**SPL1 Project Proposal Form, 2024**

**Institute of Information Technology (IIT)**

**University of Dhaka**

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| **Student’s Name:** | **Sadia Akter Snigdha** | | |
| **Student’s Roll:** | **BSSE - 1513** | **Phone:** | **01848156590** |
| **Title: “Pac-Man Game”**    **Project Description:**  A Pac-Man-inspired game has been developed.  **Core Features:**   1. **Maze Structure:**    * The maze is represented using a **2D array** for efficient constant-time updates and movement checks.    * Players navigate the maze, collecting dots for scores while avoiding enemies and obstacles.    * Power-ups, represented by ‘O,’ grant temporary invincibility. 2. **Difficulty Levels:**   Players can select their preferred difficulty level (Low, Medium, High)**.** Difficulty influences the number of enemies and obstacles, and maze design complexity.   1. **Advanced Enemy:**    * Enemies are initialized at random positions within the maze.    * They dynamically track the player using the ***A pathfinding algorithm*\***, which ensures optimal and shortest paths.    * The algorithm leverages a **min-heap** for efficient priority management and incorporates **structure** to represent positions within the maze. 2. **Player Mechanics:**    * The player starts moving from a fixed position.    * Players use keyboard inputs (w/a/s/d) to move up, down, left, or right.    * Power-ups provide a temporary boost, making the player invincible for a few seconds, during which enemies cannot capture them. 3. **Game-End Conditions:**    * + An enemy catches the player.      + The player collides with an obstacle.   **Score Management:**  Players earn points by collecting dots and using power-ups strategically. Scores are saved to a file after each game for future reference. Players can check their position after the game ends. A **sorting algorithm** organizes scores in ascending or descending order to display the top performers. | | | |
| **Languages or Tools to be used:**  **C &** C++, VS code, Git and GitHub | | | |
| **Supervisor’s Name: Toukir Ahammed**  **Signature of the supervisor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Date: 27 November 2024** | | | |
| **Before the Midterm Presentation:**  I confirm that the progress is satisfactory and I am forwarding it for midterm presentation.  **Signature of the supervisor:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | |
| **Midterm Presentation Feedback:** | | | |