Milestone 2

Heaven or Hell

ANT MILL:

- Andrey
- Liu
- Sina

Progress Made

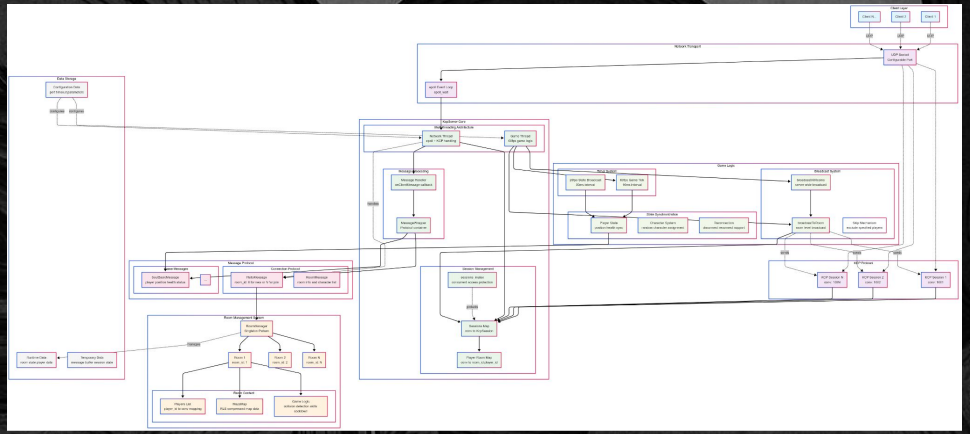
At the moment the game consists of three separate prototypes:

1. Server side
2. Unity Client side
3. Mini-games

Till now each prototype was developed and tested separately.

Server Architecture

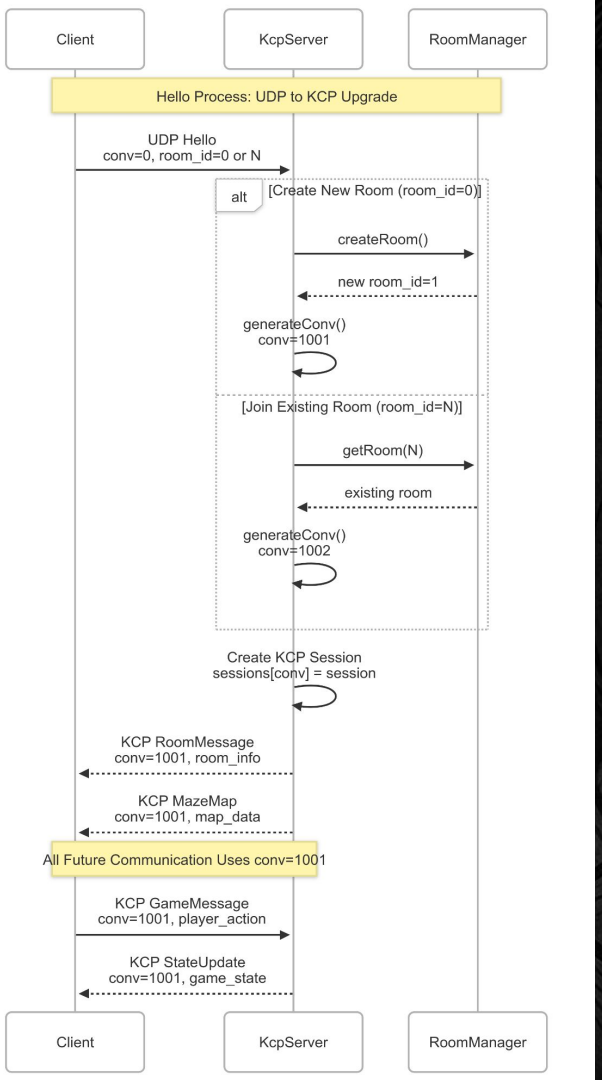
1. We build by ourselves
2. Network system
   a. protocol:
      i. UDP -> Kcp
      ii. Same with Mirror
   b. KcpSession
   c. Protocol Buffers
3. Room System
4. Tick System



Server Architecture

Handshake

1. Not let the client create conv_id
2. Simpler design than kcp2k
   - no cookie bytes
   - no message type byte
     - use protobuf instead
   - no reliable/unreliable byte
     - we use reliable for all (kcp original)



Map

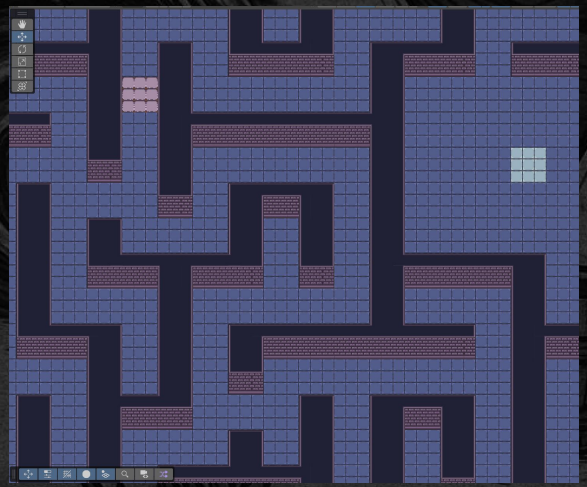
1. RLE compress
2. Random generation
   a. 4 gates on edges
   b. 1 altar from 1/4 to 3/4 of the map.
   c. DFS for path generation
      from each gate to altar
   d. clean some area aroun altar
   e. remove some walls in some areas with
      specific conditions to make more rings

```
^C
[yifei@DUGUYIFEI-ROG build]$ ./HeavenOrHellServer
New session conv=123 addr=127.0.0.1:57404
[conv=123] Move to (1.00, 2.00)
[conv=123] Move to (0.00, 0.00)
^C
[yifei@DUGUYIFEI-ROG build]$
```

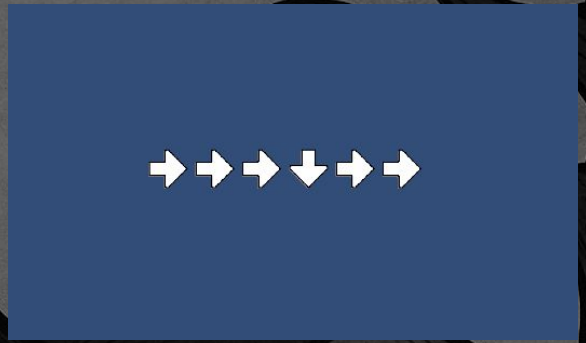
```
^C
[yifei@DUGUYIFEI-ROG build]$ ./kcp_client 127.0.0.1 8888
[Client→Server] Sending MoveMessage
[Server→Client] MapMessage: 25#1E1#1E3#
1#7.1#5.1#7.1#7.#
1#1.1#1$5#1.3#1.1#1.3#1.1#1.5#1$3#
1#1.1#1.1#3.1#3.1#1.1#1$1#3.1#1.1#3.1#3.#
1#1.1#1.3#1.3#1.1#1.3#1.3#1S1#1.1#1.1#1.1#1.#
1#1.1#3.1#5.1#3.1#1.1#1.1#3.1#1.1#1.1#1.#
1#1.1#1.7#1.3#1.1#1.1#1.5#1.3#1.#
1#1.1#3.1#2.1$4.1#3.1#7.1#3.E
1#1.3#1.1#1.1#1.5#1.1#1.2#1.2#1.3#1.1#1.#
1#3.1#1.1#1.1#1.1#5.1#5.1#1.1#3.1#1.#
3#1$1#1.1#1.1#1.1#1.5#1.3#1.1#1.3#1.3#
1#1.1#1.1#10.1$4.1#1.1#3.1#3.#
1#1.1#1.4#6.7#1.3#1.3#1.#
1#1.1#3.1#3.1C1R2.1#5.1#1.1$1.1#5.#
1#1.3#1.1#6.2#1.3#1.1#1.1#1.5#1.#
1#5.1#2.1$6.1#5.1#1.1#5.#
1#1.1#1.5#1.1#1.1#1.5#1.3#1.1#1.5#
1#1.1#1.1#5.1#1.1#5.1#5.1#1.1#3.#
1#1.1#1.1#1.5#1.5#1.1#1.2#1.2#1.3#1.#
1#1.1$1.1#1.1#1.1#3.1#4.1$1#7.1#1.1$1.#
1#1.3#1.1#1.1#1.3#1.5#1.7#1.3#
1#1.1#1.1S1.1#3.1#3.1#1.1#3.1#1S4.1#3.#
1#1.1#1.3#1.1#1$1#1.3#1.1#1.5#1.1#1.3#1.#
1#3.1#3.1#1.1#3.1#7.1#1.1#5.#
5#1.3#1.3#1.7#1.1#1.5#1.#
1#3.1#3.1#3.1#3.1#3.1#1.1#3.1#1.1#1.#
1#1.1#1.1#1.1#1.3#3.1#1$1#1.1#1.1#1.3#1.1#1.1#1.#
1#1.1#1$1#1.1#5.1#1.1#3.1#3.1#3.1#1.1#1.#
1#1.3#1.9#1.1#1.5#1.3#1$1#1.#
1#15.1#7.1#5.#
21#1E9#

[Server→Client] PlayerBasicMessage: player_id=0, pos=(0,0), hp=0/0
[Server→Client] PlayerBasicMessage: player_id=123, pos=(1,2), hp=1
00/100
[Client→Server] Sending AttackMessage
[Server→Client] PlayerBasicMessage: player_id=123, pos=(0,0), hp=1
00/100
^C
[yifei@DUGUYIFEI-ROG build]$
```

Unity Client

- Chose visual assets for the game (map, characters, etc.)
- Connect to server: Protobuf
- Create the map
- Implement Movement
- Basic Lighting



Mini-Games

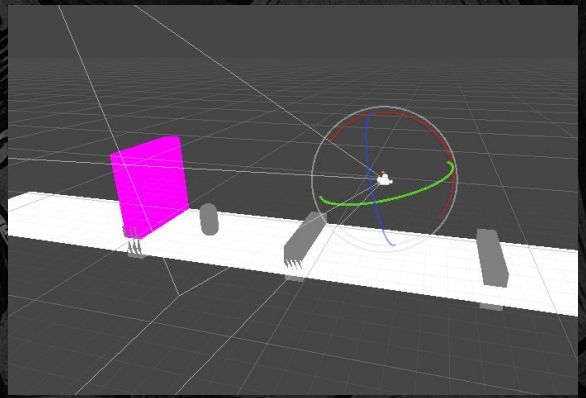


Altar Mini-game:

- It is generated randomly every time.
- It resets if the player makes a mistake.

Runner Mini-game:

- Levels are built with blocks with different obstacles.
- Player must avoid the obstacles to keep velocity and not get caught by the Wall of Fire.



Next — fine tuning, more obstacle variety and integrating both mini-games into the main level.

Live Demo Time!

Thank you!