جامعة الحسين التقنية
Al Hussein Technical University

ASSIGNEMNT MATERIAL

D/615/1618 Programming

For use with the following qualifications:

- HTU Technical Degree in Information Sciences
- HTU B.Sc. Degree in in Information Sciences
- HND

Assignment Brief Number: 1

Version 1

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Assessment Brief

Student Name/ID Number/Section	
HTU Course Number and Title	30201101 Programming
BTEC Course Number and Title	D/615/1618 Programming
Academic Year	Spring 2021/2022
Assignment Author	Eng. Dania Alsaid, Dr. Mariam Biltawi, Eng. Hana AlRasheed, Eng. Hikmat Shehadi
Unit Tutor(s)	Eng. Dania Alsaid, Dr. Mariam Biltawi, Eng. Ashraf Smadi, Eng. Hana AlRasheed
Assignment Title	Programming Assignment
Assignment Ref No.	No. 1
Issue Date	April 19, 2022
Formative Assessment Dates:	Every week, until June 16, 2022
Submission Date	June 19, 2022
IV Name & Date	Eng. Lina Hammad, Eng. Hiba Dahoud April 14, 2022

Submission Format

The submission for this assignment is divided into:

1- An individual written report (see report guidelines below) that shall include every item in the assignment details in addition to screenshots of the source code. The report should be submitted as **PDF** softcopy to the university's eLearning system within the deadline specified above on the link: https://elearning.htu.edu.jo.
2- A full working software program**s** that shall be uploaded to the GitHub repository assigned to the student by the teaching assistant. The uploaded source code should include every item in the assignment details that ends with word (**Program)**.
3- An oral discussion to discuss the assignment submission.

Report guidelines:

In your report, you should make use of headings, paragraphs, and subsections as appropriate. The expected word limit is 2000-4000 words (that is about 5-10 pages with images), although you will **not** be penalised for exceeding the total word limit, do your best to be within the word limit. Your report should be:

1. In a form of soft copies submitted to the instructor.
2. Written in a formal business style using single spacing and font size 12, of times roman.
3. Must be supported with research and referenced using the Harvard referencing system.
4. The plagiarism percentage should **not** to exceed 20%.

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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-orientated and event-driven programming.
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 have accepted the chance to be a software development intern for a software development company. Your company has an internal software development department and it is building in-house applications instead of buying readymade and custom solutions from 3rd party vendors.

You have been asked by your manager to provide a detailed report that provides complete solutions for the algorithms described in **Part 1**, answering the requests in **Part 2,** and complete the documentation **in Part 3.**

Part 1:

1.1 Outline and describe the steps involved in the process of building an application from writing to execution (**Report**).

1.2 Define what an algorithm is and outline the characteristics of a good algorithm (**Report**).

1.3 There are many algorithms that are used to solve variety of problems. In this part you should write an algorithm that converts a binary number into decimal and converts the decimal into digital format, explain your chosen algorithm, and describe the algorithm steps in pseudo code (**Report**).

Digital Format

1.4 Write a Java program code for the above chosen algorithm, the code will take input, execute algorithm and give output, the algorithm implementation should work regardless the input (**Program**).

1.5 Evaluate the above implementation of the algorithm and the relationship between the written algorithm and the implemented code (**Report**).

Part 2:

2.1 Define what is meant by a Programming Paradigm. Explain the main characteristics of Procedural, Object oriented and Event-driven paradigms and the relationships among them (**Report**).

2.2 Write code examples for the above three programming paradigms using a Java programming language (**Program**).

2.3 Compare and contrast the procedural, object orientated and event driven paradigms used in the above source code (**Report**).

2.4 Critically evaluate the code samples that you have above in relation to their structure and the unique characteristics (**Report**).

Part 3:

3.1 Use the IDE to manage the development process of the above code implementations.

3.2 Evaluate the use of an IDE for development of applications contrasted with not using an IDE. (**Report**).

3.3 Explain the debugging process you followed in writing your programs, and explain the debugging facilities available in the IDE (**Report**).

3.4 Evaluate how the debugging process can be used to help develop more secure, robust applications (**Report**).

3.5 Outline the coding standard you have used in your code; and critically evaluate why it was necessary in your work specifically and in team works generally (**Report**).

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 Evaluate** the implementation of an algorithm in a suitable language and the **relationship** between the **written algorithm** and the **code variant.**
LO2 Explain the characteristics of **procedural**, **object orientated** and **event-driven programming**		
P2 Give **explanations** of what procedural, object orientated and event driven paradigms are; their characteristics and the relationship between them.	**M2 Compare** and **contrast** the procedural, object orientated and event driven paradigms used in given source code of an application	**D2 Critically evaluate** the source code of an application which implements the procedural, object-orientated and event driven 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**.