THE INDEPENDENT INSTITUTE OF EDUCATION
IIE

MODULE NAME:	MODULE CODE:
PROGRAMMING 3A	**PROG7311**

ASSESSMENT TYPE: POE (PAPER)

TOTAL MARK ALLOCATION: 100 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 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. *All work must be adequately and correctly referenced.*
5. *Begin each section on a new page.*
6. *Follow all instructions on the assignment cover sheet.*
7. *This is an individual assignment.*

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 <u>of a maximum of ten percent</u> 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.**

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

<u>Major technical referencing errors: 10% deduction from the overall percentage</u> – 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**	<u>Minor errors</u> in technical correctness of referencing style **Deduct 5% from percentage awarded**	<u>Major errors</u> 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. • 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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Portfolio of Evidence (PoE) — Background

A group of local farmers have decided to work together to start a brick-and-mortar store where they can sell all their products under one roof. They call themselves Farm Central.

Farm Central has approached your employer to bid on developing their stock management website. The website will track incoming and outgoing stock and which farmer each item belongs to. Your employer has been shortlisted after the submission of the original bid. Now it is time to create a proposal to convince the client that your employer is the right company for the job.

Your inputs as a software developer are required for two parts of the proposal as specified by the client:

1.   "Develop a prototype of the stock management website"; and
2.   "Propose a plan for implementing the final solution."

To address the first point, you will need to develop a prototype web application that can be demonstrated to the client's bid committee. There are three people on the committee:

1.   The Accountant – a person who cares about the accuracy of the data because it will affect the income of each farmer;
2.   The Head of Marketing – a bubbly person who is very visually oriented, who cares greatly about how quick and easy the process should be for the farmers that drop off stock; and
3.   The Store Manager – an efficient person that knows the people working in the store will need to be trained to use the system.

Your prototype will need to impress each bid committee member if your company hopes to be awarded the project.

To address the second point, you will have to create the content for the proposal.

Instructions
Complete the parts below to provide all the information and the prototype required for the proposal.
Tip: Read the rubrics at the end of this document for the details of how your work will be marked.

Part 1 — Write a Report about Requirements and Design Patterns	**(Marks: 100)**
Learning Units: LU1-LU2

The client was not very specific in their request for a "plan". So, your marketers got involved, and they indicated that you should write a short report (500 to 700 words) on the following aspects:

1.   Which non-functional requirements are of high importance? Why? How are you going to address these requirements? How do they impact how you plan to develop the software?

2.   Are design patterns and architecture patterns relevant? How should they be applied in the project, if at all? Motivate your position.

Remember that your target audience is the bid committee, and you should write your report accordingly. Points to consider:

•   What should the tone of the report be?

•   How much technical detail should be included?

•   How can you structure the report so that the busy bid committee members can easily spot the critical points?

•   How can the use of diagrams improve communication?

Submit your report in Microsoft Word document format.

Note: Any words more than 700 words will not be marked.

Part 2 — Develop a Prototype Web Application   **(Marks: 100)**

Learning Units: LU3

Develop a prototype <u>web application</u> using Visual Studio and C#. In addition, your prototype must have the following functionality:

- The prototype website shall have a database of farmers with their associated products.

- The prototype website shall provide two different user roles: farmer and employee.

- The prototype website shall require farmers and employees to log into the website to access user-specific information.

- The prototype website shall allow a logged-in employee to add a new farmer to the database.

- The prototype website shall allow a logged-in farmer to add a new product to their profile in the database.

- The prototype website shall allow a logged-in employee to view the list of all the products ever supplied by a specific farmer.

- The prototype website shall allow a logged-in employee to filter the displayed list of products supplied by a specific farmer according to the date range or product type.

Include sample data with your prototype so that the marketers will have something to demonstrate without capturing lots of data on the spot.

Remember that your target audience is the bid committee, and you should address each of their concerns in your prototype:

- accuracy of the data;

- how the website looks; and

- how easy the website is to use.

Write a readme file explaining how to build and run your prototype, including any tools the reader will need. Zip all the files required to build and run your prototype, together with the readme file.

POE — Write a Report about the Prototype, Performance and Methodologies   (Marks: 100)

Learning Units: LU4-LU5

Important: Remember to resubmit parts 1 and 2 together with the POE, incorporating any feedback provided by your lecturer.

The marketing team hired a consultant to help structure the proposal. She was very satisfied with your first report but indicated that more areas need to be covered.

Write a report (1000 to 1200 words) covering the topics below. Sections 1 to 4 will be incorporated into the proposal document, while section 5 will be read-only by your marketing team.

1.   How can the performance of the prototype be optimised? What guidelines should be followed when the final software is developed to ensure its acceptable performance?

2.   Which software development methodology would you recommend for this development effort? Motivate clearly why.

3.   Would you recommend implementing DevOps? Why and how does it fit in with the chosen software development methodology?

4.   Would you recommend using ITIL, the Zachman framework, TOGAF, or a combination of these? Motivate clearly why.

5.   The marketers have also asked for a short description of the technical solution you implemented in your prototype, so they know how to explain it during the demonstration. Find a good balance between technical details and business value. Consider using diagrams to explain concepts so they can use them in their presentation.

Remember to write each section with the target audience in mind. Points to consider:

•   What should the tone of the report be?

•   How much technical detail should be included?

•   How can you structure the report so that the important points can be spotted easily?

•   How can the new sections be structured to ensure that they will fit in with the larger proposal document?

Submit your report in Microsoft Word document format.

Note: Any words more than 1200 words will not be marked.

Appendix A
Assessment Sheet (Marking Rubric)

Please note: Tear off this section and **attach** it to your work when you submit it.

MODULE NAME:		MODULE CODE:
PROGRAMMING 3A		**PROG7311**

STUDENT NAME:
STUDENT NUMBER:

RUBRIC 1 — Part 1	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 1, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Style and Tone: The report should be written in a formal style while keeping it simple (avoiding high-sounding words for the sake of sounding knowledgeable).	**9—10** Use of formal writing style appropriate for the audience.	**6—8** Use of formal writing style with some possible improvements.	**5** Somewhat informal style is used or overly formal style.	**0—4** An informal style is used.	
Structure and Formatting: The report should be structured in a way that makes it easy to spot the important points, for example making use of bullet points and bold text.	**9—10** Formatting makes the document very easy to read.	**6—8** Consistent formatting with some minor suggested improvements.	**5** Some formatting is applied, but the document is still hard to follow. Or inconsistencies.	**0—4** No or very little formatting is applied. Or all one long paragraph.	

RUBRIC 1 — Part 1 [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 1, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Multi-modal Communication: Effective use of diagrams to present information that is hard to convey effectively in words alone.	**9—10** Relevant diagrams that add value to the document.	**6—8** Useful diagrams that add value with some room for improvement.	**5** Some diagrams are included but don't add much value to the document.	**0—4** No diagrams included or diagrams and not relevant to the document.	
Content - Non-Functional Requirements: The chosen list of non-functional requirements should address the concerns of the bid committee members but not be limited to their concerns only.	**16—20** A comprehensive list of non-functional requirements included going beyond the concerns of the bid committee members.	**11—15** The list of non-functional requirements addresses only the concerns of the bid committee members.	**10** The list of non-functional requirements only partially addresses the concerns of the bid committee members.	**0—9** No non-functional requirements listed or completely irrelevant to the system.	
Content - Non-Functional Requirements: The explanation of the impact of the non-functional requirements should contain enough detail to be persuasive without overwhelming the non-technical reader.	**16—20** Detailed explanation without overwhelming technical details.	**11—15** Explanation included but with some room for improvement.	**10** Some explanations were included, but details were lacking or too technical.	**0—9** No or very little explanation included or completely irrelevant to the system.	

RUBRIC 1 — Part 1 [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 1, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Content - Patterns: The explanation whether design and architecture patterns are relevant should demonstrate an understanding of the purpose of these patterns.	**16—20** A complete explanation showing understanding of patterns is included and presented in an easy-to-understand way.	**11—15** An explanation of patterns is included with some missing detail.	**10** Only a very rudimentary explanation is included or one that would not be clear to a non-technical reader.	**0—9** No explanation of why patterns are relevant is included, or the included explanation doesn't make any sense.	
Content - Patterns: The application of the design patterns should be phrased in a practical, easy to understand way.	**9—10** A clear explanation of how patterns can be applied is included.	**6—8** An explanation is included with some missing details.	**5** A very basic explanation is included.	**0—4** No application is provided or completely irrelevant.	
PART 1 SUBTOTAL					**/100**

RUBRIC 2 — Part 2	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 2, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
System Functionality: Data is stored in a database of farmers and products, with substantial demonstration data pre-populated.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	
System Functionality: An employee or farmer must be logged into the website to see any data.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	
System Functionality: After logging in, an employee can add a new farmer to the database.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	

RUBRIC 2 — Part 2 [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 2, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
System Functionality: After logging in, a farmer can add a new product to their profile in the database.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	
System Functionality: After logging in, an employee can view a list of all the products ever supplied by a specific farmer.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	
System Functionality: When an employee views a list of products supplied by a farmer, the list can be filtered according to date range or product type.	**9—10** The feature works perfectly without any errors.	**6—8** The feature is well implemented with only one or two bugs.	**5** The feature is implemented, but there are lots of bugs.	**0—4** The feature is not implemented or does not work at all.	
User Interface: The website's appearance is good, with consistent styling applied across all the pages.	**9—10** Consistent styling was applied across all pages.	**6—8** Mostly consistent styling applied.	**5** Some attempt made at styling but were not very consistent.	**0—4** No styling applied or completely inconsistent.	

RUBRIC 2 — Part 2 [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of Part 2, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
System Ease of Use: The system should allow a user to capture new product data quickly.	**9—10** Adding new product data can be done in only a few steps.	**6—8** Adding new product data can be done but some optimisation of the process can be done.	**5** Capturing data requires a long or hard to follow process but is possible.	**0—4** The user cannot capture data, or the process is impossible to complete.	
Content – Readme File: The file should contain enough detail to make it easy to get the prototype up and running.	**9—10** The readme file includes all the detail needed to get the prototype running.	**6—8** Most information required to run the program is included with small missing items.	**5** Some information is included, but there are significant missing steps.	**0—4** No readme file is included, or no relevant information is provided.	
Good Coding Standards: Readable code with consistent naming conventions used throughout.	**9—10** Consistent naming conventions and coding standards are applied throughout.	**6—8** Mostly consistent code formatting and naming conventions used.	**5** Some code formatting and naming conventions are used but not consistently.	**0—4** No code or completely unreadable code.	
PART 2 SUBTOTAL					**/100**

RUBRIC 3 — POE	Levels of Achievement				Feedback
To be awarded full marks for these elements of the POE, students need to have:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Resubmission of parts 1 and 2 together with the POE: Incorporating feedback provided by the lecturer.	**9—10** Part 1 and part 2 were resubmitted, and all lecturer's feedback was addressed.	**6—8** Part 1 and part 2 were resubmitted, but only part 2 lecturer's feedback was addressed.	**5** Part 1 and part 2 were resubmitted, but very few lecturers' feedback was addressed.	**0—4** Not all parts were resubmitted, and minimal effort was made.	
Content – Performance: An honest review of own work in Part 2, pointing out opportunities to improve performance.	**9—10** An honest review of part 2 points out opportunities to improve performance.	**6—8** Good guidelines are included, but more details could be added.	**5** Some review is included but with unclear guidelines.	**0—4** No review included or guidelines completely irrelevant.	
Content – Methodology: A clear motivation based on the strengths of the chosen methodology and how it maps well to the client's needs.	**16—20** A clear motivation, based on the strengths of the chosen methodology and how it maps well	**11—15** The motivation maps well to the client's needs but does not provide enough detail.	**10** The motivation doesn't tie into the client's needs or needs significantly more detail.	**0—9** No methodology is specified, or very little motivation is included.	

	to the client's needs.				
Content – DevOps: A clear motivation that ties up nicely with the chosen methodology.	**9—10** Convincing motivation that ties up nicely with the methodology.	**6—8** Motivation lines up with the methodology but needs some more detail.	**5** Some motivation included but did not tie into the methodology.	**0—4** No motivation included or completely irrelevant.	

RUBRIC 3 — POE [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of the POE, students need to have the following:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Content – Frameworks: The motivation for using one or more of the frameworks should clearly illustrate what the value will be to the business to do so.	**16—20** The motivation for using one or more of the frameworks clearly illustrates what the value will be to the business to do so.	**11—15** The motivation includes what the value will be to the business but needs more detail.	**10** Some motivation included doesn't tie to the value of the business.	**0—9** No motivation included or completely illogical.	
Content – Prototype: The description of the developed prototype should accurately reflect the actual software submitted in Part 2. The description should illustrate how technical decisions enable business value.	**9—10** A complete description of the prototype, including technical details and business value.	**6—8** The description accurately describes the prototype but could be more detailed in places.	**5** Some description is included, but no reference to business value or complete lack of technical details.	**0—4** No description is included or does not match the actual prototype.	

RUBRIC 3 — POE [continued]	Levels of Achievement				Feedback
To be awarded full marks for these elements of the POE, students need to have the following:	**Excellent**	**Good**	**Developing**	**Poor**	
	Score Ranges Per Level (½ marks possible)				
Tone and structure: The content for sections 1 to 3 should be written in the same tone as the content submitted for Part 1. The structure should be similar, to form a cohesive whole in the proposal document.	**9—10** The tone and structure fit well with the content from part 1.	**6—8** The tone and structure primarily fit with the content from part 1.	**5** The tone and structure fit with the content from part 1.	**0—4** The tone and structure are entirely different from the part 1 content.	
Multi-modal Communication: Effective use of diagrams to present information that is hard to convey effectively in words alone.	**9—10** Relevant diagrams that add value to the document.	**6—8** Useful diagrams that add value with some room for improvement.	**5** Some diagrams are included but don't add much value to the document.	**0—4** No diagrams are included, or diagrams and not relevant to the document.	
POE SUBTOTAL					**/100**