# Luminus Technical University College - Assignment Brief (RQF)

## Higher National in computing

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| **Student Name** | | **Rashed Hasan Qahah.** | | | **Language of assessment** | | |  | **EN** |
| **College ID:** | | |  | |
| **Pearson ID:** | | |  | |
| **Unit Number and Title** | | **29** | **Application Program Interfaces** | | | | | | |
| **Academic Year** | | **2023/2024** | | | | | | | |
| **Unit Tutor** | |  | | | | | | | |
| **Internal Verifier Name and Approval (Signature)** | |  | | | | **Approval Date: 4/12/2023** | | | |
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| **Assignment number and Title** | | **1** | **City Explorer API Enhancement** | | | | | | |
| **Issue Date (1St Submission)** | | **4/12/2024** | | **Submission Date (1st Submission)** | | | **21/1/2024** | | |
| **Issue Date (2nd Submission)** | | **26/1/2024** | | **Completion Date (2nd Submission)** | | | **28/1/2024** | | |
| **Submission Format** | | | | | | | | | |
| **Web based application and word document at least 1000 words, use consistent style and formatting** | | | | | | | | | |
| **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 | | | | | | | | | |
| 1. Identifying what an API is and the needing for APIs, and the types of APIs. 2. Differentiate between API and SDK 3. Ability to deal and work with RESTful API 4. Ability to deal with JSON Data 5. Develop an application that utilizes an API | | | | | | | | | |
| **Vocational scenario:** | | | | | | | | | |
| Imagine that you are a web developer in an IT company and you got two new projects to be done in a month. The initial project involves enhancing the application of a tourism company giant called **ExploreWonders**, while the second was requested by your manager to be presented and sold to the company’s customers.  **ExploreWonders**, a major player in the world's tourism industry with a diverse clientele of different nationalities, already has a web application. Recently, the company's management decided to upgrade this application to have better functionality and to help users collect information about cities around the world.  Your task is to update their application's utility by introducing a "**City Explorer Corner**" by utilizing API technology. This corner allows users to input a city name, click "explore," and receive valuable information for trip planning, including weather, maps, food recommendations, and more.  Given that this is your first utilization of APIs, it is imperative to delve into the study of API technology. Subsequently, you will need to analyze, implement, and test both projects. To accomplish this, the following tasks are required: | | | | | | | | | |
| Assignment activity and guidance: | | | | | | | | | |
| **Task 1: Exploring API Technology**  • Explore the significance of Applications Programming Interfaces (APIs) and Software Development Kits (SDKs) in web application development. Define each and extract the distinctions between them.  • Determine diverse APIs offered by platforms for various purposes. Choose one platform and identify its array of APIs.  • Assess the criticality of security in API usage. Analyze the strengths and weaknesses of security concerns associated with APIs.  **Task 2: Integrating API Research Knowledge into Application Design**  • Investigate the existing web application “**ExploreWonders**” to explore its potential extension through APIs. Delve into the application's scope and determine the relevant APIs, considering the web as the development platform.  • Devise an original design for the application requested by your manager. Analyze this design by outlining the requirements and identifying the API(s) to be incorporated. Justify your selection of the chosen API(s).  • Construct a wireframe diagram for the manager-requested application, incorporating the previously selected APIs.  **Task 3: Implementing the requested Application with Appropriate APIs**  • Implement the selected APIs from task 2.1 within the "**ExploreWonders**" web application to establish the **City Explorer** **Corner**.  • Employ HTML, CSS, and JavaScript to produce the web-based application designed in task 2.2. Implement the chosen API or range of APIs.  **Task 4: Testing the Developed Application**  • Formulate a minimum of 3 distinct test cases for conducting white box testing on the "**ExploreWonders**" web application created in the culmination of task 3. Record the results for each test case.  • Enhance the application based on the testing results obtained in task 4.1.  • Execute 'black box' testing for the APIs implemented in task 3.2, incorporating a minimum of 3 different test cases. Document each test case along with its result and make necessary adjustments.  • Asses the chosen APIs for application development, critically analyzing their strengths and weaknesses. Additionally, supply you work with a data security report for the developed web 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.**  **https://www.w3schools.com/js/js\_api\_intro.asp** | | | | | | | | | |

**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. |
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**Learning Outcomes and Assessment Criteria**

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| Pass | Merit | Distinction |
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