Stage 2 Digital Technologies

External Assessment: Individual Digital Solution

Purpose

Apply **iterative** project techniques to independently identify, deconstruct, and solve a problem of interest by creating and evaluating a digital solution or prototype.

Assessment description

For the external assessment, you will apply iterative project techniques to independently identify, deconstruct, and solve a problem of interest by creating and evaluating a digital solution or prototype. Your individual digital solution could:

* Educate or inform a target audience of information on a particular issue
* Educate a target audience of information on a particular subject of interest
* Bring awareness to a local issue

Throughout the process, you will need to be mindful of any ethical considerations related to your individual digital solution.

You will need to consider the following as part of your individual digital solution:

1. Identify the problem you wish to solve.
2. Identify the product client or clients (stakeholders).
3. Define a design specification that covers the different aspects of the solution.
4. Deconstruct the problem and create a preliminary design for the digital solution.
5. Develop a project plan based on time-scale and resources and key features of the project deliverables.
6. Develop detailed designs.
7. Review the designs with stakeholders and revise your designs.
8. Evaluate and finalise your designs.
9. Develop and test each feature.
10. Regularly evaluate your progress, amend, and add, features based on your progress.

Assessment conditions

You will have 9 weeks to work on this assessment.

* The solution or prototype should include:
  + original source code and/or adapted code displaying selection, repetition, and sequencing, accompanied by design comments
  + algorithm design
  + graphical user interface and/or instructions for use.
* The solution or prototype must be supported by a designer’s statement that discusses:
  + the effectiveness of the solution or prototype
  + a feature or features that could be considered innovative in solving the problem.
* The individual digital solution and supporting documentation (code, design comments, graphical user interface and/or instructions for use) should be submitted in multimodal form.
  + The digital solution or prototype should be no more than 1 GB.
  + The designer’s statement should be a maximum of 3 minutes if oral, 500 words if written, or the equivalent if multimodal.

Assessment design criteria

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| Computational Thinking  CT1 Application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  CT2 Use of abstraction to identify core concepts and ideas.  CT4 Application of skills and processes to develop solutions to problems of interest.  Development and Evaluation  DE1 Design and creation of digital solutions or a prototype.  DE2 Application of iterative development, testing, modification, and documentation of a digital solution or prototype.  DE3 Evaluation of the effectiveness of a digital solution or prototype. |

Performance standards

| - | Computational Thinking | Development and Evaluation | Research and Ethics |
| --- | --- | --- | --- |
| A | Astute and creative application of computational thinking concepts and techniques to clearly identify and deconstruct problems of interest.  Insightful use of abstraction to identify core concepts and ideas.  In-depth analysis of relationships in data sets to draw insightful conclusions and make well-justified predictions.  Highly purposeful application of skills and processes to develop highly efficient and logical solutions to complex problems of interest. | Clear and consistent use of initiative in the design and creation of digital solution or prototype that includes innovative features.  Highly purposeful and strategic application of iterative development, testing, modification, and documentation of an innovative digital solution or prototype.  Insightful evaluation of the effectiveness of a digital solution or prototype.  Insightful explanation, supported by clear and highly convincing evidence of own role in and contribution to projects. | In-depth research and discussion of the ethical considerations in digital technologies. |
| B | Well-considered application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  Some insights in the use of abstraction to identify core concepts and ideas.  Some depth in analysis of relationships in data sets to draw informed conclusions and make justified predictions.  Purposeful application of skills and processes to develop efficient and mostly logical solutions to some complex problems of interest. | Mostly consistent use of initiative in the design and creation of digital solution or prototype that includes one or more innovative features.  Mostly purposeful application of iterative development, testing, modification, and documentation of a digital solution or prototype, with some innovation.  Well-considered evaluation of the effectiveness of a digital solution or prototype.  Some depth in explanation, supported by clear and mostly convincing evidence of own role in and contribution to projects. | Some depth in research and discussion of the ethical considerations in digital technologies. |
| C | Application of computational thinking concepts and techniques to identify and deconstruct problems of interest.  Some use of abstraction to identify core concepts and ideas.  Description, with some analysis, of relationships in data sets to draw generally informed conclusions and make predictions, with some justification.  Application of skills and processes to develop generally efficient and logical solutions to problems of interest. | Some use of initiative in the design and creation of digital solution or prototype, which may include one or more innovative features.  Competent application of iterative development, testing, modification, and documentation of a digital solution or prototype, with one or more innovative features.  Description of the effectiveness of a digital solution or prototype, with evaluation of some features.  Explanation, supported by generally clear evidence, of own role in and contribution to projects. | Considered research and discussion of the ethical considerations in digital technologies. |
| D | Partial application of basic computational thinking concepts and techniques to identify and describe problems of interest.  Identification and description of some basic core concepts and/or ideas.  Identification and use of one or more simple relationships in data sets to draw a partial conclusion and/or make a prediction based on limited evidence.  Partial application of skills and processes to develop solutions to simple problems of interest. | Partial design and creation of digital solution or prototype.  Basic application of some iterative development, testing, modification, and/or documentation of a digital solution or prototype.  Partial description of the effectiveness of a digital solution or prototype.  Basic explanation of own role in and/or contribution to projects, with limited supporting evidence. | Basic research and discussion of one or more ethical considerations in digital technologies. |
| E | Attempted application of a limited number of basic computational thinking concepts or techniques to describe a problem of interest.  Attempted identification and description of a core concept or idea.  Attempted use of limited, simple data sets to draw a conclusion or make a prediction.  Attempted application of skills and processes to develop partial solutions to some simple problems of interest. | Attempted design and creation of digital solution or prototype.  Attempted application of simple iterative development, testing, modification, or documentation of a digital solution or prototype.  Limited description of a digital solution or prototype.  Limited description of own participation in projects. | Attempted research and discussion of ethical considerations in digital technologies. |