LEARNING OUTCOME:

1. Examine the computing issues of blockchain design and developments (C4, PLO2)
2. Demonstrate the capability of developing blockchain solution with available platform and toolset (A3, PLO6)

ASSIGNMENT REQUIREMENT:

In today's digital age, secure and reliable data storage is paramount. Traditional databases, often controlled by centralized entities, face vulnerabilities to breaches and manipulation. Blockchain technology emerges as a groundbreaking solution, offering a decentralized and tamper-proof method for record-keeping. Therefore, your team are requiring analysing **One** of the following industries, figure out it's niche problem and design a Decentralized Application to tackle that problem.

1) Finance
2) Real Estate
3) Energy
4) Retail
5) Healthcare
6) Gaming

In your analysis, you are required to perform the following tasks.

1) Part 1: Proposal document

- Review the business use case in one of the industries above covering the background including the operations and practices for handling data.
- Propose a solution model thereby the data can be securely stored and chained in a blockchain manner by leveraging the features of Blockchain.
- As such, you are required to prepare a proposal of a selected industry (anyone from the list above) with Blockchain integration.

Deliverables:
Your report should include the following, but not limited to, 1) the selected industry and its business use case; 2) background information; 3) importance of the issue; 4) data analysis; 5) analysis solution model; 6) benefits; 7) conclusion; 8) reference.

Deadline:
The deliverable (proposal document) is to be uploaded to Moodle on or before the due date specified in Moodle.

2) Part 2: Solution Implementation

- Build a real-world Decentralized Application (Dapp)

Deliverables:
Your final report should include the following, but not be limited to, 1) the introduction to the issue and solution development; 2) a refined blockchain solution model, if any; 3) a discussion of the blockchain solution design; 4) implementation techniques/algorithms with code snippets including explanation; 5) conclusion covering review/evaluation of developed solution; 6) reference.

2.1 Knowledge/Presentation

- Able to build frontend using Nextjs, ReactJs.
- Able to link frontend to the local database (E.g mysql, postgres etc.)
- Able deploy the solidity smart contract to ganache (local blockchain)
- Able to link frontend to solidity smart contract.

2.2 Development Stack

- Visual Studio Code
- Node.js
- Ganache
- Next.js
- Solidity
- Ethereum.js

ASSIGNMENT TYPE:

Group assignment (3 - 4 students)

MARKING CRITERIA:

Criteria	Marks
Part 1:	
Continuous assessment: *Proposal* • Review the business sectors/industries or use cases and identify the Blockchain solution possible integrating to the business sector *Report of findings* • Detail of findings • Analysis of the selected business sector to integrate the Blockchain as a solution to their business data (approx 2000 words). • Blockchain solution design and architecture benefiting the business data and operations can be produced.	10% 10%
SUBTOTAL	**20%**

Part 2:	
Final assessment: Blockchain solution model and its implementation *Solution development (with code snippets)* • Front End + Database • Solidity	 20% 20%
SUBTOTAL	**40%**
TOTAL:	**60%**

GRADING CRITERIA

MARKING KEY	EQUIVALENT MARKS
A+ = **Distinction** Superior achievement in assignment, outstanding quality; complete in every way.	**A+** = 80-100
A = **Distinction** Very high achievement in all objectives, excellent quality assignment.	**A** = 75-79
B+ = **Credit** Very good/High achievement in most objectives, high quality assignment.	**B+** = 70-74
B = **Credit** Good/High achievement in most objectives, shows some of the qualities but lacks comprehensiveness nevertheless quality assignment.	**B** = 65-69
C = **Pass** Satisfactory/competent achievement in most objectives, all essential points covered plus some of the minor ones.	**C/C+/C-** = 50-64
F = **Marginal Fail / Fail** Unsatisfactory, Improvement essential/poor achievement; poor quality assignment, some essential objectives not covered.	**D/F+/F/F-** =below 49