# Discrete Mathematics ICT101 Assessment 3 (25%)

## Instructions

**Assessment Type**: Group Assignment

**Purpose of the assessment**: To develop a plan for a real-world example of an application in information technology from the **one of the topics given below**. This assessment contributes to the various learning outcomes of your Bachelor of IT degree.

**Assessment Task**: In the initial part of assignment, the group of students' will be tested on their skills on writing literature review of a topic you have learnt in the Discrete Mathematics (ICT101) course in the week 1 to 6. Students need to read at least 3 articles or books on this topic especially with application to Information Technology and give detail review of those. Student will also identify one application of information Technology related to the topic in which he/she is interested and write a complete account of that interest.

Student can use the following database to find article or books.

> o EBSCO Databases
>
> o Emerald Insight
>
> o IBISWorld
>
> o IGI Global
>
> o ProQuest eBooks
>
> o O'Reilly Learning

Student group will be exploring and analysis the application of information technology related to the topic which are identified by each group member, and they must recognise an application that can be programmed into computer. Each group must sketch a plane to draw a flow-chart and algorithm. Use some inputs to test the algorithm (Give different trace table for each input) and identify any problem in the algorithm. Suggest a plane to rectify or explain why it can't be rectified. Each group must write one report on its findings.

**Student should identify group members by his/her own but should be within his/her tutorial class.**

Students can choose one from the following Topic. However, after deciding on the topic to work on, consult with your tutor.

**The topic student group can choose from are:**

- **Number system used in Computing**
- **Logic in computing**
- **Inverse Function in Computing**
- **Induction Proof and its computing application**
- **16-bit Representation**

**The written report must have the following sections:**

1. Introduction
2. Proper reference of at least three articles or books
3. Write detail review of those articles or books related to the topic student chooses

4. Identify one application in Information Technology in which student is interested. Write a complete account of that interest
5. Description of why students choose this application
6. Give a complete plane to implement the application into a computer program with use of flow-chart
7. Write an appropriate algorithm
8. Use at least two inputs to test the algorithm. Group need to give a trace table for each input.
9. Conclusion
10. Short statement about contributions/Reflections from each group member
11. References

**Deadline to submit written report: On or before Wednesday 18th May 2024, 11.59pm via Moodle.**

**The report must be:**

1. Word or pdf document (3 to 4 pages long)
2. Size: A4
3. Use Assignment Cover Page (download from Moodle) with your details and signature
4. Single space
5. Font: Calibri, 11pt

## Deduction, Late Submission and Extension

Late submission penalty: - 5% of the total available marks per calendar day unless an extension is approved. For extension application procedure, please refer to Section 3.3 of the Subject Outline.

## Plagiarism

Please read Section 3.4 Plagiarism and Referencing, from the Subject Outline. Below is part of the statement:

**Marking Rubric for Assessment N. 03 (Group Assignment)    ;        Value 25%**

| Criteria | Fail (0 – 49%) | Pass (50 – 64%) | Credit (65 – 74%) | Distinction (75 – 84%) | High Distinction (85 – 100%) |
|---|---|---|---|---|---|
| Understanding of the Topic 3 marks | Inaccurate mathematical description of the Topic | Basic mathematical description of the Topic | Accurate mathematical description of the Topic | Accurate mathematical description of the Topic and some connections with Information Technology | Polished mathematical description of the Topic and references to Information Technology |
| Evidence of depth of research with reference 3 marks | Little or no relevant reading and references | Some relevant reading and references | Some relevant reading and references with explanations of connections to the Topic | Relevant reading and references and clear connections illuminating the Topic | Relevant reading and references and polished connections illuminating the Topic |

| Identifying an application of Information Technology relevant to the topic 3 marks | Little or no connection between the topic and the application | Basic connection between the topic and the application | Accurate application of the topic to the information technology | Accurate and comprehensive application of the topic to the information technology | Detail and complete account of application of the topic to the information technology |
|---|---|---|---|---|---|
| Understanding of the Information technology application(s) 3 marks | Inaccurate description of application of information Technology | Basic description of application of information Technology | Accurate description of application of information Technology | Accurate description of application of information Technology and some connections with relevant topics | Polished description of application of information Technology and references to relevant theories |
| Detail description of the choice of the application 3 marks | Little or no evidence is given for the choice and omit. | Basic evidence is given for the choice. | Accurate evidence is given for the choice. | Accurate evidence is given for the choice and omit with relevant analysis | Accurate evidence is given for the choice and omit with relevant analysis and complete detail |
| Design a plane for computer implementation 3 marks | Plane is not designed in a proper manner | Plane is designed in a proper manner and no flow-chart is given | Plane is designed in a proper manner and flow-chart is also given | Accurate and comprehensive plane is given with a correct flow-chart | Appropriate plane with correct flow-chart and complete detail is given. |
| Writing an algorithm 3 marks | Inaccurate algorithm or algorithm is given in an inappropriate manner | Correct algorithm but written in an inappropriate manner | Correct algorithm which is written in an appropriate manner | Correct algorithm which is written in an inappropriate | Correct algorithm which is written in an inappropriate manner with |

| | | | | manner with little discussion | complete discussion |
|---|---|---|---|---|---|
| Conclusions 3 mark | Little or no evidence of accuracy of the algorithm | Basic evidence of accuracy of the algorithm | Accurate evidence of accuracy of the algorithm | Accurate evidence of accuracy of the algorithm | Complete analysis and justification of accuracy of the algorithm |
| Documentation 1 mark | Poorly organised report with unclear structure | Well organised report but with some errors | Clearly organised report with few errors | Clearly organised report and good use of tables and graphs | Polished report and creative use of tables and graphs |
| **Total Mark:    / 25**<br><br>**25%** | **COMMENTS:** | | | | |