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| ASSIGNEMNT BRIEF | | | |
| **HTU Course No:** 010200101 **HTU Course Name:** Programming  **BTEC UNIT No:** D/615/1618 **BTEC UNIT Name:** Programming | | | |
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| **Version: 2** | |  | |



**Assessment Brief**

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| Student Name/ID Number/Section |  |
| HTU Course Number and Title | **010200101 : Programming** |
| BTEC Course Number and Title | **D/615/1618: Programming** |
| Academic Year | 2018/2019 |
| Assignment Author | Ali Alomary |
| Unit Tutor | Ali Alomary |
| Assignment Title | **Algorithm, program and two reports** |
| Assignment Ref No. | **No. 1** |
| Issue Date | 3/23/2019 |
| Formative Assessment Dates: | Part 1: 4/25/2019 Part 2: 17/05/2019 Part 3: 23/05/2019 |
| Submission Date | 5/27/2019 |
| IV Name & Date | Dr. Salem Alemaishat 3/23/2019 |

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| **Submission Format** |
| Every individual should present proof of the followings:  **For Part 1:**  The submission is in the form of soft copy will be available in E-learning for the following:   1. **Word** document for the algorithm 2. **A text** file of the code   Also, you have to submit a hard copy of the above as well as the **Student declaration** form filled out and signed properly.  **For Part 2:**  The submission is in the form of soft copy will be available in E-learning for the following:   1. **Word** document report   Also, you have to submit a hard copy of the above as well as the Student declaration form filled out and signed properly.  **For Part 3:**  The submission is in the form of soft copy will be available in E-learning for the following:   1. Report (IDE Evaluation), (Debugging Evaluation) and fully commented source code   You are required to make use of appropriate structure, including headings, paragraphs, subsections, and illustrations as appropriate, and all work must be supported with research and referenced.  Also, you have to submit a hard copy of the above as well as the Student declaration form filled out and signed properly.  ***As a part of your submission, you will have a discussion with your assessor presenting and illustrating Part1, Part2, and Part3 of the assignment.*** |

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| **Unit Learning Outcomes** | | |
| **LO1** Define basic algorithms to carry out an operation and outline the process of programming an application.  **LO2** Explain the characteristics of procedural, object orient oriented and event-driven programming, conduct an analysis of a suitable Integrated Development Environment (IDE)  **LO3** Implement basic algorithms in code using an IDE.  **LO4** Determine the debugging process and explain the importance of a coding standard. | | |
| **Assignment Brief and Guidance** | | |
| **Scenario:**  You currently work as a software developer for a local university. Your team lead asked you to build an algorithm and write a program from that algorithm. Your program should be able to read a text file with some input data, process it, then write the result into the output file. Furthermore, you will need to produce two other reports, one about programming languages feature & IDEs and a second report about programming languages paradigms and IDEs.  **Part 1: Algorithm and program**  With reference to the customer brief above, your team leader informed you that the management wants to exercise the ability to code mathematical formulas to be used in engendering labs. He asked you to write an algorithm as a first step and then execute your algorithm in a python program.  Consider this as a mini project that will be turned in. as part of the report, you first will need to explain what an algorithm is, and how it will relate to the application development process, down to the implementation in a suitable language. For the specific task assigned to you by your team leader, you need to write down a detailed algorithm for creating the required report and relate it to a certain code.  Write a Python program to calculate the Areas of Different Geometrical Shapes (Rectangle, Square, Triangle, Circle, Parallelogram, and Trapezoid)   1. The program will read all the input/data from an input file, process it, then output the results to an output file. 2. Calculate the areas of all the shapes in the input file using functions. 3. Sort the result shapes based on areas small area first, large area last (ascendant). 4. Count the numbers of each geometrical shape in the input file. 5. Sum up all the areas for each geometrical shape in the input file. 6. Output all the results to an output file called.   Create a Class for each different geometrical shape, each should include the attributes and function that calculate each of the above-mentioned shapes.  **R** indicates a Rectangle, **C** indicates a Circle, **S** indicates a Square, **T** indicates a Triangle, **P** indicates a Parallelogram, and **Z** indicates a Trapezoid.  **The needed Area Formulas for the different geometrical shapes are below:**   * Area of Rectangle = Length × Width * Area of Square = s2 = Side × Side * Area of Triangle = ½(Base × Height) * Area of Circle = π(Radius)2 = πr2 = 3.142 × Radius x Radius * Area of Parallelogram = Base × Height. * Area of Trapezoid = ½(Base1 + Base2) × Height  1. The code should compile without errors and produce the correct output. The code should be **clean, well commented, and using the best coding standards.** 2. Sample Input file:   r 5 3  c 4  s 6  t 2 6  p 7 14  z 2 4 8  s 2  r 6 2  c 5  c 4  r 6 10   1. Sample Output file:   Area of Square = 4.00  Area of Triangle = 6.00  Area of Rectangle = 12.00  Area of Rectangle = 15.00  Area of Trapezoid = 24.00  Area of Square = 36.00  Area of Circle = 50.27  Area of Circle = 50.27  Area of Rectangle = 60.00  Area of Circle = 78.55  Area of Parallelogram = 98.00  The Summary of Results:  Total number of Rectangles = 3  Total area of Rectangles = 87.00  Total number of Squares = 2  Total area of Squares = 40.00  Total number of Triangles = 1  Total area of Triangles = 6.00  Total number of Circles = 3  Total area of Cirles = 179.09  Total number of Parallelograms = 1  Total area of Parallelograms = 98.00  Total number of Trapezoids = 1  Total area of Trapezoids = 24.00  End of Report  **Part 2: Programming language features/Analysis of IDE’s**  The research and development team you work with have been tasked with further investigation into how best to build more efficient, secure software. You have been asked to look into programming paradigms and the advantages and disadvantages of using different programming language approaches.  Your report should include an explanation of each paradigm, an analysis of suitable IDEs, and an evaluation of source code that would be generated for an application.  **Part 3: Programing language paradigms and IDE’s**  The software development unit of the company you are currently working for has a position available for an application developer which you are interested in applying for. As part of the application process, they want to see that you can implement algorithms using an IDE.  Your aim is to create a fully working, secure application that has been developed using an IDE and adheres to coding standards.  The document portfolio should include:   1. Evidence of how the IDE was used to manage the development of your code. 2. An evaluation of developing applications using an IDE versus developing an application without using an IDE. 3. An evaluation of the debugging process in the IDE used and how it helped with development. 4. An evaluation of coding standards and the benefits to organizations of using them.   The working application produced must also be demonstrated. | | |
| **Learning Outcomes and Assessment Criteria** | | | |
| **Pass** | **Merit** | **Distinction** | |
| **LO1** Define basic algorithms to carry out an operation and outline the process of programming an application | | | |
| **P1** Provide a definition of what an algorithm is and outline the process in building an application. | **M1** Determine the steps taken from writing code to execution. | **D1** Examine the implementation of an algorithm in a suitable language. Evaluate the relationship between the written algorithm and the code variant. | |
| **LO2** Explain the characteristics of procedural, object orient oriented and event-driven programming, conduct an analysis of a suitable Integrated Development Environment (IDE) | | | |
| **P2** Give explanations of what procedural, object-orientated and event-driven paradigms are; their characteristics and the relationship between them. | **M2** Analyse the common features that a developer has access to in an IDE. | **D2** Critically evaluate the source code of an application which implements the programming paradigms, in terms of the code structure and characteristics. | |
| **LO3** Implement basic algorithms in code using an IDE | | | |
| **P3** Write a program that implements an algorithm using an IDE. | **M3** Use the IDE to manage the development process of the program. | **D3** Evaluate the use of an IDE for development of applications contrasted with not using an IDE. | |
| **LO4** Determine the debugging process and explain the importance of a coding standard | | | |
| **P4** Explain the debugging process and explain the debugging facilities available in the IDE.  **P5** Outline the coding standard you have used in your code. | **M4** Evaluate how the debugging process can be used to help develop more secure, robust applications. | **D4** Critically evaluate why a coding standard is necessary in a team as well as for the individual. | |

**Student Assessment Submission and**

**Declaration**

When submitting evidence for assessment, each student must sign a declaration confirming that the work is their own.

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| **Student name:** | | **Assessor name:** Ali Alomary | |
| **Issue date:**  3/23/2019 | **Submission date:**  5/27/2019 | | **Submitted on:** |
| **Programme:** Computer Science/Information Sciences | | | |
| **HTU Course Name:** Programming **BTEC Course Title:** Programming  **HTU Course Code :** 10200101 **BTEC Course Code:** D/615/1618 | | | |
| Assignment number and title: 1,Algorithm, program and two reports | | | |

**Plagiarism**

Plagiarism is a particular form of cheating. Plagiarism must be avoided at all costs and students who break the rules, however innocently, may be penalised. It is your responsibility to ensure that you understand **correct referencing practices**. As a university level student, you are expected to use appropriate references throughout and keep carefully detailed notes of all your sources of materials for material you have used in your work, including any material downloaded from the Internet. Please consult the relevant unit lecturer or your course tutor if you need any further advice.

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| **Student declaration**  I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.  **Student signature: Date:** |