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| Assignment title | Concepts of object-oriented programming | |
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| Assessor | Dion van Overdijk | |
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| Date issued | 23/11/18 | |
| Final deadline | 07/12/18 | |
| Duration (approx) | 2 weeks | |
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| Qualification suite covered | Pearson BTEC Level 3 Extended Diploma in Computing | |
| Units covered | Unit 16: Object-oriented programming | |
| Learning aims covered | **A:** Understand the principles of object-oriented programming | |
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| Scenario | You are a junior employee at a small software development company. Your company has been invited by a local college to give a guest lecture on object-oriented programming.  Your supervisor has provided you with a portfolio of computer programs and has asked you to research the programs with regards to the concepts used to create a knowledge base and prepare for the visit. | |
| |  |  | | --- | --- | | Task 1 | **Research**  Evaluate the computer programs you have been provided with and conduct research into types of programming languages and how object-oriented programming principles have been applied to produce effective applications.  You will research principles of object-oriented programming and programming languages to:   * explain the use of object-oriented programming languages and the difference between them and other types of programming language. You should include an explanation of modularity, encapsulation, abstraction and inheritance. * explain object-oriented principles as used in the sample programs. Include where and how pre-defined libraries, encapsulation, abstraction, polymorphism are used. * explain what may affect performance and security within object-oriented programs. Include discussion of garbage collection, interpreters and the deployment platform in your explanation. * explain the use of mathematics within the sample programs and how they benefit the program. You should detail where and how programming logic, Boolean algebra and pre-defined functions have been used. * analyse and evaluate the sample programs for their application of the principles of object-oriented programming. Your analysis should include the relationships between objects, where, how and why polymorphism, overriding, overloading and interfaces have been used. * analyse and evaluate the sample programs for their application of mathematics to. Your analysis should include the representation of graphical elements and how the use of algorithms can benefit the development of a programmed solution   When evaluating the quality of the programs you should consider the robustness of the code, its maintainability, efficiency, portability and ease of use. |  |  |  | | --- | --- | | Evidence you must produce for this task | A report evaluating computational thinking skills and principles of software design and programming languages. | | | |
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| Criteria covered by this task: | | |
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| To achieve the criteria you must show that you are able to: | | Criterion reference |
| Evaluate the effectiveness of object-oriented programming with regard to its principles. | | 16/A.D1 |
| Analyse the importance of the principles of object-oriented programming and the use of mathematics in object-oriented programming. | | 16/A.M1 |
| Explain the importance of principles of object-oriented programming and factors affecting the performance, safety and security of object-oriented programs | | 16/A.P1 |
| Explain how mathematics is used when creating object-oriented programs. | | 16/A.P2 |

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| **Sources of information to support you with this Assignment** | Links and videos provided on the relevant ALO site by your teacher |

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| **Other assessment materials attached to this Assignment Brief** | Sample object-oriented programs covering all concepts in the unit specification |

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