**Stage 1 Digital Technologies**

**Assessment Type 2: Digital Solutions**

**Programming: *Don’t Be a Litterer* Game**

**Purpose**

*Dob in a Litterer* is an app launched in February 2017 by the Environment Protection Authority (EPA) of South Australia that attempts to solve the state problem of littering, particularly rubbish thrown from vehicles such as cigarette butts and fast food packaging.

Games can be a powerful (yet fun!) tool for raising awareness about a problem and potentially changing the behaviours of people. To support the EPA in their fight against littering, you are to create a *Don’t Be a Litterer* game that will draw attention to this problem and encourage people not to litter.

**Assessment Description**

* Develop an idea for a suitable *Don’t Be a Litterer* game e.g. app, wearable technology, micro-controller system (Arduino, BBC micro:bit, Raspberry Pi) etc.
* Create a design brief which identifies the necessary features and components of the proposed game. This should include:
  + a brief description of the game and how it will support the EPA in their mission.
* Create a design plan for the proposed game. This should include:
  + basic hand-drawn annotated sketches of the interface
  + flowchart and/or relationship/object diagram, or similar (as appropriate)

*(Note: these diagrams can be created using* [*https://www.draw.io*](https://www.draw.io)*)*

* + for each feature/component, represent the required algorithm using pseudocode and/or UML diagram
  + the order features are to be developed.
* Based on the design plan, develop the game.
  + add or remove features, based on issues or ideas, as the game develops
* Prepare a video presentation (up to 3 minutes in length) of the game. This should include:
  + a demonstration of the game
  + an evaluation of the effectiveness of the game

**Assessment Conditions**

* Design plan
* Game e.g. app, wearable technology, micro-controller system etc.
* Video presentation of the game
* Evaluation of the effectiveness of the game

**Assessment Design Criteria**

CT1 Application of computational thinking skills to explore problems and possible solutions

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

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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. |