





1. Program Analysis - Use Cases

1. Everything goes well
 - A user types their name at the prompt, gets his or her random values, goes through the maze without anything going to zero. This user gets a high score and a victory message appears.
2. Not so well
 - A user types their name at the prompt, gets his or her random values, and his or her time is pretty low. He or she runs out of time and a "sorry, you lose" message appears.
3. Good strategy
 - A user types their name at the prompt, gets his or her random values, and his or her time is very high while money and intelligence is low. He or she first builds up the money and intelligence variables by reading papers and searching for loose change. He or she then continues on with the maze, eventually winning but no high score.
4. Weak
 - A user types their name at the prompt, gets his or her random values, and keeps restarting the game until he or she gets exceptionally high random values. He or she continues to play, but soon gives up and quits the game. A goodbye message appears.
5. High Scores
 - A user starts the program, checks the high scores, and quits. A goodbye message appears.

2. Program Design

A. Player class - This class saves the name and attributes of each player and contains the random number generator to decide how much the player gains and loses when he or she reads technical papers, searches for loose change or moves. This contains a position object.

1. Variables
 - a. name - string
 - b. intelligence - int
 - c. time - int
 - d. money - int
 - e. position - position object
2. Functions
 - a. bool move(char) – boolean, return if the user can move or not
 - b. search() – changes attributes
 - c. read() – changes attributes
 - d. setName(string) – sets the name
 - e. int score() - returns the score amount
 - f. toString() - displays the player's name, intelligence, time, money, score and position

B. Position class - This contains an int for the row and the column and the map arrays. It also has the move methods.

1. Variables
 - a. hall - double int array of values 0 or not 0 that tell whether the user can go there or not
 - b. col - int
 - c. row - int
 - d. stepsArray – double int array of steps away from finish
2. Functions
 - a. int getCol()
 - b. int getRow()
 - c. bool moveWest() - returns if they move left or not
 - d. bool moveEast() - returns if they move right or not
 - e. bool moveNorth() - returns if they move north or not

- f. bool moveSouth() - returns if they move south or not
- g. setCol(int)
- h. setRow(int)
- i. int getStepsAway() – returns steps away from position

C. Menu class – This class has all the menu options.

1. Functions

- a. importScore()
- b. showMain()
- c. int getChoice()
- d. showActionMenu()
- e. int getAction()

3. Test Cases

A. Abnormal Usage

1. If any of the attributes reach zero the player loses. The program will not keep subtracting after one reaches zero. User then loses the game. GOOD

intelligence: 38

time: 0

money: \$16.00

YOU JUST LOST THE GAME AND THE DUNSTAN AND DRAGONS
GAME TOO!

MAIN MENU:

- 1) Start a New Game of Dunstan and Dragons
- 2) View top 5 High Scores
- 3) Quit

Please choose an option (1 - 3):

2. The program will ask the user to enter the menu choice again if he or she enters a negative number, a number that's not a menu option, a letter or any other character. GOOD

MAIN MENU:

- 1) Start a New Game of Dunstan and Dragons
- 2) View top 5 High Scores
- 3) Quit

Please choose an option (1 - 3): 5

Please choose an option (1 - 3): -1

Please choose an option (1 - 3):

Please choose an action (1 - 5):

7

You are 21 steps away from the finish point.

You can move:

(E)ast

1) Move (takes time and sometimes more)

2) Read technical papers(boost intelligence, takes time)

3) Search for loose change (boost money, takes time)

4) View character

5) Quit the game

Please choose an action (1 - 5):

3. When choosing where to move they can enter a capital or lower case letter. Anything else the program asks the user to enter the option again. GOOD

Which direction do you want to move (single character): E

You had to grade papers!

You lost 1 time and gained 0 money!

dsaht has:

intelligence: 16

time: 12

money: \$16.00

You are 20 steps away from the finish point.

You can move:

(S)outh

(W)est

1) Move (takes time and sometimes more)

2) Read technical papers(boost intelligence, takes time)

3) Search for loose change (boost money, takes time)

4) View character

5) Quit the game

Please choose an action (1 - 5):

1

Which direction do you want to move (single character): w

You didn't run into anything. Good job!

dsaht has:

intelligence: 16

time: 12

money: \$16.00

You are 21 steps away from the finish point.

You can move:

(E)ast

1) Move (takes time and sometimes more)

2) Read technical papers(boost intelligence, takes time)

3) Search for loose change (boost money, takes time)

4) View character

5) Quit the game

Please choose an action (1 - 5):

4. A position cannot go past the bounds of the hall. GOOD

B. Normal Usage

1. If the user goes along a wrong path the only option will be to go backward until he or she gets back to the correct path. GOOD

2. When a new high score is made it replaces the lowest high score.

3. Always prints menu at beginning. GOOD

4. Does not come up with an incorrect random value. GOOD

MAIN MENU:

1) Start a New Game of Dunstan and Dragons

2) View top 5 High Scores

3) Quit

Please choose an option (1 - 3): 1

What's your name? dh

dh has:

intelligence: 10

time: 18

money: \$11.00

You are 21 steps away from the finish point.

You can move:

(E)ast

1) Move (takes time and sometimes more)
2) Read technical papers(boost intelligence, takes time)
3) Search for loose change (boost money, takes time)
4) View character
5) Quit the game
Please choose an action (1 - 5):

1

Which direction do you want to move (single character): e

You encountered a professor!
You lost 3 time and gained 0 intelligence!

dh has:
intelligence: 10
time: 15
money: \$11.00
You are 20 steps away from the finish point.
You can move:
(S)outh
(W)est
1) Move (takes time and sometimes more)
2) Read technical papers(boost intelligence, takes time)
3) Search for loose change (boost money, takes time)
4) View character
5) Quit the game
Please choose an action (1 - 5):

2

You read strangely insightful papers left on the floor!
You lost 1 time and gained 0 intelligence!

dh has:
intelligence: 10
time: 14
money: \$11.00
You are 20 steps away from the finish point.
You can move:
(S)outh
(W)est
1) Move (takes time and sometimes more)
2) Read technical papers(boost intelligence, takes
time)
3) Search for loose change (boost money, takes
time)
4) View character
5) Quit the game
Please choose an action (1 - 5):

3

You found some loose change!
You lost 1 time and gained 2 money!

dh has:
intelligence: 10
time: 13
money: \$13.00
You are 20 steps away from the finish point.
You can move:
(S)outh
(W)est
1) Move (takes time and sometimes more)
2) Read technical papers(boost intelligence, takes
time)
3) Search for loose change (boost money, takes
time)
4) View character

5) Quit the game

Please choose an action (1 - 5):

4

dh has:

intelligence: 10

time: 13

money: \$13.00

You are 20 steps away from the finish point.

You can move:

(S)outh

(W)est

1) Move (takes time and sometimes more)

2) Read technical papers(boost intelligence, takes time)

3) Search for loose change (boost money, takes time)

4) View character

5) Quit the game

Please choose an action (1 - 5):

5

MAIN MENU:

1) Start a New Game of Dunstan and Dragons

2) View top 5 High Scores

3) Quit

Please choose an option (1 - 3): 3