

Lost In The Woods

Design Document

Revision 1.0

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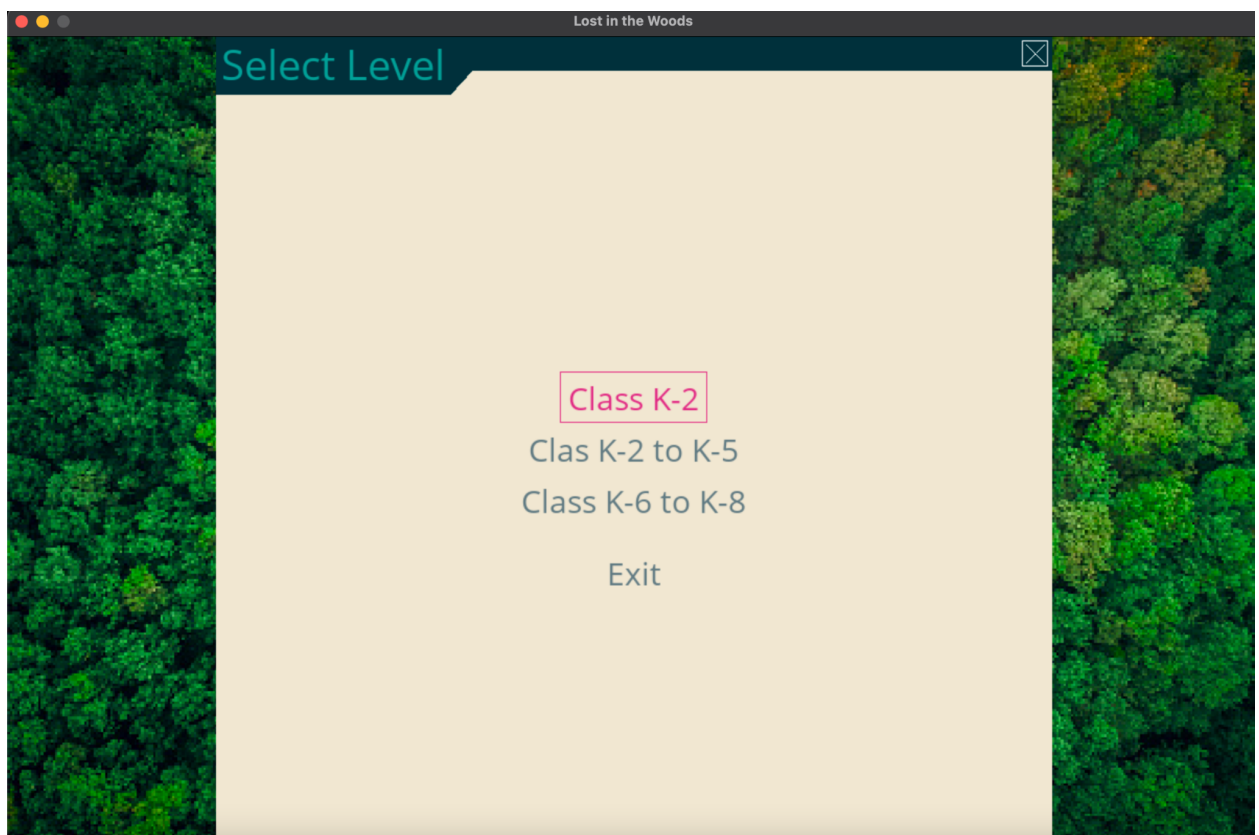


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Overview

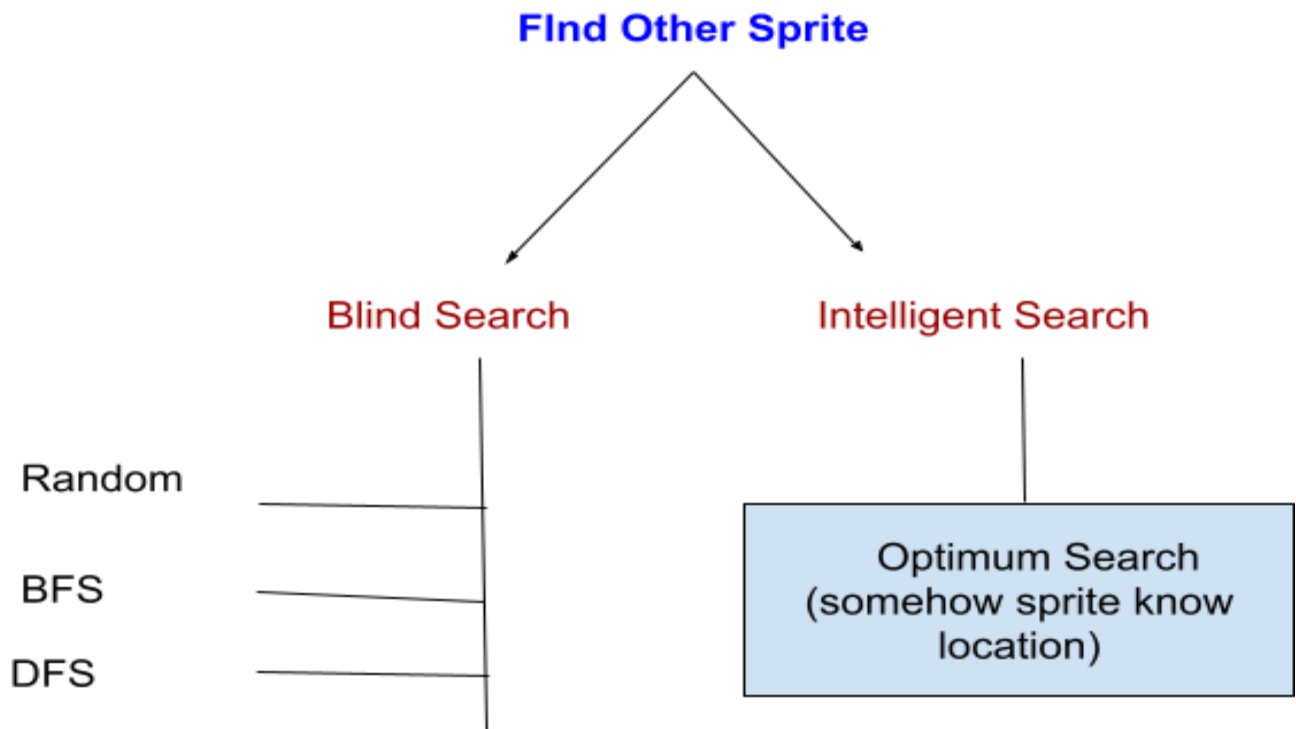
Game Universe Overview

This is a simulation style game for kids to make them understand basics of computation, computational thinking and critical thinking.

In this game there are sprites in a forest with a grid, the forest is dense and hence no two people can hear about each other if they are not in the same cell. The objective for game to finish is that players meet in the same cell. To find the other player(s) different protocol/search techniques can be followed.

Various Methods

To Search for the other sprite in the grid we can follow one of these methods.



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Tech Stack used:

Python Programming language,
Pygame library for creating this game,
Pygame-menu to create a custom menu for the game

Deliverables

Target Audience	Children from class k-2 to k-8
Platform	PC
Format	Executable files .exe for windows and .dmg for mac
User Manual	To understand how it runs

Objectives

- **Simulation**- Students need to be able to run these simulations
- **Analysis** - They should be able to compare the efficiency of various protocols

Gameplay Flow

Here the students will first select their level, kind of simulation, run those simulation and extract findings.

Example:

1. On the Home page Class level will be selected
2. After that options will be selected i.e. number of players and search protocols
3. Then they will start the game
4. Once the game is finished they can
 - a) run it again
 - b) Output Analytics related to simulations

And so on...

Core Mechanics

This is 2D platformer style simulation game and hence we need to implement control of the sprites, here we will be using bees as sprites who wanders around in the woods.

Protocols

1. Random: Based on pseudorandom numbers generated by python's random module to select the path.
2. Breadth-first approach: i.e. visit all adjacent nodes, we can implement this in two ways where a sprite will know the path of other players based on the sprite's trail.
3. Depth-first search: we will visit a node to one more depth from all the sprites, this will take less memory with similar time complexity.
4. Optimal Search technique: if we know the current co-ordinates of these sprites relative to the center then we can devise a very efficient algorithm in terms of how these sprites will meet using best first search or A*.

Controls

The Simulation is generally controlled by the code only, but for two players we can play this game with keyboard using "wasd" keys for one player and arrow keys for another.

Design Style

We will be designing our simulation on a minimalist greed with trees in the background.

Art Style and Theme

Cartoon-y/simplistic art style, retro themed.

Sprites

Colorful bees : Open source image art

Concept Art and Notes

Sometimes not even words are enough to truly allow someone to understand your grand design that you have envisioned for your game, providing images and other information will help the reader get a clearer picture of what you have in mind for your game.

Bibliography

<https://www.pygame.org/docs/>

<https://pygame-menu.readthedocs.io/en/4.2.8/>

https://www.w3schools.com/PYTHON/module_random.asp