‘Rule #9: Approach answers obliquely’: <http://www.liquidagency.com/brand-exchange/rule-9-approach-answers-obliquely/>
* Starting with the proposed idea for a digital solution to solve the problem, adjust, adapt, refine or further develop the idea, ensuring it is innovative.
* Create a design plan for the proposed digital solution. This should include:
	+ a brief description of the proposed digital solution, including annotated sketches (digital or hand-drawn) of the interface, object diagram, flowcharts etc. (as appropriate)
	+ each feature to be included in the proposed solution, with a brief description and code design (pseudocode)
* Based on the design plan, create a project plan to develop the proposed digital solution:
	+ decide on a minimum viable product (MVP) that can be produced in the time available i.e. identify which features are required for the minimal digital solution to the issue
	+ decide the order for the features to be developed, with the MVP features placed first
	+ create a timeline to develop the features

*Note: The time allocated for a feature should include testing time as well as coding time.*

*Allocate time for user testing of the digital solution at key times during its development, and when the development is complete.*

* + identify and note potential risks, being sure to identify strategies to minimise these risks
* Based on the project plan and the design plan, develop the digital solution.
* Review the project plan after a feature is completed (developed and tested) and adjust as necessary:
	+ add or remove features, based on new ideas as the digital solution develops. In the design plan, add details for new features, but only note features removed (leaving the original details)
	+ change the timeline, if need be, to suit changes to features and/or time available
* Prepare a presentation (up to 3 minutes in length) of the digital solution. This should include:
	+ a demonstration of the solution
	+ an evaluation of the effectiveness of the digital solution in solving the issue
	+ an outline of the digital solution’s innovative features
	+ a discussion about the ethical implications of the solution

**Assessment Conditions**

* Design plan – documenting the initial design concept, as well as the modifications as the digital solution is developed
* Project plan – documenting the initial project plan, and the modifications as the digital solution is developed
* Digital solution e.g. app, wearable technology, micro-controller system etc.
* Presentation and evaluation of the digital solution

**Assessment Design Criteria**

CT2 Development and application of programming skills to create a digital solution or prototype

DE1 Development and application of program-design skills to create a digital solution or prototype

DE2 Evaluation of the effectiveness of a digital solution or prototype

RE1 Research into and discussion of ethical considerations in digital solutions and/or data use

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|  | Computational Thinking | Development and Evaluation | Research and Ethics |
| A | Insightful and sustained application of computational thinking skills to explore problems and possible solutions.Focused development and strategic application of a wide range of programming skills to create a digital solution or prototype.In-depth analysis of patterns and relationships in data sets and/or algorithms to draw insightful conclusions. | Purposeful and well-considered development and application of program-design skills to create digital solutions or a prototype that include innovative features.Insightful evaluation of the effectiveness of a digital solution or prototype.Insightful and proactive contribution to collaborative work. | In-depth research into and discussion of the ethical considerations in digital solutions and/or data use. |
| B | Some insights in the application of computational thinking skills to explore problems and possible solutions.Thorough development and well-considered application of a range of programming skills to create a digital solution or prototype.Some depth in analysis of patterns and relationships in data sets and/or algorithms to draw well-informed conclusions. | Well-considered development and application of program-design skills to create digital solutions or a prototype that include one or more innovative features.Well-considered evaluation of the effectiveness of a digital solution or prototype.Mostly consistent and effective contribution to collaborative work. | Some depth in research into and discussion of the ethical considerations in digital solutions and/or data use. |
| C | Application of computational thinking skills to explore problems and possible solutions.Competent development and application of programming skills to create a digital solution or prototype. Description, with some analysis of patterns and relationships in data sets and/or algorithms, to draw generally informed conclusions. | Development and application of program-design skills to create digital solutions or a prototype that may include one or more innovative features.Description, with some evaluation of the effectiveness, of a digital solution or prototype.Effective contribution to collaborative work. | Considered research into and discussion of the ethical considerations in digital solutions and/or data use. |
| D | Some application of basic computational thinking skills to describe problems and possible solutions.Basic development and some application of programming skills to create one or more partial solutions or prototypes.Basic description of patterns and relationships in data sets and/or algorithms to draw one or more basic conclusions. | Some development and application of program-design skills to create one or more partial solutions or prototypes.Basic description of a digital solution or prototype and one or more aspects of its effectiveness.Some contribution to collaborative work. | Basic research into and discussion of the ethical considerations in digital solutions and/or data use. |
| E | Attempted application of a limited number of simple computational thinking skills to describe a problem and/or possible solution.Attempted development and/or application of basic programming skills. Attempted description of one or more patterns and relationships in data sets and/or algorithms. | Attempted development and application of program-design skills.Attempted description of a digital solution or prototype.Limited contribution to collaborative work. | Attempted discussion of an ethical consideration in digital solutions and/or data use. |