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| **Name** | |  | | | |
| **Analysis** | | | | | |
| **1-2** | **3-5** | | **6-8** | **9-10** | **Score** |
| * Identified some features that make the problem solvable by computational methods. * Identified suitable stakeholders for the project and described them and some of their requirements. * Identified some appropriate features to incorporate into their solution. * Identified some features of the proposed computational solution. * Identified some limitations of the proposed solution. * Identified some requirements for the solution. * Identified some success criteria for the proposed solution. | * Described the features that make the problem solvable by computational methods. * Identified suitable stakeholders for the project and described how they will make use of the proposed solution. * Researched the problem looking at existing solutions to similar problems identifying some appropriate features   to incorporate into them  solution.   * Identified the essential features of the proposed computational solution. * Identified and described some limitations of the proposed solution. * Identified most requirements for the solution. * Identified some measurable success criteria for the proposed solution. | | * Described the features that make the problem solvable by computational methods and why it is amenable to a computational approach. * Identified suitable stakeholders for the project and described them and how they will make use of the proposed solution and why it is appropriate to their needs. * Researched the problem in depth looking at existing solutions to similar problems identifying and describing suitable approaches based on this research. * Identified and described the essential features of the proposed computational solution. * Identified and explained any limitations of the proposed solution. * Specified the requirements for the solution including (as appropriate) any hardware and software requirements. * Identified measurable success criteria for the proposed solution. | * Described and justified the features that make the problem solvable by computational methods, explaining why it is amenable to a computational approach. * Identified suitable stakeholders for the project and described them explaining how they will make use of the proposed solution and why it is appropriate to their needs. * Researched the problem in depth looking at existing solutions to similar problems, identifying and justifying suitable approaches based on this research. * Identified the essential features of the proposed computational solution explaining these choices. * Identified and explained with justification any limitations of the proposed solution. * Specified and justified the requirements for the solution including (as appropriate) any hardware and software requirements. * Identified and justified measurable success criteria for the proposed solution. |  |

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| **Design** | | | | |
| **1-4** | **5-8** | **9-12** | **13-15** | **Score** |
| * Described elements of the solution using algorithms. * Described some usability features to be included in the solution. * Identified the key variables / data structures / classes (as appropriate to the proposed solution). * Identified some test data to be used during the iterative or post development phase of the process. | * Broken the problem down systematically into a series of smaller problems suitable for computational solutions describing the process. * Defined the structure of the solution to be developed. * Described the solution fully using appropriate and accurate algorithms. * Described the usability features to   be included in the solution.   * Identified the key variables / data structures / classes (as appropriate to the proposed solution) and any necessary validation. * Identified the test data to be used during the iterative development of the solution.   Identified any further data to be used in the post development phase. | * Broken the problem down systematically into a series of smaller problems suitable for computational solutions explaining the process. * Defined in detail the structure of the solution to be developed. * Described the solution fully using appropriate and accurate algorithms explaining how these algorithms form a complete solution to the problem. * Described, explaining choices made, the usability features to be included in the solution. * Identified and justified the key variables / data structures / classes (as appropriate to the proposed solution) explaining any necessary validation. * Identified and justified the test data to be used during the iterative development of the solution.   Identified and justified any further data to be used in the post development phase. | * Broken the problem down systematically   into a series of smaller problems suitable for computational solutions, explaining and justifying the process.   * Defined in detail the structure of the solution to   be developed.   * Described the solution fully using appropriate and accurate algorithms justifying how these algorithms form a complete solution to the problem. * Described, justifying choices made, the usability features to be included in the solution. * Identified and justified the key variables / data structures / classes (as appropriate to the proposed solution) justifying and explaining any necessary validation. * Identified and justified the test data to be used during the iterative development of the solution. * Identified and justified any further data to be   used in the post development phase. |  |

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| **Iterative Development** | | | | |
| **1-4** | **5-8** | **9-12** | **13-15** | **Score** |
| * Provided evidence   of some iterative development for a coded solution.   * Solution may be linear. * Code may be inefficient. * Code may not be annotated appropriately. * Variable names may be inappropriate. * There will be little or no evidence of validation.   There will be little evidence of review during the development. | * Provided evidence for most stages of the iterative development process for a coded solution describing what they did at each stage. * Solution will have some structure. * Code will be briefly annotated to   explain key components.   * Some variable and/or structure names will be largely appropriate. * There will be evidence of some   basic validation.  There will be evidence that the development was reviewed at some stage during the process. | * Provided evidence of each stage of the iterative development process for a coded solution relating this to the break down of the problem from the   analysis stage and explaining what they did at each stage.   * Provided evidence of some prototype   versions of their solution.   * The solution will be modular in nature. * Code will be annotated to explain all key components. * Most variables and structures will be appropriately named. * There will be evidence of validation for most key elements of the solution.   The development will show review at most key stages in the process. | * Provided evidence of each stage of the iterative development process for a coded solution relating this to the break down of the problem from the analysis stage and explaining what they did and justifying why. * Provided evidence of prototype versions of their   solution for each stage of the process.   * The solution will be well structured and modular   in nature.   * Code will be annotated to aid future maintenance of the system. * All variables and structures will be appropriately named. * There will be evidence of validation for all key elements of the solution.   The development will show review at all key stages in the process. |  |

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| **Testing to inform development** | | | | |
| **1-2** | **3-5** | **6-8** | **9-10** | **Score** |
| Provided some evidence of testing during the iterative development process. | * Provided some evidence of testing during the iterative development process.   Provided evidence of some failed tests and the remedial actions taken. | * Provided evidence of testing at most stages of the iterative development process.   Provided evidence of some failed tests and the remedial actions taken with some explanation of the actions taken. | * Provided evidence of testing at each stage of the iterative development process.   Provided evidence of any failed tests and the remedial actions taken with full justification for any actions taken. |  |
| **Testing to inform evaluation** | | | | |
| **1** | **2** | **3-4** | **5** | **Score** |
| Provided evidence of some post development testing. | Provided evidence of final product testing for function. | * Provided annotated evidence of post   development testing for function.   * Provided annotated evidence for   usability testing. | * Provided annotated evidence of post   development testing for function and robustness.  Provided annotated evidence for usability testing. |  |

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| **Evaluation** | | | | |
| **1-4** | **5-8** | **9-12** | **13-15** | **Score** |
| * Commented on the success or failure of the solution with some reference to test data. * The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | * Cross referenced some of the test evidence with the success criteria and commented on the success or otherwise of the solution. * Provided evidence of usability features. * Identified some limitations on the solution.   The information has some relevance and is presented with limited structure. The information is supported by limited evidence. | * Used the test evidence to cross reference with the success criteria to evaluate the solution identifying whether the criteria have been met, partially met or unmet. * Provided comments on how any partially or not met criteria could be addressed in further development. * Provided evidence of the usability features. * Considered maintenance issues and   limitations of the solution.  There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence. | * Used the test evidence to cross reference with the success criteria to evaluate the solution explain how the evidence shows that the criteria has been fully, partially or not met in each case. * Provided comments on how any partially or unmet criteria could be addressed in further development. * Provided evidence of the usability features justifying their success, partial success or failure as effective usability features. * Provided comments on how any issues with partially or unmet usability features could be addressed in further development. * Considered maintenance issues and limitations of the solution. * Described how the program could be developed to deal with limitations and potential improvements / changes.   There is a well developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. |  |
| **Total** | | | |  |
| **Grade** | | | |  |

**Analysis (10) Done Feedback/ Improvements**

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| Identified stakeholders (audience) and described them, explaining how they’ll use the solution and why it fits needs |  |  |
| Described the features of the problem that make a computational approach suitable |  |  |
| Researched **in depth** existing solutions to similar problems & identified your approach based on these |  |  |
| Identified a list of user requirements, explaining your choices |  |  |
| Identified & explained within the user reqs what the **essential** features of your solution are |  |  |
| Identified the hardware and software requirements of the solution |  |  |
| Identified & explained and limitations of the proposed solution |  |  |
| Identified & justified measureable success criteria |  |  |

**Design (15)**  **Done Feedback/ Improvements**

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| Produced a **structure diagram / class diagram** to show the modular nature of the solution |  |  |
| **Development Plan** –   * shown how the problem is broken down into smaller problems & j**ustified** the processes/ steps you have chosen * Identified the **test data** to be used during the development phase * Identified further data to be used in post-development BETA testing to make sure user reqs met and it is robust |  |  |
| **Diagrams** - produced a set of appropriate diagrams to show the structure of the solution e.g.  UML diagrams (Class, object, activity, communication) |  |  |
| **Algorithms** - Produced appropriate and accurate algorithms (pseudo-code and/ or flowcharts) to **fully** describe the solution   * Describe each sub-problem/ sub-routine * Show how all algorithms fit together (system flowchart) * Show how the algorithms have been **tested** using trace tables/ dry runs |  |  |
| **Interfaces** –   * Explain and justify the design of and user interfaces * Described & **justified** the **usability** features to be included |  |  |
| **Data Dictionary** –   * Identified and **justified** the key variables, data structures, classes (where appropriate) * Explained any necessary validation |  |  |

**Development (25)** **Done Feedback/ Improvements**

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| **Iterations –** provide evidence of following each stage of your development plan, showing how each stage was coded and tested - **explain what you did and why**. |  |  |
| **Prototypes** – save prototypes made at each stage that show well commented code.  Show test tables and x-ref to vids & screenshots. |  |  |
| **Modular code**  They are looking for:   * Well commented code * Meaningful variable names * Efficient use of sub-routines |  |  |
| **Validation**  You need to show where the validation is in the program and where you have tested it to prove it works as expected (valid/ invalid/ extreme) |  |  |
| **Reviews**  Have you summarised at the end of each section and explained how it was tested?  Have you explained and changes/ updates required and any modifications to the design that have occurred due to testing? |  |  |

**Evaluation (20** [5 + 15]**)** **Done Feedback/ Improvements**

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| **Post development testing BETA**  Show you have tested:   * the solution as a whole * that the system works as designed * that it is robust and will not break easily  (Prove you have tried to break it!)   Cross-ref all of the tests to the success criteria/ user reqs to show how well the solution meets them. |  |  |

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| **Usability testing**  Show how you tested each feature identified in the Design phase to make sure they meet stakeholder needs |  |  |
| **Evaluation**  How well does the solution match the reqs?  What changes were made to the design during development?  Which criteria were **unmet/ partially met** and how could these be achieved in future development?  What additional features might be added and how might you implement those (overview)? |  |  |
| **Maintenance**  What maintenance might the program need/ what limitations are there in the current solution?  How might the program be modified to meet any additional requirements or changing requirements?  Have you included any maintenance features in the program that could be used? |  |  |