Name: Mai Tien Dat Tran
ID: 104207944

SPIKE OUTCOME REPORT

SUMMARY: This report outlines the results of Spike Number 6, focusing on "Navigation with Graphs." The project was aimed at developing a simulation where agents can plan paths using heuristic search algorithms and navigate environments using steering-based movement. The report details the goals, technologies used, tasks undertaken, findings, open issues, and recommendations for future work.

GOALS: The objective was to create a simulation where agents plan paths using heuristic search algorithms and navigate environments using steering-based movement. This simulation can be utilized for tower-defense games or other projects involving intelligent agent navigation.

TECHNOLOGIES, TOOLS, AND RESOURCES USED: The project employed Python 3.12.0 along with external tools such as ChatGPT and Claude. Additionally, resources from Lab 05 - Graphs, Paths, and Search were utilized.

TASKS UNDERTAKEN: Tasks included implementing the SearchAStar method, creating the Agent class with attributes and methods, extending the BoxWorld class to accommodate multiple agents, and modifying the game module to incorporate search algorithms and user interaction.

FINDINGS: Tests conducted using the provided input map revealed that the A* algorithm can find paths for agents only when a search limit of 15 or higher is applied.

OPEN ISSUES/RISKS: Potential risks involve overlooking edge cases or bugs that could impact the performance of the AI agents.

RECOMMENDATIONS: Suggestions for future work include exploring other search algorithms for optimization, conducting additional testing on various game maps to ensure robustness, and enhancing the efficiency of the AI agents.