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| **Assessment schedule – 3.7 Complex Programming** | | |
| **ACHIEVED** | **MERIT** | **EXCELLENCE** |
| **Use complex programming techniques to develop a computer program.**  **The student has:**   * **written code for a program that performs a specified task (Car Rental Online Booking Form)** * **used complex techniques in a suitable programming language (Javascript / HTML/ CSS / JSON)**   **For example (partial evidence):**  The student’s program allows users to enter typical data and outputs on expected cases.  Program has a graphical user interface and write booking data to persistent storage(Firebase)   * **set out the program code clearly and documented the program with comments**   **For example (partial evidence):**  Layout is clear, and whitespace has been effectively used. Student has included comments stating what the code does.   * **tested and debugged the program to ensure that it works on a sample set of expected cases**   **For example (partial evidence):**  Student has provided evidence of testing their program. The testing might be missing some of the expected detail. It might miss some testing showing that the program works for unexpected/invalid values. | **Use complex programming techniques to develop an informed computer program.**  **The student has:**   * **documented the program with variable/module names and organised comments that describe code function and behaviour** * **followed conventions for the chosen programming language**   **For example (partial evidence):**  Camel case is used for variable names and functions are defined and called. Code has **clear commenting throughout that describes function and behaviour**. The student has used an automated tool to check that their code follows conventions (HTML/CSS/JAVASCRIPT)   * **comprehensively tested and debugged the program in an organised way to ensure that it works on a sample of both expected and relevant boundary cases**   **For example (partial evidence):**  Student provides evidence of systematically testing their final outcome to confirm that it works for expected, and relevant boundary values.  Boundary values – Age , Max Car Days hire -14 | **Use complex programming techniques to develop a refined computer program.**  **The student has:**   * **ensured that the program is a well-structured, logical response to the task**   **For example (partial evidence):**  Program code is easy to read/understand and has been set up in a logical fashion. Functions have been used to keep distinct tasks separate, and to avoid duplicate code. The program explicitly passes data between functions and avoids the use of global variables. Where the program uses a GUI, the GUI and the underlying code are kept in 3 separate files and communicate via a well-defined interface.   * **made the program flexible and robust** * **comprehensively tested and debugged the program**   **For example (partial evidence):**  Student provides evidence of comprehensively testing their program to show that it works correctly for expected, unexpected and boundary values.  It has been structured so that making changes to it is easy. For example, the code uses named constants(booking fee/insurance), clearly defined in a ‘constants’ area. The code uses derived values for the total cost calculations |

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| **Assessment schedule – 3.8 Complex Processes** | | |
| **ACHIEVED** | **MERIT** | **EXCELLENCE** |
| **Use complex processes to develop a digital technologies outcome.**  **The student has:**   * **used recognised and appropriate project management tools(Trello) and technique (Design Thinking) to plan and manage the development of a digital technologies outcome** * **decomposed the digital technologies outcome into smaller components** * **trialled components of the outcome**   **For example (partial evidence):**  The student has used appropriate project management tools and techniques, such as Agile(Design Thinking) with a Trello board, to plan and manage the development of their outcome.  The outcome has been broken down into smaller components**(fonts,layout,colour etc)** and these have been trialled and tested. The components have then been combined into a working outcome.   * **tested that the digital technologies outcome functions as intended**   **For example (partial evidence):**  The student has provided evidence of testing the outcome to ensure that it functions as intended: The testing might be missing some of the desired detail and the program might not work as intended for unexpected data but works for intended input.   * **addressed relevant implications**   **For example (partial evidence):**  The student outcome is easy to use, fully functional, aesthetically pleasing. | **Use complex processes to develop an informed digital technologies outcome.**  **The student has:**   * **effectively used project management tools and techniques to manage development, feedback.**   **For example (partial evidence):**  The student provides evidence of versioning the outcome where new versions either have **improved functionality or added features.**  The student provides evidence of sharing documents/data and **managing feedback**. For example, they used Google Team Drive to share design ideas and to seek feedback or stored their feedback in their portfolio.  **The student provides evidence of how they managed their work flow. This could include screen captures of a Trello board.**  The student has managed their versions effectively through the use of structured file and folder naming conventions and back-ups.   * **effectively trialled multiple components and/or techniques**   **For example (partial evidence):**  They have trialled several ways of presenting the selection of program choices via the GUI (multiple components) and selected the one that had the best usability and prevented the user from entering incorrect data or was mobile friendly.  Evidence can be seen in their project management tool(s) and/or logs that includes annotations of the component(s) and/or techniques trialled with annotations regarding the outcome or next steps.   * **effectively used information from testing and trialling to improve the functionality of the digital technologies outcome**   **For example (partial evidence):**  The student provides evidence of testing and trialling during development and they have indicated how they improved their outcome using this approach. Evidence can be seen in their project management tools and/or logs that includes annotations of changes made to improve the functionality **(A vs B testing)** | Use complex processes to develop a refined digital technologies outcome.  The student has:   * synthesised information from the planning, testing and trialling of components   **For example (partial evidence):**  The student outcome is of high quality as a result of student effectively using project management tools and techniques, to efficiently manage the trialling, testing and refinement process. They have incorporated user suggestions and feedback to improve the usability, aesthetics, and functionality of the outcome.  The student has:   * discussed how the information led to the development of a high-quality digital technologies outcome   **For example (partial evidence):**  **The student has reflected on their use of processes to develop their outcome** and provided evidence of **how the process helped them** to effectively test and trial various components to refine and enhance the design and functionality their outcome. |