MODULE NAME:	MODULE CODE:
CLOUD DEVELOPMENT A	CLDV6211

ASSESSMENT TYPE: POE (PAPER AND MARKING RUBRIC)

TOTAL MARK ALLOCATION: 300 MARKS

TOTAL HOURS: A minimum of 45 HOURS is suggested to complete this assessment

By submitting this assignment, you acknowledge that you have read and understood all the rules as per the terms in the registration contract, in particular the assignment and assessment rules in The IIE Assessment Strategy and Policy (IIE009), the intellectual integrity and plagiarism rules in the Intellectual Integrity and Property Rights Policy (IIE023), as well as any rules and regulations published in the student portal.

INSTRUCTIONS:

1. *No material may be copied from original sources, even if referenced correctly, unless it is a direct quote indicated with quotation marks. No more than 10% of the assignment may consist of direct quotes.*
2. *Make a copy of your assignment before handing it in.*
3. *Assignments must be typed unless otherwise specified.*
4. *Begin each section on a new page.*
5. *Follow all instructions on the PoE cover sheet.*
6. *This is an individual assignment.*
7. *Answer All Questions.*
8. *Instructions for submitting your assessment:*
    a. *Use of good programming practice and comments in code is compulsory.*
    b. *Save your solution/project files in your GitHub repository for this module.*
    c. *Save all files (including any source code files, template files, design files, image files, text files, database files, etc.) within your GitHub repository.*
    d. *Do NOT save zipped (archive) files in your GitHub repository unless specifically instructed to do so.*
    e. ***Important:*** *Upon completion of your assessment, you must save and close all your open files before submitting your work. You will submit your assessment on the LMS page for this module.*
    f. ***To complete your submission:*** *Create a document in MS-Word or Notepad for each part of the POE. The document name for each part of the POE must follow the format explained in the POE instructions.*
    g. *In this document include the following: Your student number, the module code, all required answers,* ***the link to your GitHub repository*** *where you saved your practical work, and the URL of your web application.*
    h. *Submit this document in the LMS, using the submission links for this module.*

Referencing Rubric

Providing evidence based on valid and referenced academic sources is a fundamental educational principle and the cornerstone of high-quality academic work. Hence, The IIE considers it essential to develop the referencing skills of our students in our commitment to achieve high academic standards. Part of achieving these high standards is referencing in a way that is consistent, technically correct and congruent. This is not plagiarism, which is handled differently.

Poor quality formatting in your referencing will result in a penalty **of a maximum of ten percent being deducted from the percentage awarded**, according to the following guidelines. Please note, however, that **evidence of plagiarism in the form of copied or uncited work (not referenced), absent reference lists, or exceptionally poor referencing, may result in action being taken in accordance with The IIE's Intellectual Integrity Policy (0023)**.

Markers are required to provide feedback to students by indicating **(circling/underlining) the information that best describes the student's work.**

Minor technical referencing errors: 5% deduction from the overall percentage – the student's work contains **five or more errors** listed in the minor errors column in the table below.

Major technical referencing errors: 10% deduction from the overall percentage – the student's work contains **five or more errors** listed in the major errors column in the table below**.**

If both minor and major errors are indicated, then 10% only (and not 5% or 15%) is deducted from the overall percentage. The examples provided below are not exhaustive but are provided to illustrate the error

Required: **Technically correct referencing style**	**Minor errors in technical correctness of referencing style** **Deduct 5% from percentage awarded**	**Major errors in technical correctness of referencing style** **Deduct 10% from percentage awarded**
Consistency • The same referencing format has been used for all in-text references and in the bibliography/reference list.	Minor inconsistencies. • The referencing style is generally consistent, but there are one or two changes in the format of in-text referencing and/or in the bibliography. • For example, page numbers for direct quotes (in-text) have been provided for one source, but not in another instance. Two book chapters (bibliography) have been referenced in the bibliography in two different formats.	Major inconsistencies. • Poor and inconsistent referencing style used in-text and/or in the bibliography/ reference list. • Multiple formats for the same type of referencing have been used. • For example, the format for direct quotes (in-text) and/or book chapters (bibliography/ reference list) is different across multiple instances.
Technical correctness • Referencing format is technically correct throughout the submission. • The correct referencing format for the **module's discipline** has been used, i.e., either **APA,** OR **Harvard** OR **Law.** • Position of the reference: a reference is directly associated with every concept or idea. • For example, quotation marks, page numbers, years, etc. are applied correctly, sources in the bibliography/reference list are correctly presented.	**Generally, technically correct with some minor errors.** • The correct referencing format has been consistently used, but there are one or two errors. • Concepts and ideas are typically referenced, but a reference is missing from one small section of the work. • Position of the references: references are only given at the beginning or end of every paragraph. • For example, the student has incorrectly presented direct quotes (in-text) and/or book chapters (bibliography/reference list).	**Technically incorrect.** • The referencing format is incorrect. • Concepts and ideas are typically referenced, but a reference is missing from small sections of the work. • Position of the references: references are only given at the beginning or end of large sections of work. • For example, incorrect author information is provided, no year of publication is provided, quotation marks and/or page numbers for direct quotes missing, page numbers are provided for paraphrased material, the incorrect punctuation is used (in-text); the bibliography/reference list is not in alphabetical order, the incorrect format for a book chapter/journal article is used, information is missing e.g. no place of publication had been provided (bibliography); repeated sources on the reference list.
Congruence between in-text referencing and bibliography/ reference list • All sources are accurately reflected and are all accurately included in the bibliography/ reference list.	**Generally, congruence between the in-text referencing and the bibliography/ reference list with one or two errors.** • There is largely a match between the sources presented in-text and the bibliography. • For example, a source appears in the text, but not in the bibliography/ reference list or vice versa.	**A lack of congruence between the in-text referencing and the bibliography.** • No relationship/several incongruencies between the in-text referencing and the bibliography/reference list. • For example, sources are included in-text, but not in the bibliography and vice versa, a link, rather than the actual reference is provided in the bibliography.
In summary: the recording of references is accurate and complete.	In summary, at least **80%** of the sources are correctly reflected and included in a reference list.	In summary, at least **60%** of the sources are incorrectly reflected and/or not included in reference list.

Overall Feedback about the consistency, technical correctness and congruence between in-text referencing and bibliography:

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Background

James Khumalo, a visionary entrepreneur, set out to establish KhumaloCraft Emporium as a global e-commerce platform to showcase handcrafted products. His dream involves connecting artisans worldwide with a discerning audience. However, for this dream to become reality, KhumaloCraft Emporium needs a scalable, accessible, and user-friendly platform.

Achieving this requires an understanding of basic cloud computing and the various service models; and a platform that is accessible globally, which is usable and ensures a positive user experience. Once the craftwork and its related details have been built into a suitable platform to showcase the work, it is necessary that the platform be deployed to enable accessibility and advertising the work.

James envisioned a platform accessible to a global audience, scalable to accommodate growth, and ensuring a secure and enjoyable shopping experience. The challenges include making crucial decisions on cloud service models and deployment strategies, as well as designing an efficient database schema for product information and user data, while ensuring scalability with the platform's growth. The development team faces technical challenges such as global accessibility, scalability, and ensuring a seamless user experience.

Lastly, James would like to include advanced services and functionalities to enhance user experience and advanced features, such as search capabilities, notifications, serverless services, and automation.

The entire goal of KhumaloCraft is to have a web application which is accessible, stores the artisans' craftwork, and allows customers globally to access and order their craftwork. Therefore, the following needs to be completed:

- Demonstrate an understanding of cloud computing and its relevance in solving this problem.
- Development of a basic web application to provide background information on the company and their services.
- Deploying the web application on a suitable Azure platform.
- Development of a database and its integration with the web application.
- Adding the necessary functionality.

- Including the various advanced features of Azure such as Search Engines, Functions and Logic apps to add advanced features on the web application.

Instructions

The Portfolio of Evidence (POE) requires you to create a web application which includes advanced features of Azure to enhance the experience of the user. The development process will take a stage approach where Parts 1 – 3 of the POE will contribute towards the development of the final solution.

To work on the POE, students are required to:

- Have access to an Azure account with available credit. This access will be arranged by your lecturer/campus at the start of this module.
- Use Microsoft Visual Studio for your coding.
- Save source code in a GitHub repository. This access will be arranged by your lecturer/campus at the start of this module.

The submission of each part of the POE will require you to do the following:

- Create a **document** in MS-Word which contains the following:
  - Your student number
  - The module code
  - All answers required, including typed answers, diagrams and screenshots
  - The ***URL of the Web App*** that you developed
- The document name must follow the format shown here:
  - ***StudentNumber_ModuleCode_Part#.***
  - E.g., if your student number is *12345* and you are submitting *Part 1* of the POE for the module *PROG121*, create a document named ***12345_Prog121_Part1.***
- Submit this document in Learn, using the submission link on the Learn page for this module.

Summary Sheet

ITEM	DESCRIPTION
Summary of Activities	The student needs to submit each part of the POE on the Learn/LMS page for this module. ***NB. Please follow the given instructions to supply a document which includes the needed answers, screenshots, the URL of the Web App module developed; and the link to the GitHub repository containing your project source code.***
Tools and Resources	• Microsoft Visual Studio; • Microsoft SQL Server; • Microsoft Word or other word processing software; • Windows Azure Portal; • Windows Azure subscription with Microsoft Azure Storage; • A GitHub repository
Calculation of Marks	This POE consists of 3 parts. The mark for each part of the POE will be calculated as a mark out of 100 (i.e. a percentage). The final mark will be weighted as follows: • Part 1 – 25% (formative) • Part 2 – 25% (formative) • Part 3 – 50% (summative)

Part 1 — Provide a motivation for a suitable solution and develop a basic web application.

(Marks: 100)

Related Content: Learning Units: 1 – 2

Assessment

Assessment/ Deliverable	Marks	Weight	Duration
Part 1	50 total marks. (*Your mark awarded for Part1 will be calculated as a percentage.*)	25%	10 hours

Your submission document

Your answers for the following questions must be submitted in an MS-Word document, containing the following:

- Your student number
- The module code
- Question A – typed answers, including diagrams, illustrations, etc.
- Question B – screenshots of your local web application
- Question C – the URL of your deployed application, the GitHub link for the web application source code, as well as screenshots of the deployment process and the deployed web application

Note: *Make sure you read the instructions given earlier in this document and follow the specified file name format.*

A. Provide a motivation for a suitable solution for KhumaloCraft.

Read the background information provided earlier in this document, and develop a motivation for a suitable solution which KhumaloCraft must adopt. To describe this solution you should provide a report to KhumaloCraft as to what approach they can take, and what benefits they will get.

Your motivation should include the following headings:

- Introduction
- Compare KhumaloCraft current workflow with the proposed solution
- Benefits of using cloud computing
- Scalability
- Accessibility

- Services provided through cloud computing.
- Conclusion

Note: You can use tables, diagrams, photos, illustrations, etc. as part of your motivation.

B. Develop a web application

Develop a web application using ASP.NET which will assist KhumaloCraft to advertise their work.

Your web application should include the following:

- A *Home*, *About Us*, *Contact Us*, and a *My Work* page with the necessary information.
- The *My Work* page should include information about the work KhumaloCraft does. Such information should include images, craftwork, and prices of the craftwork. This information should be added as static information upon development of the web application. (In Part 2 of the POE the information will be included as part of a database integration.)

In your submission document (Below your answers for question A) provide screenshots of the following as part of your answers for question B:

- Your web application running locally on your computer.
- The process for deploying your web application on an App Service.
- Your web application running through the link.
- Ensure that your screenshots show the various pages that you must include in your web application.

C. Deploy your Web Application to an Azure App Service (Windows)

Once you have tested your web application, you are required to deploy it to an Azure App Service and make it accessible through a link. Ensure that this has been texted both on your local computer and on the App Service.

In your submission document (below your answers for question B) provide the following as part of your answers for question C:

- The URL for your deployed Web Application
    - The URL should follow the following format and must look similar to this: **http://student_number.azurewebsites.net**
- Screenshots of the process for deploying your Web Application on an App Service.

- Screenshots of your Web Application running through the link.
- GitHub link for the web application source code.

Submitting your document for this part of the POE

Once you have completed your submission doc containing the answers to all the questions above, submit your document using the submission link on the Learn page for this module.

Note: *Make sure you read the instructions given earlier in this document and follow the specified file name format.*

Rubric 1 (for POE Part 1)	Excellent	Good	Developing	Poor	Comments
A convincing motivation is given to show how cloud computing can be a viable and relevant solution towards KhumaloCraft's needs. The motivation addresses relevant aspects of accessibility, scalability, benefits, and related services.	16 – 20	11 – 15	6 – 10	0 - 5	
A web application was developed and includes the basic functionality required in a user-friendly and usable manner. Pages are included for *Home*, *About Us*, and *Contact Us*. These pages should include relevant information for KhumaloCraft. The *My Work* page should include visually appealing and well-displayed details about the KhumaloCraft's artisans' work. *(Note: The information in this web site should not yet persist. Database integration will follow in Part 2 of the POE.)*	16 – 20	11 - 15	6 – 10	0 - 5	

Rubric 1 (for POE Part 1)	Excellent	Good	Developing	Poor	Comments
The web application is deployed to an Azure App Service and runs correctly in the online environment. • Screenshots of the Azure deployment process are provided. • The URL is provided and accessible in a web browser.	8 – 10	5 – 7	3 – 4	0 - 2	
POE Part 1 Subtotal					**/50**
Note: The mark achieved will be calculated as a percentage					

POE Part 2 — Create a database and integrate to the web application (Marks: 100)

Related Content: Learning Units: 3 – 4

Assessment

Assessment/ Deliverable	Marks	Weight	Duration
Part 2	80 total marks. (*Your mark awarded for Part2 will be calculated as a percentage.*)	25%	15 Hours

Your submission document:

Your answers to the following questions must be submitted in an MS-Word document, containing the following:

- Your student number
- The module code
- The URL of your deployed application with the updated functionality
- The GitHub link for the web application source code
- ER diagram and screenshots of the database design and structure
- Screenshots of the process for deploying the database
- Screenshots of the web application (My Work page)
- Screenshots that show that users can insert data to the SQL database via the web application
- Screenshots that show that users can order any product

Note: *Make sure you read the instructions given earlier in this document and follow the specified file name format.*

Instructions:

The web application developed in Part 1 is a useful start in terms of basic functionality. However, at this point, the web application does not allow any transactions, and it does not allow clients to interact with KhumaloCraft since it does not store the necessary information anywhere.

Based on the feedback you received for Part 1, you should make relevant improvements to your existing web application. Thereafter, you are required to implement the following enhancements to your web application:

A. Database design and development

You are required to design and develop a SQL database that stores user, product, and transaction-related data:

- Identify the necessary entities for your application's functionality.
- Design a database using SQL Server with the different entities.
- Write the various queries necessary for your application.
- Deploy your database on Azure.

B. Integrating your database and web application

- Implement functionality on your My Work page of your web application which replaces the static details of the craftwork with the data from your database.
- The data that should be displayed is the **product information (name, price, category, availability).**
- Ensure that a user can insert data to the database using the web application.
- A client should be able to place an order of a craftwork they like, and should be able to view their previous orders.
- KhumaloCraft users must be able to see client orders and process them.

Submitting your document for this part of the POE

Once you have completed your submission doc containing the answers to all the questions above, submit your document using the submission link on the Learn page for this module.

Notes:

- Your solution for Part 2 must incorporate all the requirements from Part 1 and Part 2.
- Make sure you read the instructions given earlier in this document and follow the specified file name format.

Rubric 2 (for POE Part 2)	Excellent	Good	Developing	Poor	Comments
The database design efficiently implements the requirements for KhumaloCraft, including relevant entities, relationships and constraints. The necessary tables have been created to store data related to users, products, and transactions. (Evidence includes screenshots of the relational diagram and database structure)	12 – 15	9 – 11	5 – 8	0 - 4	
The database has been deployed to Azure and is integrated and accessible to the web application. (Evidence includes screenshots of the process for deploying the database)	12 – 15	9 – 11	5 – 8	0 - 4	
Users can effectively insert data in the database through the web application. Data related to products, users, and transactions can be stored on the database using the web application.	16 – 20	11 – 15	6 – 10	0 - 5	
Product information is retrieved correctly from the database and displayed in a user-friendly manner to clients in the web application.	16 – 20	11 - 15	6 – 10	0 - 5	

Rubric 2 (for POE Part 2)	Excellent	Good	Developing	Poor	Comments
Functionality for processing and accessing order information from the database is implemented in a user-friendly and efficient way in the web application. Clients are able to place orders of the craftwork and can see their previous orders. KhumaloCraft can see client orders and process them.	8 – 10	5 – 7	3 – 4	0 - 2	
Bonus Marks: The student has implemented advanced features which were not mentioned in the specifications. These advanced features are useful and efficient enhancements that provide a richer user experience to the clients and users of the web application.	8 – 10	5 – 7	3 – 4	0 – 2	
POE Part 2 Subtotal					**/80**

Notes:

- *The mark achieved for Part 2 will be calculated as a percentage.*
- *Bonus marks are not included in the subtotal and will be added to your marks only in cases where exceptional additional work was added which results in useful and efficient improvements to the overall solution.*

Part 3 — Integrating advanced Azure services and functionality (Marks: 100)

Related Content: Learning Units: 5 – 9

Assessment

Assessment/ Deliverable	Marks	Weight	Duration
Part 3	90 total marks. (*Your mark awarded for Part3 will be calculated as a percentage.*)	50%	20 hours

Your submission document:

Your answers for the following questions must be submitted in an MS-Word document, containing the following:

- Your student number.
- The module code.
- The How-To-Guide created for Section A.
- The URL of your deployed application with the updated functionality required for Section B.
- The GitHub link for the web application source code.
- A link of the web application with the updated functionality.
- Screenshots of the web application.
- Provide screenshots of the order process workflow.
- Screenshots of the process for implementing your Azure Cognitive Search.

Note: *Make sure you read the instructions given earlier in this document and follow the specified file name format.*

Instructions:

The functional web application developed in Part 2 is useful in terms of functionality, but now requires additional advanced Azure services that will enhance the user experience of the web application.

Based on the feedback you received for Part 2, you should make relevant improvements to your existing web application. Thereafter, you are required to implement the following enhancements in order to deliver a rich user experience in your web application:

A. Conduct Research and Create a How-To-Guide for Implementing a Cognitive Search Engine (Azure AI Search)

Create a How-To-Guide (HTG) which will allow future developers to integrate a cognitive search (Azure AI Search) engine to ensure that a client can utilize some of the Azure Cognitive Search engine features.

In your HTG, you are required to provide instructions for the following:

- Import your existing data source to integrate to your search engine.
- Ensure that you implement a full-text search to search for specific products.
- You Azure Cognitive Search should make use of cognitive skills.

B. Implement Durable Functions

In this section you need to extend your existing web application as follows. When a user places an order for a specific work, various steps need to be executed, such as inventory updates, payment processing, and order confirmation.

- Implement a durable function orchestrator that coordinates the different steps in the order processing workflow. Each step can be implemented as a separate activity function.
- Implement an activity function for each inventory-related task, to ensure that when an order is placed, the inventory is updated.
- Implement an orchestrator function for managing the notification workflow by using activity functions for sending push notifications at the various stages of the order process.

Submitting your document for this part of the POE

Once you have completed your submission document containing the answers to all the questions above, submit your document using the submission link on the Learn page for this module.

Notes:

- Your final solution for Part 3 must incorporate all the requirements from Part 1-3.
- Make sure you read the instructions given earlier in this document and follow the specified file name format.

Rubric 3 (for POE Part 3)	Excellent	Good	Developing	Poor	Comments
The HTG (How-To-Guide) demonstrates how to import an existing data source to be used by the Azure Cognitive Search.	12 – 15	9 – 11	5 – 8	0 - 4	
The HTG demonstrates how to implement and integrated the AI search into to the web application, with the necessary functionality required.	8 - 10	5 - 7	3 - 4	0 - 2	
The HTG explains how to use a range of full-text searches for specific products in the web application.	12 – 15	9 – 11	5 – 8	0 - 4	
The HTG demonstrates how Azure Cognitive (AI) search can be implemented with cognitive skills that improves the user's search experience and functionality	16 – 20	11 – 15	6 – 10	0 - 5	
The HTG is well structured, includes a cover page and table of contents. The document is well written in accessible and easy to understand language. The HTG makes use of section headings and sub headings and includes images to demonstrate configuration steps	16 – 20	11 - 15	6 – 10	0 - 5	

Rubric 3 (for POE Part 3)	Excellent	Good	Developing	Poor	Comments
The necessary activity functions have been implemented through Durable functions according to the provided workflow.	8 – 10	5 – 7	3 – 4	0 - 2	
Bonus Marks: The student has implemented advanced features which were not mentioned in the specifications. These advanced features are useful and efficient enhancements to the scalability, accessibility or usability of the solution.	8 – 10	5 – 7	3 – 4	0 – 2	
POE Part 3 Subtotal					**/90**

Notes:

- *The mark achieved for Part 3 will be calculated as a percentage*
- *Bonus marks are not included in the subtotal and will be added to your marks only in cases where exceptional additional work was added which results in useful and efficient improvements to the overall solution.*