# Luminus Technical University College - Assignment Brief (RQF)

## Higher National Diploma in computing

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| **Student Name** | | **Shahed Montaser** | | | **Language of assessment** | | | **AR** | **EN** |
| **College ID:** | | | **22036814** | |
| **Pearson ID:** | | | **RE67234** | |
| **Unit Number and Title** | | **6** | Deploying and Operating in the Cloud | | | | | | |
| **Academic Year** | | **2022/2023** | | | | | | | |
| **Unit Tutor** | | **Ghena Barakat** | | | | | | | |
| **Internal Verifier Name and Approval (Signature)** | | **Hazem Al najar** | | | | **Approval Date:9/8/2023** | | | |
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| **Assignment number and Title** | | **1** | **Building a well-architected cloud-based prototype** | | | | | | |
| **Issue Date (1St Submission)** | | **9/8/2023** | | **Submission Date (1st Submission)** | | | **4/9/2023** | | |
| **Issue Date (2nd Submission)** | | **6/9/2023** | | **Completion Date (2nd Submission)** | | | **8/9/2023** | | |
| **Submission Format** | | | | | | | | | |
| * **A presentation file with a consistent style and formatting** * **For report, a Word document with at least 1000 words, and you are required to use consistent style and formatting** * **Use APA reference style for your citations** * **For fonts and styles:**   + **Use Times New Roman format with size: 16 For main sections’ headers, 14 for sub-sections, 12 for paragraphs and 8 for tables and figures’ labels** | | | | | | | | | |
| **Unit Learning Outcomes** | | | | | | | | | |
| **LO1** | **Discuss the cloud architectural principles used for designing a technological solution for an organisational move to the cloud** | | | | | | | | |
| **LO2** | **Develop a cloud-based prototype using an appropriate development methodology for a business case** | | | | | | | | |
| **LO3** | **Test the prototype solution against business case requirements** | | | | | | | | |
| **LO4** | **Discuss the value gained from developing a cloud-based solution to support sustainable organisational performance.** | | | | | | | | |
| Transferable skills and competencies developed | | | | | | | | | |
| * Engage in research activities, design and development, testing and problem solving. * Acquire fundamental knowledge and skills to design, develop and deploy a solution to the cloud | | | | | | | | | |
| **Vocational scenario:** | | | | | | | | | |
| **Sanad**, an online application owned by the Jordanian Government, was initially developed during the pandemic to provide easily accessible vaccine certificates and vaccination details for each Jordanian. Following the pandemic, the Electronic Government in Jordan decided to leverage the application to offer electronic identification services to citizens by integrating it with various government departments such as Civil and Citizenship Department, Ministry of Justice, Ministry of Industry, Trade and Supply Companies Control Department, Greater Amman Municipality, Ministry of Social Development, National Aid Fund, Ministry of Local Administration, and Department of Land and Survey. This integration allows Jordanian citizens to access their details from all connected departments conveniently from home and, in some cases, order and receive personal documents through the Internet. Activation of the electronic identification can be done by visiting one of the approved centers spread throughout Jordan.  However, Sanad's website faces challenges due to being fully hosted on on-premise servers. It experiences high traffic during different seasons, leading to high latency and network interruptions. Additionally, the website frequently goes down, becoming unreachable, and has encountered security breaches. These issues result in delays for citizens and negatively impact their access to urgent and important services.  To address these challenges, the objective for Sanad is to provide distinct, smart, sustainable, and flexible services by leveraging electronic identification for citizens and moving most of the services online. The Jordanian Government aims to enhance service quality in terms of availability, scalability, and security, aligning with their strategic plan for a greener and fairer future.  As a cloud engineer at BluLogix, you have been assigned to manage a team responsible for devising a full cloud migration plan for Sanad. The plan involves moving all web applications and databases to the cloud computing environment while repairing and enhancing current devices for employees to access cloud services securely from anywhere. The migration strategy includes the following tasks where executing them, you will enable Sanad to offer improved services, enhanced security, and reduced dependency on physical government offices. This migration plan aligns with the Jordanian Government's vision for a sustainable and efficient future. | | | | | | | | | |
| Assignment activity and guidance | | | | | | | | | |
| * **Task 1 (Analysis)**: As a cloud engineer at BluLogix, your initial task is to create a comprehensive presentation outlining the key aspects, business processes, and architectural principles of the migration strategy. Your presentation will serve as a demonstration to stakeholders and decision-makers, showcasing the approach to be taken for the cloud migration project. The following tasks are essential components of your role:  1. Sanad has chosen cloud migration to optimize its services and processes. **Make clear** the motivation for Sanad to migrate their services to the cloud. 2. Sanad set out to create a cloud-based application, putting a lot of emphasis on creating a well-architected system. This calls for adherence to the five architectural principles of cost optimization, performance efficiency, reliability, operation excellence, and security. **Consider** the five architectural principles that every well-architected cloud-based solution must involve. 3. **Compose** the appropriate development strategy from the variety of options available, such as Agile, Waterfall, Spiral, JAD, Prototype, etc., that suits Sanad's needs and business practices and Reason your selected choice.  * **Task 2 (Design & Implementation)** : You should begin the design and implementation phases of the migration project in this task, and you need complete the following:      * 1. **Construct** a design specification for the cloud-based solution using a UML design, keeping in mind how to create a well-architected solution that complies with job 1.2's design principles.   2. Based on the designed solution, you have got to utilize Microsoft Azure Cloud services to creat a cloud-based model, based on the requirements and aims of Sanad. For archiving your results; you need to **utilize** screenshots by filling the below table with your answers  |  |  |  | | --- | --- | --- | | **Step Number** | **Step description** | **Screenshot** | |  |  |  |  * **Task 3 (Discussion)**: Upon completing the presentation in the first task, and preparing the prototype and implementing the design, the next step is to construct a comprehensive document discussing the primary benefits of the migration strategy. This document should contains the following key points:  1. **Examine** the impact of business process on developing successful cloud-based solution. 2. **Measure** how the usage of architectural principles and services contribute in designing solutions in the cloud***.***  * **Task 4 (Test)**: Following the creation of the prototype, your responsibility in this phase will involve assessing the developed prototype's alignment with the specified objectives and requirements through testing:  1. You need to **create** a testing strategy that evaluates the compliance of the implemented cloud-based prototype to the established standards. Use the provided table format to structure your testing plan.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Number** | **Plan** | **Parameter** | **Result** | **Screenshot** | | 1 | Load testing | Number of errors | Passed |  |  1. In this phase of work you are required to **conduct** the testing plan for the implemented cloud-based prototype. Capture screenshots that illustrate the obtained results. Afterwards, integrate these screenshots into the below table that was generated in the previous task to documenting the outcomes in an accurate way***.*** 2. **Examine** the achieved results from the testing plan in relation to Sanad's business requirements, objectives, and goals.      1. **Appraise** various testing approaches that can be employed to test cloud-based prototypes***.***  * **Task 5 (Review)**: The final objective involves persuading Sanad owners of the added value brought about by the cloud computing migration project. This will be achieved by documenting the subsequent key aspects:   1. Your responsibility entails a comprehensive **examination** of the influence of the migration project on Sanad's organizational objectives.   2. In this stage you are required to **examine** the possibilities for enhancing the developed solution in terms of its capacity to deliver value to Sanad***.***   3. **Appraise**the ways in which a cloud-based solution can contribute value to Sanad’s goals, alongside an analysis of the challenges that Sanad used to face. | | | | | | | | | |
| **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** | | | | | | | | | |

**Learning Outcomes and Assessment Criteria**

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| Pass | Merit | Distinction |
| **LO1** Discuss the cloud architectural principles used for designing a technological solution for an organisational move to the cloud | | **D1** Evaluate how architectural principles and services are used for designing solutions in the cloud. |
| **P1** Explain the business processes that lead to organisations adopting cloud-based systems.  **P2** Discuss cloud architectural principles in relation to designing an efficient, secure, scalable and cost-effective cloud solution. | **M1** Analyse how business process improvements have an important impact on the successful design and development of a cloud solution |
| **LO2** Develop a cloud-based prototype using an appropriate development methodology for a business case | |
| **P3** Produce a design specification, selecting an appropriate development methodology, for a prototype solution for a given business use case. **P4** Build the cloud prototype, considering its essential characteristics and utilising available services suitable for the business case requirements. | **M2** Justify the decisions made in designing the cloud prototype, including the chosen methodology |
| **LO3** Test the prototype solution against business case requirements | | **D2** Evaluate the different test strategies that are used for testing a prototype solution |
| **P5** Develop a test plan for conducting tests on the solution against the core testing components.  **P6** Carry out testing of the solution against your test plan. | **M3** Analyse the testing results against the requirements set out from the business case |
| **LO4** Discuss the value gained from developing a cloud-based solution to support sustainable organisational performance | | **D3** Evaluate how a cloud-based solution can add value to an organisation’s objectives, as well as the challenges posed |
| **P7** Review how the solution developed meets organisational objectives. | **M4** Assess how the developed solution could be improved in terms of how it can deliver value to the organisation. |