**GCSE Computer Science (8520)**

**Non-Exam Assessment:** <Enter series and scenario title>

*These grids should be completed and securely attached as a separate document to the front of the candidate's work.*

*They should be sent to the moderator if the candidate's work is requested, or retained at the Centre.*

*If sent to the moderator they may be retained and not returned with the work.*

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| --- | --- | --- | --- |
| Centre Name: |  | Centre Number: |  |
| Candidate Name: |  | Candidate Number: |  |
|  |  |  |  |
| Programming Language Used: |  | | |

***Important Note: The marking criteria given in this marking grid are condensed versions of the full criteria given in the specification. When deciding on the appropriate mark it is essential that the full criteria in the specification are used.***

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| --- | --- | --- | --- | --- | --- | --- |
| **Section** | **Marking Criteria** | **Maximum Section mark** | **Maximum criteria Mark** | **Centre Mark Awarded** | **Moderator Mark** | **TL Mark** |
| 1 | Designing the solution | **9** | **9** |  |  |  |
| 2 | Creating the solution | **30** | **15** |  |  |  |
| **15** |  |  |  |
| 3 | Testing the solution | **21** | **9** |  |  |  |
| **12** |  |  |  |
| 4 | Potential enhancements and refinements | **10** | **10** |  |  |  |
| 5 | Overall quality of the report | **10** | **10** |  |  |  |
| Total | | **80** | |  |  |  |

**1. Designing the solution (9 marks)**

|  |  |  |
| --- | --- | --- |
| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| A comprehensive design which could be used as the basis of an effective implementation of a complete or almost complete solution.  A comprehensive design which shows good understanding of variables, data types and structures, as well as how the data will be processed.  Explanations of all or almost all of the main blocks of the proposed solution including data validation where appropriate.  Design choices are justified with reference to user requirements. | **7-9** |  |
| A detailed design that describes how most of the key aspects of the solution are to be structured/are structured.  A largely effective design for the variables, but showing limited understanding of the potential offered by data types and structures.  Explanations of most of the main blocks of the proposed solution, including the processing of calculations where appropriate.  Design choices are described. | **4-6** |  |
| A minimal design of what the problem involves.  An incomplete or partially effective design for the variables and/or data structures.  Minimal descriptions of some of the main blocks of the proposed solution are given, so that it is difficult to obtain a picture of how the solution is to be structured/is structured without resorting to looking directly at the programmed solution.  Design choices are stated. | **1-3** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

**2. Creating the solution (30 marks)**

|  |  |  |
| --- | --- | --- |
| **Completeness of solution (15 marks)** | | |
| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| A solution that meets all or almost all of the requirements of the problem.  The marks at the top end of the level are for solutions that include well implemented elements of robustness and structured programming. | **13-15** |  |
| A solution that achieves most, but not all of the requirements of the problem. The solution uses structured programming elements effectively.  The marks at the top end of the level are for solutions that include some elements of robustness. | **10-12** |  |
| A solution that achieves some of the requirements of the problem.  The marks at the top end of the level are for solutions that include some elements of structured programming and some data validation. | **7-9** |  |
| A solution that achieves a few requirements of the problem.  The marks at the top end of the level are for solutions that include a minimal number of elements of structured programming. | **4-6** |  |
| A solution that tackles a few aspects of the problem. Solutions at this level may not work as intended. | **1-3** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

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| --- | --- | --- |
| **Programming techniques used (15 marks)** | | |
| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| The code demonstrates that the coding skills required for this level have been applied sufficiently to demonstrate proficiency.  Evidence in the code and/or annotation/comments shows a successful solution to the problem that utilises exception handling, data validation and subroutine interfaces as appropriate.  Meaningfully named variables (local and/or global) and any data structures are effectively used and appropriate to the solution.  Code is appropriately structured for ease of maintenance. | **13-15 a** |  |
| The code demonstrates that the coding skills required for this level have been applied sufficiently to demonstrate proficiency.  Evidence in the code and/or annotation/comments shows a largely successful solution to the problem that utilises modularisation as well as exception handling and/or data validation as appropriate.  Meaningfully named variables (local and/or global) and any data structures are appropriate to the solution. | **10-12 b** |  |
| The code demonstrates that the coding skills required for this level have been applied sufficiently to demonstrate proficiency.  Evidence in the code and/or annotation/comments shows a solution that solves most of the problem. The solution utilises modularisation as appropriate.  Meaningfully named variables (local and/or global) and any data structures are appropriate to the solution. The use of data validation is evident and appropriate. | **7-9 c** |  |
| The code demonstrates that the coding skills required for this level have been applied sufficiently to demonstrate proficiency.  Multiple programming techniques are used, and there is evidence through annotation/comments of some understanding of how to solve the problem.  Variables with meaningful names are used effectively throughout the solution. | **4-6 d** |  |
| The code demonstrates that the coding skills required for this level have been applied sufficiently to demonstrate proficiency.  Code statements address at least one of input, process and output and are relevant to user requirements with some minimal comments/annotation.  Variables with meaningful names are used effectively for parts of the solution. | **1-3 e** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

**Indicative coding skills required for the Programming Techniques Used criteria. See previous page.**

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| --- | --- | --- | --- | --- |
| **Outstanding** | **Excellent** | **Good** | **Basic** | **Minimal** |
| Subroutines used with appropriate interfaces  Cohesive subroutines  Good exception handling  Self-documenting code  Modularisation of code  Appropriate use of local variables  Minimal use of global variables  Appropriate use of data validation  Appropriate use of constants  Consistent style throughout  Meaningful identifier names  Appropriate indentation  Annotation used effectively where required | Good exception handling  Self-documenting code  Modularisation of code  Appropriate use of local variables  Minimal use of global variables  Appropriate use of data validation  Appropriate use of constants  Consistent style throughout  Meaningful identifier names  Appropriate indentation  Annotation used effectively where required | Modularisation of code  Appropriate use of local variables  Minimal use of global variables  Appropriate use of data validation  Appropriate use of constants  Consistent style throughout  Meaningful identifier names  Appropriate indentation  Annotation used effectively where required | Appropriate use of constants  Consistent style throughout  Meaningful identifier names  Appropriate indentation  Annotation used effectively where required | Meaningful identifier names  Appropriate indentation  Annotation used effectively where required |

**3. Testing the solution (21 marks)**

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| --- | --- | --- |
| **Test planning (9 marks)** | | |
| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| A thorough representative range of tests have been planned that will demonstrate the robustness of the solution as well as that the requirements of the problem have been achieved.  Test data includes normal (typical), boundary (extreme) and erroneous data.  Detailed expected outcomes are given. The test plan is clear and unambiguous. | **7-9** |  |
| A representative range of tests have been planned but fall short of demonstrating that the requirements of the problem have been achieved.  Test data includes some different types from normal (typical), boundary (extreme) and erroneous data. Expected outcomes are listed.  The test plan is clear. | **4-6** |  |
| A small number of tests have been planned, some of which may be inappropriate.  Some test data and/or expected outcomes may be given.  The test plan may not be entirely clear. | **1-3** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

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| **Testing evidence (12 marks)** | | |
| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| Clear evidence is presented, in the form of carefully selected representative samples, which demonstrates thorough testing has been carried out.  There is an explanation that the evidence demonstrates the robustness of the complete or nearly complete solution and shows that the requirements of the problem have been achieved. | **10-12** |  |
| Extensive testing has been carried out, but the evidence presented in the form of representative samples, does not make clear that all of the core requirements of the problem have been achieved. This may be due to some key aspects not being tested or because the evidence is not always presented clearly.  There is an explanation that the evidence presented demonstrates partial robustness of the solution. | **7-9** |  |
| range of tests have been carried out and the evidence is presented in the form of representative samples, but falls well short of demonstrating that the requirements of the problem have been achieved and that the solution is robust.  The evidence presented is explained. | **4-6** |  |
| A small number of tests have been carried out, which demonstrate that some parts of the solution work.  The evidence presented is not entirely clear. | **1-3** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

**4. Potential enhancements and refinements (10 marks)**

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| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| Full consideration given to how well the solution meets all or almost all of the requirements of the problem. Efficiency of execution and robustness are discussed.  Improvements to the solution, if the problem were revisited, are discussed. | **9-10** |  |
| Some consideration has been given to how well the solution meets all or almost all of the requirements of the problem. Efficiency of execution or robustness are described.  Improvements to the solution, if the problem were revisited, are explained. | **7-8** |  |
| Consideration has been given to how well the solution meets most of the requirements of the problem. Where appropriate, some of the requirements that have not been met have been considered in the evaluation.  Improvements to the solution, if the problem were revisited, are described. | **5-6** |  |
| Consideration is given to how well the solution meets some of the requirements of the problem but not all aspects are addressed. There may be omissions, or some of the requirements may not have been met, and those requirements not met have been overlooked in the evaluation.  Some potential improvements, if the problem were revisited, have been stated. | **3-4** |  |
| Parts of the solution are evaluated but only in a superficial way. | **1-2** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |

**6. Overall quality of the report (10 marks)**

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| **Criteria Description** | **Mark Range** | **Mark Awarded** |
| The report is complete. All or almost all of the content is relevant to the solution of the task. A wide range of technical terms have been used accurately. There is a consistent approach to the structure and layout of the report which enables easy cross-referencing between sections and between different parts of the solution. Consistency is evident between the account of design and the coded implementation, the account of design and execution of testing, and the account of evaluation and refinement. | **9-10** |  |
| The report is complete. Most of the content is relevant to the solution of the task. Most of the technical terms used have been used accurately. Most of the report shows a consistent approach to the structure and layout which enables easy cross-referencing between most sections and/or different parts of the solution. Consistency is evident between the account of design, the coded implementation, the account of design and execution of testing, and the account of evaluation and refinement. | **7-8** |  |
| The report is complete in all or almost all respects. A few technical terms have been used accurately. There is evidence of an attempt to create a report structure and layout that would enable cross-referencing between one or two sections and/or different parts of the solution. There is some consistency evident between at least three of the following: account of design of the solution, the coded implementation, the account of design and execution of testing, and the account of evaluation and refinement. | **5-6** |  |
| At most, one section of the report is missing or incomplete. There is very little evidence of an attempt to create a report structure and layout that would enable cross-referencing between sections and/or different parts of the solution. The report gives some idea of how the solution has been developed and the code listing is consistent with other sections.. | **3-4** |  |
| Two or more sections are missing from the report. There is no evidence of an attempt to create a report structure and layout that would enable cross-referencing between sections and/or different parts of the solution. The report fails to show a clear account of the development of the solution. | **1-2** |  |
| Nothing worthy of credit. | **0** |  |
| Comments | | |