



Course Information Technology
Section: Coding, AI & Game Design



James Rumsey
Technical Institute

Create a Turn-Based Game

What You Will Do

Draw a game map and write an algorithm to move through the maze.

Materials You Will Need

- Graph paper or plain printer paper
- Colored pencils or markers
- Ruler
- Small objects to represent the player and monsters

What is an Algorithm?

An algorithm is a clear set of steps used to solve a problem or complete a task. Algorithms are used in computer coding, video games, apps, GPS directions, robots, and search engines. Computers do exactly what programmers tell them. Bad instructions = bugs.

Create a Game Map

1. If you don't have graph paper, use a ruler to draw a grid of equally spaced horizontal and vertical lines.
2. Draw a maze on your grid with a starting point and exit.
3. Draw a couple of prizes like coins that award the player points or money.

Plot Paths for the Monsters

1. Create paths for the monsters to move through the map.
2. Count each square of the grid as a move.
3. Write down each move they make. The number of moves forward, which direction to turn, etc.

Write the Algorithm

1. Write down each monster's moves as a list of instructions.
2. Write a set of rules for adding or subtracting points.

Example of an algorithm used in video game code:

```
If player touches coin:  
    Add 1 point  
If monster touches player:  
    Subtract 1 point  
If health = 0:  
    Game Over
```

Alpha Test

An alpha test is performed by the developers to work out bugs and general game mechanics.

The hero character will be played by a human. They will make choices with each move. The monsters will be NPCs controlled by the “computer”. Their moves are restricted to the algorithm you wrote. The game will be turn-based. The player moves one square, then the computer moves each monster one square. Can you outmaneuver your own algorithm? Is it too easy? If so, adjust your algorithm and test it again.

Beta Test

Beta testing is done by a group of people outside the company. These are usually serious gamers who want to help the developers make the game more polished. Get a friend to play the hero while you execute the algorithm that controls the monsters.

1. Write down any bugs or issues you or the player notice.
2. Decide on the number of points the player begins the game with.
3. Create a name for the hero character, name for the game, and a story for your game.