# Luminus Technical University College - Assignment Brief (RQF)

## Higher National Diploma in computing

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| **Student Name** | | **Abdelrahman Saleh** | | | **Language of assessment** | | | **AR** | **EN** |
| **College ID:** | | | **22030961** | |
| **Pearson ID:** | | | **PG76228** | |
| **Unit Number and Title** | | **29** | **Application Program Interfaces** | | | | | | |
| **Academic Year** | | **2022/2023** | | | | | | | |
| **Unit Tutor** | | **Somaya Alshare** | | | | | | | |
| **Internal Verifier Name and Approval (Signature)** | | **Arar Altawil** | | | | **Approval Date:** | | | |
|  | | | |  | | | |
| **Assignment number and Title** | | **1** | **Utilising APIs to add new features to applications.** | | | | | | |
| **Issue Date (1St Submission)** | | **9/8/2023** | | **Submission Date (1st Submission)** | | | **7/9/2023** | | |
| **Issue Date (2nd Submission)** | | **9/9/2023** | | **Completion Date (2nd Submission)** | | | **11/9/2023** | | |
| **Submission Format** | | | | | | | | | |
| **You are to submit a word document and an application. The choice of font type, font size, and line spacing are left to your discretion. However, as a professional report, clarity and readability are critically important. Any material (images, drawings, diagrams, text) that is derived from other sources must be suitably referenced using a standard form of citation.** | | | | | | | | | |
| **Unit Learning Outcomes** | | | | | | | | | |
| **LO1** | **Examine what an API is, the need for APIs and types of APIs** | | | | | | | | |
| **LO2** | **Apply the knowledge of API research to design an application that incorporates relevant APIs for a given scenario or a substantial student chosen application.** | | | | | | | | |
| **LO3** | **Implement an application in a suitable development environment** | | | | | | | | |
| **LO4** | **Document the testing of the application, review and reflect on the APIs used.** | | | | | | | | |
| Transferable skills and competencies developed | | | | | | | | | |
| * Identifying what an API is, the need for APIs, and types of APIs. * Ability to identify and select relevant APIs to use within an application from a given scenario. * Ability to deal and work with RESTful APIs * Ability to deal with JSON Data. * Developing proof-of-concept application that utilizes existing APIs for common tasks that can include communication, displaying interactive visuals, audio playback in a suitable development environment. * Testing of the application; and a critical review of the APIs used. * Communication literacy, critical thinking, analysis, reasoning and interpretation. | | | | | | | | | |
| **Vocational scenario:** | | | | | | | | | |
| **You are a software engineering student in your senior year at LTUC. As a requirement to graduate you have to participate in an annual competition where participants from across Jordan universities compete for a 10K JOD prize. The participants go through multiple levels; At the end of each level, specific deliverables must be submitted in order for the participant to qualify for the next level.**  **The required deliverables at the end of each level are listed below:** | | | | | | | | | |
| Assignment activity and guidance | | | | | | | | | |
| **Level 1 Deliverables (Basics):**  In this level you must submit a report reflecting your knowledge of API’s in which you should:   1. ***Investigate*** the relationship between API’s and a software development kit (SDK). 2. ***Assess*** the possible security issues that you need to take care of when developing an API. 3. ***Analyse*** a range of APIs that offer services for a specific platform (web/mobile/desktop).   After submitting the reports, An assessment committee study the submitted reports and participants whose reports get approved go to the next level.  **Level 2 Deliverables (Application):**  For the next level participants should submit applications. Each participant should choose a topic/domain for an application that uses existing public API’s. They should build their application from scratch and it has to be unique for every participant. The development of the application is divided into milestones:  **Milestone 1: Application Design**   1. ***Investigate*** an existing/popular application that could be extended by adding a new feature to it with the help of a suitable API. (provide the  source of the API that you are planning to use) 2. ***Design*** an application of your choice that will utilise only one API which provides some service. Develop relevant **wireframes** diagrams. 3. ***Expand*** your design in Milestone 1- part 2 to let your application utilise a range of APIs, and **defend** your choice of these APIs. Develop relevant **wireframes** diagrams.     **Milestone 2: Application Implementation**  Now that you designed your application and decided on the APIs that you want to utilise, it is time to implement it. The competition coordinators encouraged the participants to make their application web based so it will be globally available for users. One option is to use HTML and CSS along with JavaScript to get the job done. The recommended implementation plan for participants to follow is:   1. First, participants will be given a test application that uses an API and they are asked to study this application. Then they need to ***implement one more API*** into it. This will help participants gain some practical experience. 2. Then participants have to ***create*** an application from scratch that utilises one API. The implementation should follow the design they provided in milestone 1-part 2. 3. Then they need to expand this application and ***produce*** an application thatutilise multiple APIs. Refer to the design that you made in milestone 1-part 3.     **Milestone 3: Application Testing**  Finally, participants should test their applications before submitting them. The following tests are required according to the competition rules:   1. ***Design*** and ***complete*** a white box test of your application. Provide test plan and test result. 2. ***Carry out*** a black box test of your application, and ***illustrate*** the test results (provide screenshots). 3. Based on the results of both tests, ***make suitable modifications*** to your application to ensure reliable performance. 4. After finishing your application you are able now to ***judge*** the APIs used within your application. ***Give*** a data security report of your application. | | | | | | | | | |
| **Recommended Resources**  **Please note that the resources listed are examples for you to use as a starting point in your research – the list is not definitive.**  **Textbooks**  Spencer, T. et al. (2015) Securing the API Stronghold: The Ultimate Guide to API Security. 1st Ed. Kindle. Amazon.  **Websites**  www.khronos.org The Khronos Group “Vulkan API” (Development Tool)  developers.google.com Google Developers (Development Tools) | | | | | | | | | |

**Learning Outcomes and Assessment Criteria**

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| **Pass** | **Merit** | | **Distinction** |
| **LO1** Examine what an API is, the need for APIs and types of APIs | | |  |
| **P1** Examine the relationship between an API and a software development kit (SDK). | **M1** Asses a range of APIs for a particular platform that covers a range of uses. | | **D1** Evaluate potential security issues surrounding API |
| **LO2** Apply the knowledge of API research to design an application that incorporates relevant APIs for a given scenario or a substantial student chosen application | | | **D2** Create a design for a chosen substantial application that will utilise a range of APIs, justifying choices. |
| **P2** Analyse an existing application that could be extended with a suitable API. | **M2** Design an application that will utilise an API for a given purpose. | |
| **LO3** Implement an application in a suitable development environment | | |  |
| **P3** Build on an existing application framework to implement an API. | | **M3** Develop an application that utilises an API. | **D3** Construct an application utilising multiple APIs, following the designs in LO2. |
| **LO4** **Document the testing of the application, review and reflect on the APIs used** | | | **D4** Critically evaluate the APIs used within your application. Provide a data security report of your application. |
| **P4** Design and complete a ‘white box’ test of the application, recording the results | | **M4** Conduct ‘black box’ tests of your application, recording the results.  **M5** Update the application accordingly with the results. |