DFS Plan – Adam Riley

I’m making a basic 2D realtime RTS adventure with the purpose of exploring an ECS paradigm. I’m going to base the combat off The Realm of the Mad God. Maps will be grid based but the movement and abilities of entities will be free. I want simple interactive UI for NPC interaction. I want a quest system that will be the driving force of the player through the game. If time allows, I want multiple levels that the player can explore.

The controls are intended to use wasd and the mouse for interaction and abilities. Possible controller support may be added.

The first level layout is as follows:

* Player starts at the bottom of the map.
  + Map is incursion style
* There is a barrier preventing the player from leaving bottom side.
* The NPC is there ready to talk too.
  + NPC gives quest to kill enemies above barrier
* When interacting the player’s input is consumed by the UI system.
* Can Accept or decline.
  + First pass, decline just exits the Dialog without any consequences.
  + Second pass, there are consequences for declining quests.
* Camera is centered on player
* Once, quest is accepted, you can pass through invisible barrier
* Once, the quest is complete, Return to the giver to finish it. This will open a door to the next level.
* Once level one is done, other levels can be made but not required. Only if time allows.

Consequences to failing or declining quests will result in the quest failing, this in turn will effect that map in a negative way. Maybe the NPC dies, making other paths closed to you. This could open alternate paths later. Note that this is a stretch goal.

Entity Component System

The rules that I would like to follow in the code I’m going to use this in are:

* Components only hold data, do no logic
* Systems only preform logic, have no data

This is to explore how easy it is to begin and add to games using this structure.

References: https://www.youtube.com/watch?v=W3aieHjyNvw&feature=emb\_logo

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|  |  | **Schedule** |
| **Week** | **DATE** | **DUE** |
| 1 | Jan 17 | Project Planning |
| 2 | Jan 21,24 | Project planning and Architecture |
| 3 | Jan 28,31 | Get Map setup and player moving – 4 hours  Get NPC made and interact – 4 hours |
| 4 | Feb 4,7 | Get UI and interactions – 4 hours   * Including starting the quest   Rendering and animation – 4 hours |
| 5 | Feb 11,14 | \*\*\* Out of town \*\*\* DICE Conference \*\*\* |
| 6 | Feb 18,21 | * Create more detailed schedule \*\* - 1.5 hour   Quest   * When close enough to NPC, interact key appears on it – 30 mins * Interact with NPC – (1.5 hours)   + Give quest – 1 hour   + Create Dialog box – 30 mins   Combat   * Get Enemies to populate – (1 hour)   + Render enemy – 30 mins   + Place enemies correctly – 15 mins   + Correct components on enemies – 15 mins * Player can fire visible bullet – 1 hour * Bullet can die after 1 sec – 30 mins |
| 7 | Feb 25,28 | Physics   * Dynamic Physics components collide with solid walls – 1.5 hours * Dynamic Physics components collides with other Physics components – (45 mins)   + Dynamic – 30 mins   + Static – 15 mins * Keeps a list of ids that it collided with for other systems to reference – 15 mins   Combat 2.0   * Bullet can collide with enemy – 15 mins * Enemies can take damage – 15 mins * Enemies can die – 15 mins * Get enemies to fire back at player when in range – 30 mins * Get enemies to move toward player when in range – 30 mins |
| 8 | Mar 3,6 | **Midterm Presentation – Prep** |
| **9** | **Mar 10,13** | **Midterm Presentations** |
| 10 | Mar 17,20 | \*\*\* Out of Town \*\*\* GDC \*\*\* (Spring Break) |
| 11 | Mar 24,27 | Quest Finish   * Quest gets updated when an enemy dies, if its part of the quest – 30 mins – \*\*2 hours\*\* includes some refactor and setup * Finish Quest and trigger exit to level –   + When all elements are complete, tells player to complete quest – 30 mins   + When interacting with player on complete, give different dialog – 30 mins   Exit   * Exit has two states – (45 mins) \*\*4 hours \*\*(lots of bugs) Includes some refactoring, setup, and MOVING between levels   + Closed – Doesn’t nothing when player in range – 15 mins   + Open – Teleports player to destination when player is in range – 30 mins   Quest Finish 2.0   * Trigger Exit to Level   + When interacting with player on completed quest, trigger the exit to activate – 45 mins   + Dialog box goes away on second interact or out of range – 15 mins |
| 12 | Mar 31, Apr 3 | * Reschedule 1.5 hours * Barrier cut – 0 mins * Bug with UI after text change – Blocker – 2 hour   + Alinement for the menu is broken. It’s not putting the quest log in the right place.   + It was the aspect Modifier * Check Exits and make sure that they work correctly. – 30 mins   + Bug, because the second level never had another entity in it. Game breaking checks never were fixed.   + It was fine to have another entity. It didn’t like transferring back. – 45 mins, transferring to the same level. Bug occurred because of add unclaimed entities into availability lists.   + Problem with camera copying the DX11 UBOs   + Fixed – 1.5 hours * Create Levels 1, 2, 3 – 15 mins * Add exit’s to levels allowing a flow back and forth between levels – 45 mins * Enemies from level 1 to level 2 – 15 mins * Change quest to open the exit from level 2-3 - 30 mins * Test quest to make sure it’s not broken – 15 mins * Bug fixing Bucket – 2 hours – Used for bugs above |
| 13 | Apr 7,10 | * Look at schedule and adjust – 30 mins * Create Wrapper around enemy creation to make many enemies at once. – 30 mins * Get to point of pain – 1 hour – \*\*\*2.5 hours \*\*\*   + Create the death zone. Keep adding enemies in level 2 until it begins to lower the FPS below 60. Aim for ~55.   + Take notes of when the system started to fail.   + Release only bug while adding FPS avg counter, in Render Context – 45 mins…   + Find good map states to continue testing. * Bug Fixing Bucket – 2 hour |
| 14 | Apr 14,17 | * Look at schedule and adjust – 30 mins * Get profiling stats – 1.5 hours * Analyze the stats received on the change in the component system. Was there a difference? – 30 mins * ~~CSV – layer on top of profileScope – 1 hour~~ * ~~V-Tune? - profiler~~ * ~~Refactor the Entity Component System to have entities keep track of each component’s id it owns and remove the dependency on the entity’s id. – 1 hour \*\* 2 hours \*\*~~   + ~~Record the difference in FPS~~ * Bug Fixing Bucket – 2 hours   wishlist / Ludum Dare Weekend – Takes a lot of time out |
| 15 | Apr 21,24 | * Look at schedule and adjust – 30 mins * Get profiling stats – 1.5 hours * Analyze the stats received on the change in the component system. Was there a difference? – 30 mins * Iterate on profiling and optimizing – 45 mins   Game Plan for Optimizing:   * Min num entities – at 50 FPS * Profiler print at shutdown to get a good average * Drill into bad areas * Go top down |
| 16 | Apr 28/ **May 1** May 1 | * Optimize and get stats for presentation – 3-4 hours * Polish for presentation – (no health bars…) * Final Project Submissions and Presentations – Due * Presentation Prep **Final Presentations, Part 1** |
| **17** | **5/5** | Reading Day |
| **17** | **Wednesday**  **5/6** | **Final Presentation - 11 am** |

Rollover

* Add buttons to UI system – 2 hours
* Use buttons to switch between states of quests – 1 hour
* Health Bars – 1 hour
* Edit NPC interaction to toggle talking to the NC instead of just always talking within range and interact. – 2.5 hours
  + Freeze world in dialog state - 1

Polish

* Collect audio samples – 1 hour
* Audio – 30 mins
  + Add sound for bullet impact
  + Add sound for accepting quest
  + Add sound for background music
  + Add sound for finishing quest
  + Add sound for completing quest
* Create Level 3
  + Create quest in level 3 – 1 hour
* Main Menu – 2 hours
  + PLAY button – 1 hour
  + Exit button – 1 hour
  + Menu Music - 1 hour
* Make Enemies seem more fun to fight against. – 1 hour
* Make Enemy Spawners. – 2 hours
  + Spawn a given amount of enemies within aabb
  + Keep track of when enemies die

Spawn enemies once a spawn time has gone by

Wishlist:

Polish Graphics

* Animations – (5 hours)
* Base animation setup – 2 hours
* Boss – 30 mins
* Enemies – 30 mins
* NPC – 30 mins

XML setup of map layouts. - ?( Can’t tell till the components are made.)

* XML Setup Entities

Quest fail / decline consequences – Stretch goal – 5 hours

* When all elements are complete, tells player to complete quest
* Accept and decline option - 1

Particles on exploding – 2 hours