Wandering in the Woods

A Final Project for Software Engineering CPSC 44000 Spring ‘23

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**1.0 Introduction**

The Wandering in the Woods Game is a program that simulates a game where people are lost in the woods represented by a rectangular grid. The game is designed for students in grades K-8, with different levels of complexity and features for each grade level.

**1.1 Purpose**

The purpose of the Wandering in the Woods Game is to provide an educational and fun way for students to learn about probability, statistics, and basic programming concepts. The game is designed to be engaging and interactive, with cartoon characters and music to keep the students entertained while they learn.

**1.2 The Wandering in the Woods Game**

The game consists of a rectangular grid representing the woods, with people represented by cartoon characters wandering randomly on the grid. The goal of the game is for the people to bump into each other and meet up. The game includes different levels of complexity and features for students in grades K-8.

**2.0 Process Model**

The Wandering in the Woods Game follows an iterative development process, with each iteration consisting of the following stages:

1. Requirements gathering
2. Design and prototyping
3. Implementation and testing
4. Feedback and iteration

**3.0 Use Cases**

The Wandering in the Woods Game supports the following use cases:

1. Select the level of complexity and features based on the grade level
2. Start a new game
3. Place the people on the grid (for grades 3-5 and 6-8)
4. Move the people randomly on the grid
5. Count the number of moves for each person
6. Display statistics when the people bump into each other
7. Reset the game and start over

**4.0 UML Model**

**4.1 Use Case Diagram**

**Diagram

Description automatically generated**

**4.2 Deployment Diagram**

Wandering in the Woods wills run locally via executable file. The user will simply run the file on their machine and be prompted with the game.

**Diagram

Description automatically generated**

**4.3 Class DiagramDiagram

Description automatically generated**

**Game:** Initializes single game instance, generates home screen and options

**Board:** choose grade, options associated with selected game mode

**Player:** Single player instance has ability to move, location of this object will determine outcome of game

**4.4 State Diagram**Diagram

Description automatically generated

**4.5 Activity Diagram Diagram

Description automatically generated**

**5.0 Customer Journey MapDiagram

Description automatically generated**

**6.0 Personas**

Here we have provided three samples of personas that we think fit the average user who will be using the program.

**Grades K-2**

**Name:** Emma  
**Age:** 6  
**Background:** Emma is a first grader who is just learning to read and write. She enjoys playing games on the computer but needs help navigating them. She is very curious and loves to ask questions.

**Goals:** Emma wants to learn about how people move around in space. She is interested in playing the game to see how the people move and interact with each other.

**Frustrations:** Emma may get frustrated if the game is too difficult to understand or if she can't figure out how to move the people around.

**Grades 3-5**

**Nam**e: Jack  
**Age:** 9  
**Background:** Jack is a third grader who is starting to become more independent in his learning. He enjoys playing video games and is confident in his ability to navigate them. He is interested in science and likes to learn about how things work.

**Goals:** Jack wants to use the game to explore how people move in different environments. He is interested in the statistics that the program generates and wants to compare the results of different experiments.

**Frustrations:** Jack may get frustrated if the game is too easy or if he can't change the settings to make the game more challenging. He may also get bored if the graphics are not engaging enough.

**Grades 6-8**

**Name:** Maya  
**Age:** 13  
**Background:** Maya is an eighth grader who is interested in science and technology. She enjoys coding and has some experience with programming languages. She is curious about how things work and likes to experiment with different ideas.

**Goals:** Maya wants to use the program to explore how people move in different environments, and to understand how different variables affect their movements. She wants to be able to modify the code and experiment with different settings to see how it affects the results.

**Frustrations:** Maya may get frustrated if the program is too simple or if she can't access the source code to modify it. She may also get bored if the graphics are not sophisticated enough or if the program is not challenging enough.

**7.0 UI Mock-up**

The Biggest thing for the UI is going to be making the program engaging and fun for the students.

**8.0 Testing Strategy**

The testing strategy for the Wandering in the Woods Game includes the following types of testing:

**8.1 Unit Testing**

Unit testing will be used to test individual functions and modules of the program to ensure that they are functioning correctly.

**8.2 Integration Testing**

Integration testing will be used to test the integration of different modules and features of the program to ensure that they are working together correctly.

**8.3 Usability Testing**

Usability testing will be used to test the user interface and user experience of the program to ensure that it is easy to use and understand for students in the target grade levels.

**8.4 Validation Testing**

Validation testing will be used to test the accuracy and validity of the statistics and data generated by the program to ensure that they are correct and useful for educational purposes.