Documentation for Software Engineering Exam (Michael Wick)

For this Exam I am planning to code a snake game. It will have the following features:

- A grid on which the snake will move around and on which mice will appear for the snake to eat
- Mice will be randomly generated at a point in the grid which is not already occupied by the snake
- The snake will be moved by the player with the arrow keys
- The snake will be able to swallow mice and grow longer afterwards
- The game will be over when the snake hits itself or the boundaries of the grid
- The game will be written in C# using Visual Studio and the graphics will be displayed in ASCII

Design patterns to be used:

I don't know yet if it makes sense to use design patterns. I can't think of any pattern that would add any meaningful benefit to the code.

Data Structures:

I will make use of linked lists and a matrix to create the snake and the grid.

Code Conventions to follow:

I will stick to the usual naming conventions of C# and will make use of interfaces for certain classes which will make unit testing easier and allow for better scalability if the game would be expanded on.

Unit tests planned:

I will test if the grid works correctly, if the snake is displayed and if mice spawn as intended. I will also test if the game ends when the snake moves out of bounds

```
                    IGame              ISnake             IGrid
                 ┌──────────┐       ┌──────────┐      ┌──────────┐
                 │          │       │          │      │          │
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   ┌──────────┐   ┌──────────┐       ┌──────────┐      ┌──────────┐      ┌──────────┐
   │ Program  │   │   Game   │       │  Snake   │      │   Grid   │      │ Position │
   │          │───│          │───────│          │──────│          │──────│          │
   └──────────┘   └──────────┘       └──────────┘      └──────────┘      └──────────┘
                       │
                 ┌──────────┐
                 │ Direction│
                 │          │
                 └──────────┘
                       │
                 ┌──────────┐
                 │ Controls │
                 │          │
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```