Project Tittle: "Wandering in the Woods" Educational Game Simulation

Introduction

In order to teach K–8 pupils about computation, computational thinking, arithmetic principles, and computer science, the "Wandering in the Woods" project is creating an educational computer simulation game. There are three stages to the project, each suited to a different grade level.

Project Objectives

The project objectives include:

- creating fun and instructive game simulations for children in K–8.
- ensuring a smooth transition between each grade level.
- teaching data analysis and computational thinking.
- creating an audio-guided, user-friendly interface.
- utilizing internal assessments to evaluate student performance.

Project Stages

- Stage 1: Grades K-2
    - For K–2 kids, a straightforward visualization
    - grids that are always square and have two characters who start in different corners.
    - Random character movement occurs.
- Stage 2: Grades 3-5
    - The version for grades 3-5 that is a little bit more difficult.
    - square or rectangle grids that can be customized in size.
    - Student-placed characters of 2, 3, or 4.
    - keeps track of data like the average run, the shortest run, and the longest run without a meeting.
    - When two or three characters meet, they move together.
- Stage 3: Grades 6-8
    - Version advanced for grades 6–8
    - Grid size and form variations are tested to see how they affect average run times.
    - Investigate different wandering procedures.

- To cut down on meeting time, encourage students to make data-driven decisions.
- introduction to using numerous data sources, visualizations, and local and big data

Software Requirements

Programming Languages: Python for Development

Tools: Pygame library for graphics

Usability

Commands to execute

- Install pygame - pip3 install pygame
- Executing - python3 project-software-engineering.py

The project prioritizes usability and fun to cater to students:

- Intuitive design.
- Robust and reliable.
- Engaging visuals.

Conclusion

The "Wandering in the Woods" educational game simulation offers a unique and engaging way for students to learn computational thinking, data analysis, and computer science concepts. With distinct stages for different grade levels and a user-friendly interface, it promises an exciting learning journey.