

29.03.2023 Uldis Baurovskis Armands Baurovskis

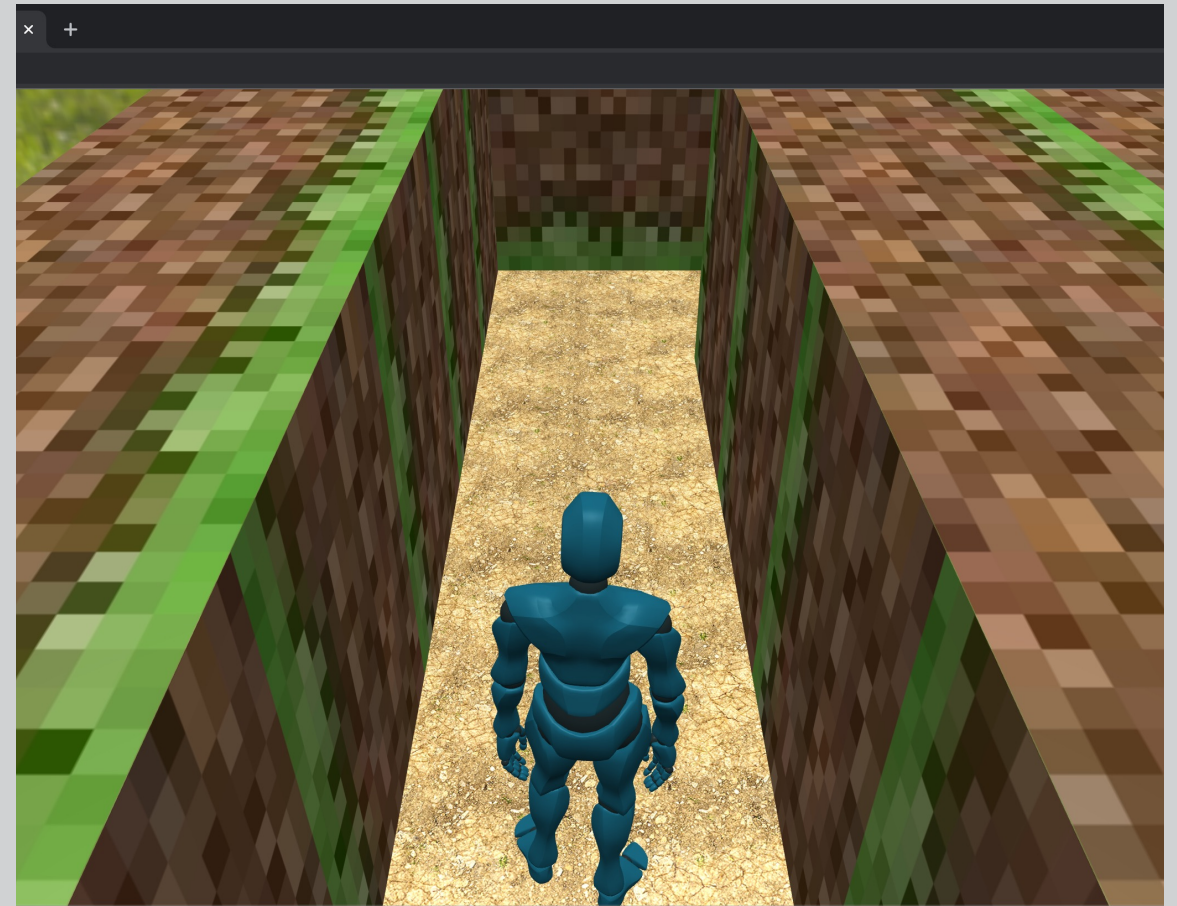
Rat race

Agenda

- Game preparation
- Creating the maze
- Skybox
- Player modal
- Player camera
- Inputs
- Player animations
- Collisions

Game preparation

- Maze world with character in it
- Character can move through maze to explore it



Creating the maze

- Maze will consist from two parts
 - Ground
 - Walls
- Maze map is generated from JSON file
 - 20x20 array
 - 0 – no wall,
 - 1 – wall,
 - 2 – user start position

```
"maze": [
  1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,
  1,1,0,0,0,1,1,1,1,1,1,0,0,0,1,1,0,0,0,1,
  1,0,0,1,0,1,0,0,0,0,0,0,1,0,0,0,0,0,0,1,
  1,0,1,1,0,1,0,0,0,0,1,1,1,0,1,1,0,0,0,1,
  1,0,1,1,0,1,0,0,0,0,1,1,1,0,1,1,1,1,0,1,
  1,0,1,1,0,1,0,0,0,0,1,1,1,0,1,1,1,1,0,1,
  1,0,1,1,0,0,0,0,0,0,0,0,1,0,0,0,0,0,0,1,
  1,0,0,0,0,1,1,1,1,1,0,1,0,1,1,0,1,1,0,1,
  1,1,1,0,1,1,1,1,1,1,0,0,0,1,1,0,1,1,0,1,
  1,1,1,0,1,1,1,1,1,1,1,1,1,1,1,0,1,1,0,1,
  1,1,0,0,0,1,1,1,0,0,0,0,0,1,1,0,1,1,0,1,
  1,1,0,0,0,1,1,1,0,1,1,1,0,0,0,0,1,1,0,1,
  1,0,0,0,0,0,0,0,0,0,1,0,0,0,1,1,1,1,0,1,
  1,1,1,0,1,0,1,1,0,1,0,0,0,1,1,0,0,0,0,1,
  1,0,0,0,1,0,0,0,0,1,0,0,0,1,1,0,1,1,0,1,
  1,0,1,1,1,1,0,1,1,1,1,1,0,0,0,0,1,1,0,1,
  1,0,1,1,0,1,0,1,1,1,1,1,0,1,1,1,1,0,0,1,
  1,0,1,1,0,0,0,0,0,0,1,1,1,0,0,0,0,1,0,1,1,
  1,2,1,1,0,1,1,1,1,1,1,1,1,1,0,0,0,1,1,
  1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
]
```

Creating the maze (continue)

- Creating ground
 - Ground mesh
- Creating walls
 - Box meshes

```
const ground = CreateGround("ground", { width: 1, height: 1 }, scene);  
const wall = CreateBox("wall", { width: 1, height: 1, depth: 1 }, scene);
```

Creating the maze (continue)

- Texturing
 - Asset manager
 - Load ground and wall texture
 - Add texture to meshes

```
const assetManager = new AssetsManager(this.scene);  
assetManager.addTextureTask("load-ground", "ground.png");  
assetManager.addTextureTask("load-wall", "wall.png");  
assetManager.loadAsync();
```

Skybox

- Skybox is horizon texture to simulate real world environment
- Load skybox texture
- Add skybox to scene



Player model

- Load premade player modal in Babylon format
 - Includes model
 - all necessary animations
- Add player to scene
- Move player to start position on maze



Player camera

- Create FreeCamera
- Attach camera to player
- Enable camera

```
const camera = new FreeCamera("camera", Vector3.Zero(), scene);  
camera.parent = this;  
camera.position.set(0, getSize(this).y + 1.5, -2);  
camera.setTarget(new Vector3(0, getSize(this).y, 0));  
camera.getScene().activeCamera = camera;
```

Inputs

- Keyboard inputs
 - Listen keyboard events for WASD keys
- Move character based on inputs
 - Forward/Backward
 - Rotate

```
switch(info.event.code) {  
    case "KeyW":  
        // Move forward  
        break;  
    case "KeyS":  
        // Move backwards  
        break;  
    case "KeyA":  
        // Rotate left  
        break;  
    case "KeyD":  
        // Rotate right  
        break;  
}
```

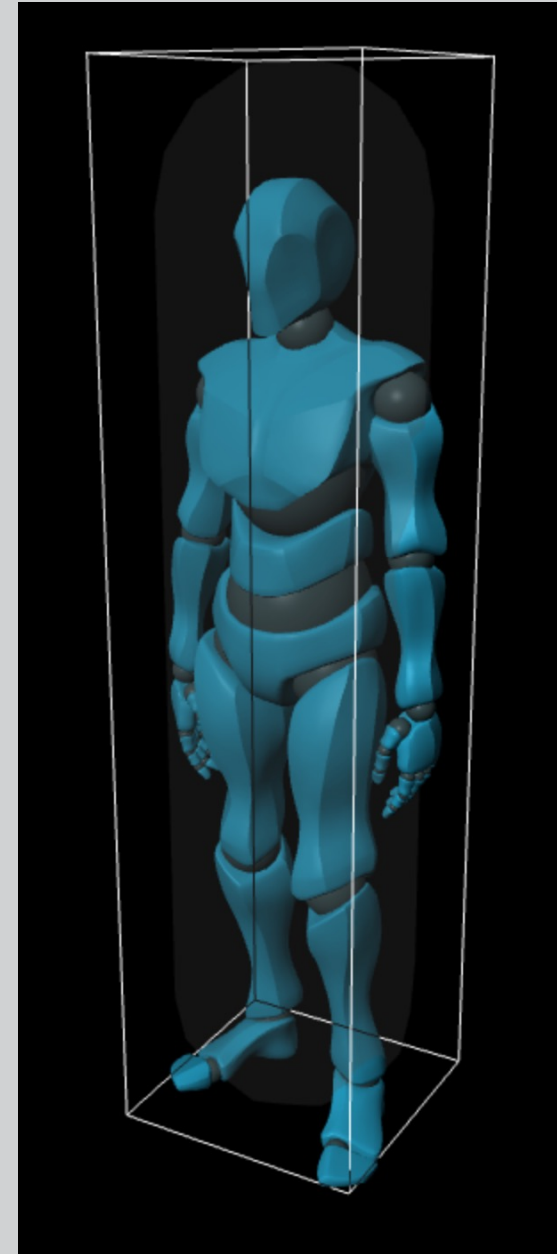
Player animations

- Idle animation for standing state
- Walking animation for movement



Collisions

- Add collision checks for wall
- Move character with collision detection



Homework

- Try out concepts learend in lecture
- Recreate game from lecture
- Play with different maze layouts
- Check out different lightning possibilities

Q&A