# FTE4312 • Assignment 1

Due: noon (12 o'clock) , October 27

## Instructions:

You must submit your assignment in Blackboard. Please pack all **'.sol'** files into a **zip** file. The '.sol' file name should be in the format '**student number–Problem1/2.sol**'. The zip file name should be in the format **'student number–name–ass1.zip'**. Any nonstandard assignment will not be graded.

- The homework must be written in English.
- Late submission will not be graded.
- Each student must not copy assignment solutions from another student.
- The code for each problem is controlled **within 150 lines,** and appropriate.
- Make sure your code's solidity version is **0.8.7**.

### Problem 1 (50pts) Issue a Token

Use **Solidity** to issue two tokens (X Y) with the specified functions.

Contract A should issue **a free token (X)**, implementing **minting** and **transfer** functions.

Contract B should issue **a token (Y)** that **requires token X to mint** (transfer token X from owner to Contract B). The total supply of token Y is 10,000.

1. Minting each of the first 1,000 token Y requires 10 token X.
2. Minting each of the 1,001st to 5,000th token Y requires 20 token X.
3. Minting each of the 5,001st to 9,000th token Y requires 50 token X.
4. Minting each of the 9,001st to 10,000th token Y requires 100 token X.

### Problem 2 (50pts) GuessGame

(You are recommended to use **'Commit–Reveal'** pattern).

Use **Solidity** to design the following **two player** game: Each player **secretly chooses** a number between 1–10 each round. Then each player **announces** any number between 1–10, which **may or may not match** their secretly chosen number. The other player can choose to **challenge** whether the announced number matches the chosen number or not. There are four outcomes for each player:

1. You are honest, competitor challenges – You get 1 point.

2. You are honest, competitor does not challenge – Competitor get 1 point.

3. You are dishonest, competitor challenges – Competitor get 2 points.

4. You are dishonest, competitor does not challenge – You get 2 points

The game lasts for 3 rounds. Whoever has the **higher** score at the end wins. Implement this game in Solidity using appropriate data structures and functions.

**Marking Criterion:**

| | |
|---|---|
| Function realization | 60% |
| Code correctness | 20% |
| Code readability | 20% |

**Classroom Policies for AI Generative Tools:**

You are welcome to use AI techniques, e.g. ChainIDE Sage or ChatGPT, for assistance in completing this assignment.

However, note that language models can invent false facts and code generators can produce inaccurate outputs. **You must thoroughly understand any code you submit** to avoid introducing incorrect or biased content, regardless of its origin.

Even with these caveats, using AI techniques is encouraged, as they may help you complete higher quality assignments more efficiently.