Spyral Narwhals - “SoundMaze”

A survival game designed for the visually impaired.

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PURPOSE

Using the Unity engine, create a game that is equally accessible to both the visually and non-visually impaired.

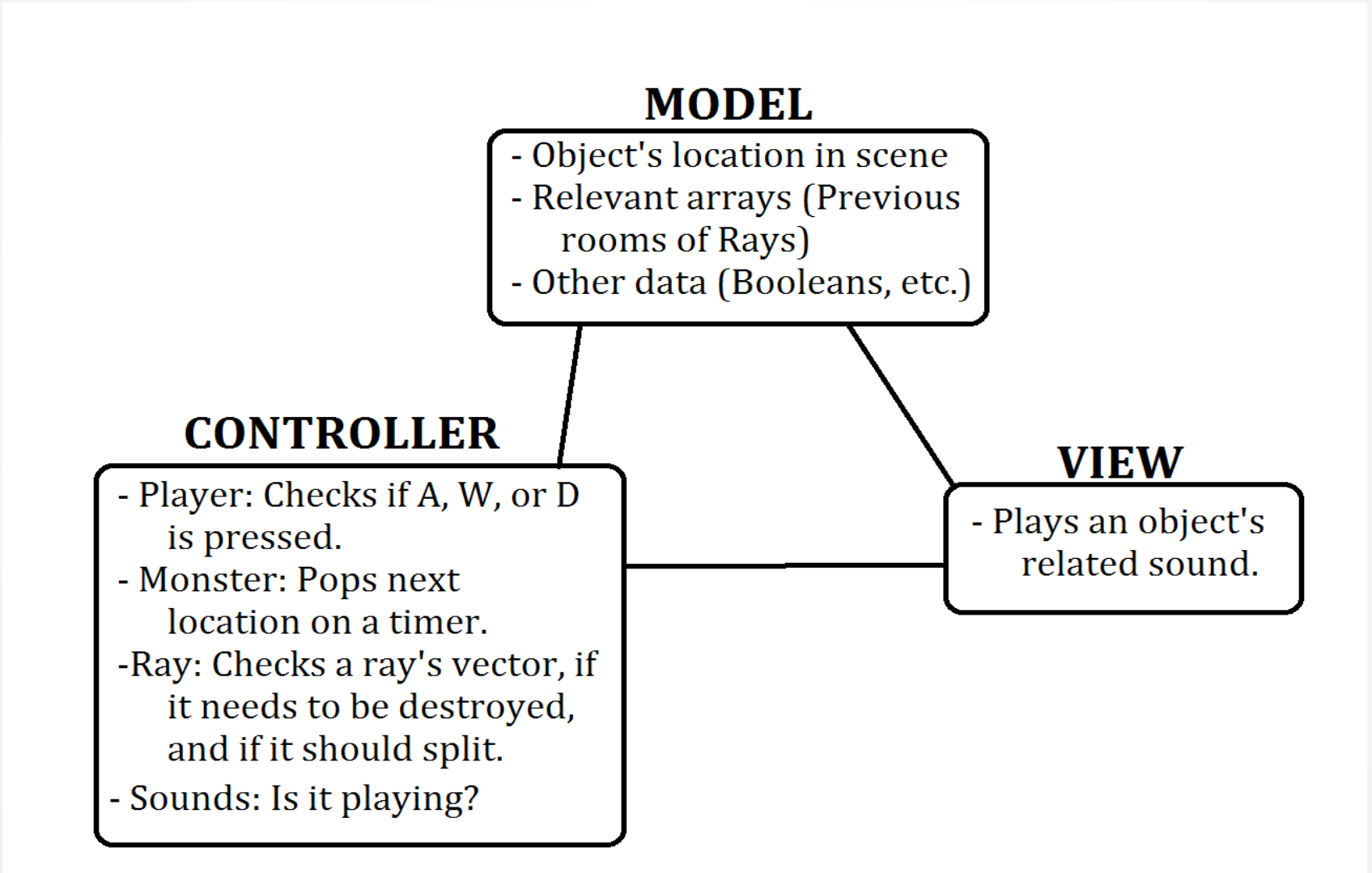
- Use only sounds to successfully guide players through levels.
- Make the game simple enough to be easily learned, but difficult enough to not be patronizing.

DESIGN

We used MVC:

- Due to how Unity functions, however, our MVC designs had to get mixed together in objects.
  - Was more useful making the components of an object (sounds, how it moves)
- View is pared down to only sounds played by an object
- Model was the largest part of our project
  - Saved the object translations from the Controller
  - All of our background data such as where an object is, its vector, and any associated arrays and data
- Controller handled how it moves
  - Player: User input controls
  - Monster: Stack of movements
  - Rays: Split or not? Destroy self or not?

OBJECT MVC DESIGN



VERIFICATION

Verification for games is awkward!

- Unit testing is difficult – much of it ends up redundant in our case due to Unity's structure.
- The engine handles rendering and shading. As such, controls and visuals testing comes down to observation tests.
- What we do have thoroughly tested, however, is our raycasting system.

VERIFICATION

How We Test

- First, we have an external level that runs an integration test. This test mainly checks that player movement remains valid. Not part of the main program!
- Second, we run a quick unit test on our raycasting system in another level before loading the first level.
  - Quickly runs rays through various situations, and will throw an exception if a ray acts in an unexpected manner (phasing through a wall, infinite cloning, etc.)
  - If the game opens, the tests passed!

TEAMWORK

To keep on schedule, we split into two groups: Design/Research and Coding.

- We needed people looking for solutions before we even reached a problem. Short on time.
- Design took ideas for solutions, and proved them on paper.
- Lead design then took the solutions to Coding and used Paired Programming (agile programming) to translate the designs into the game.
- Unity isn't very friendly with source control, so having one person manage the master was the easiest way.

WHAT WENT RIGHT?

- The way we broke down our team worked fairly well, considering Unity's limitations.
- Pre-designing systems allowed us to avoid huge hurdles before we even reached them.
- We designed very abstract systems before “game-ifying” the project, making everything abstract enough to quickly build new levels.
- Our systems work well with Unity, allowing us to use Unity's built-in level editor to add and remove elements (rooms, player location, goal point, etc.) simply by clicking and dragging it. No script editing is required – the game will still work.

WHAT WENT WRONG?

- We allowed ourselves to wait six whole weeks before abandoning the original project.
- We didn't account for unit testing until the very end.
- Often, we took a lot of Unity's framework for granted. We went into this project assuming Unity had soundcasting systems built in.
- We have more of a prototypical engine than a full game.

CONCLUSION

A great start!

- The game's systems and backbone is functioning and intact.
- We built it to be easily extensible, meaning adding levels and content is as easy as dropping assets into a level.
- Did we achieve our goals? Sort of.
  - We'll find out how well our directionalized sound system works at the demos. We haven't had any QA yet!
  - We do have a very comprehensive prototype, however, that will be very easy to flesh out into a polished game.