

CSC8503 Assignment

Gameplay

This game features 2 levels in total. The main idea is controlling the player goat through the challenge and eating all the coins for gaining scores in the limited time. Once all the coins are destroyed, the game will show the winning interface. If time runs out and player goat doesn't eat all the coins, the game will end with a losing interface.

Key binding

Menu: Press **1** for Level One

Press **2** for Level Two

Press **F1** for restarting level

Press **F3** for backing to main menu

Once the game starts, please press **Q** to switch to select mode and select goat character. Then press **L** to lock the camera movement.

Camera mode movement: **W, S, A, D, SHIFT, SPACE**

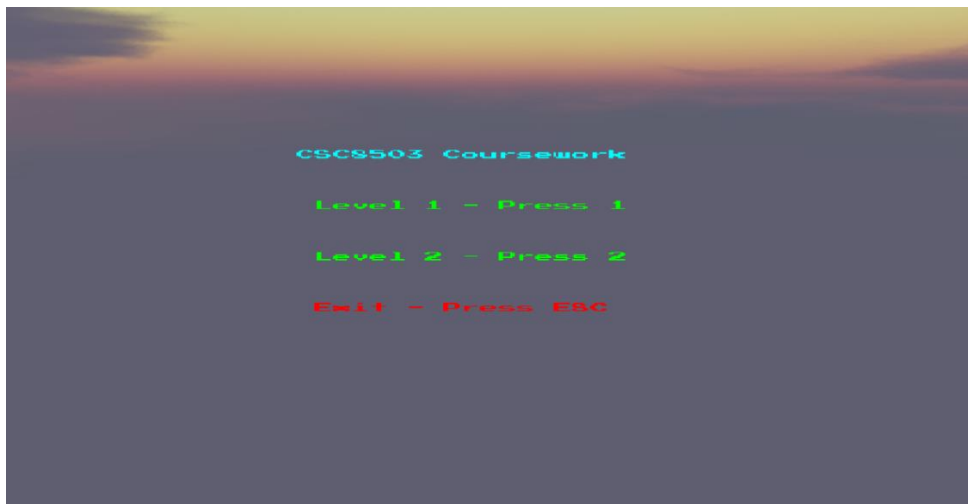
Lock mode goat movements: **LEFT, RIGHT, UP, DOWN**

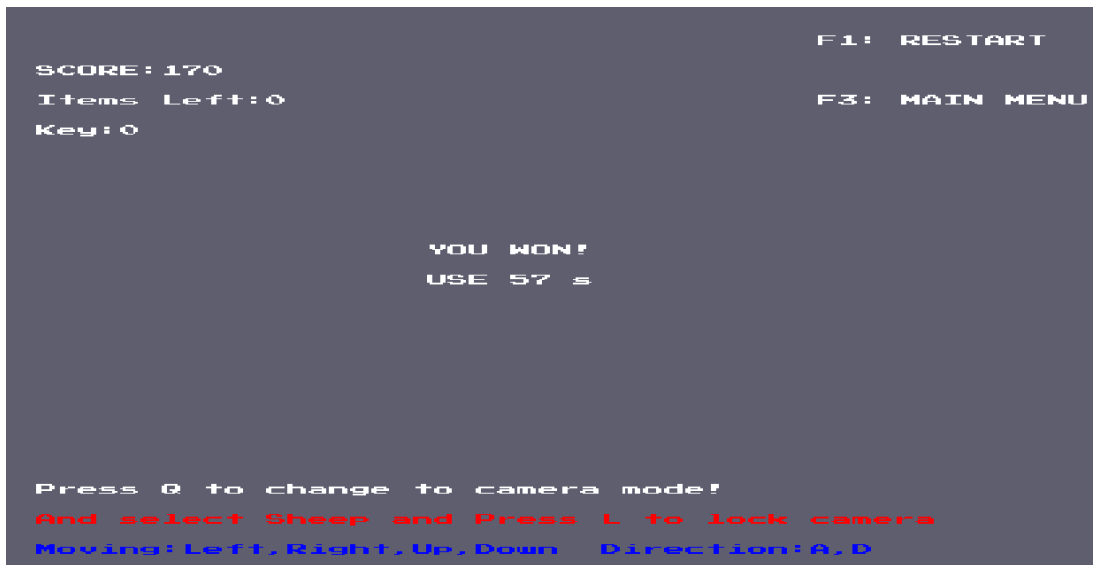
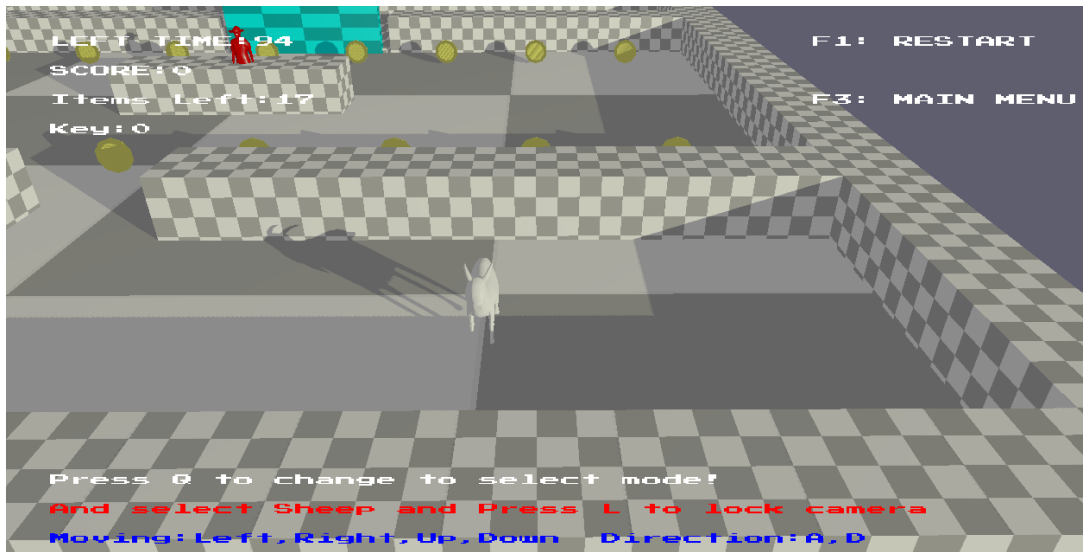
Direction keys: **A, D**

Screenshots

1. Menu system + in game interface + win/lose pages (Usage of Pushdown Automata).

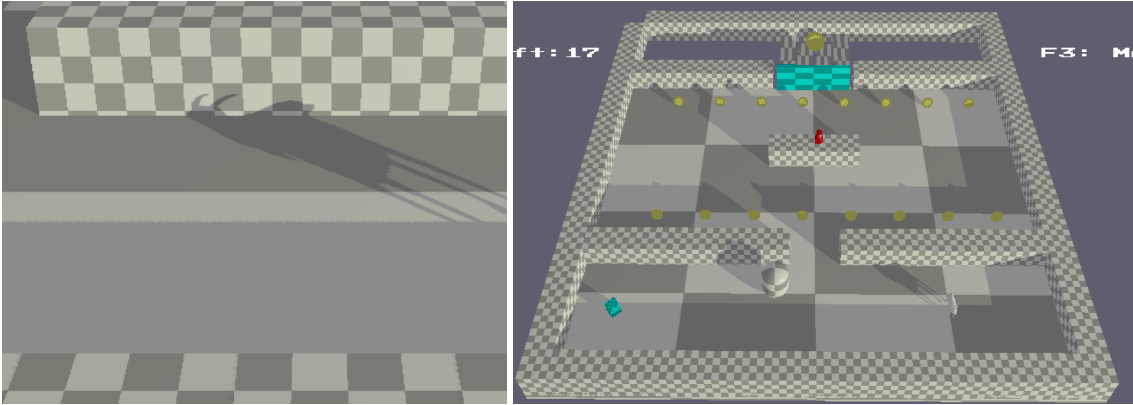
It allows players to play different levels and restart the game anytime during game play. It also shows the in-game scores, time left, items left etc.



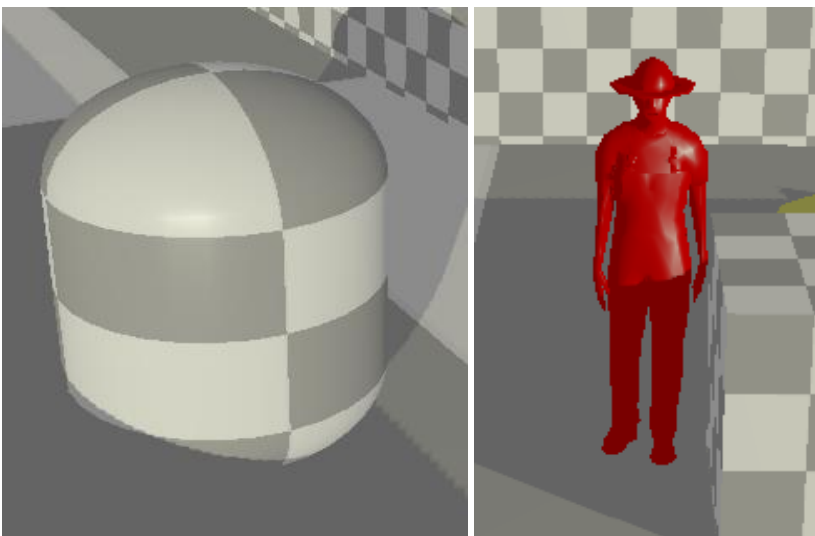
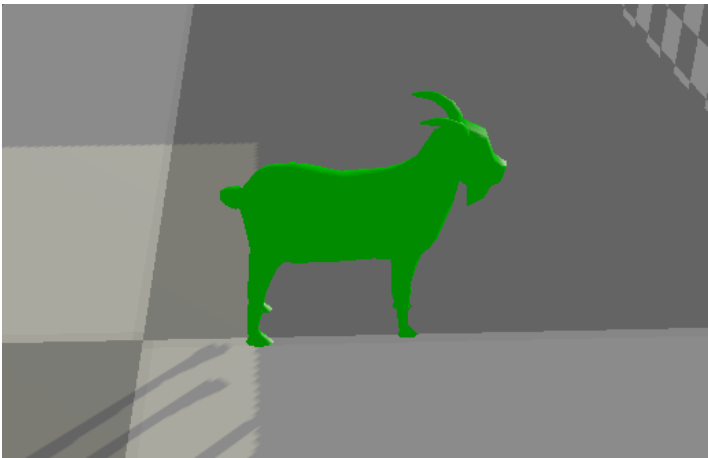


2. Collision detection & Collision resolution & Forces & constraints

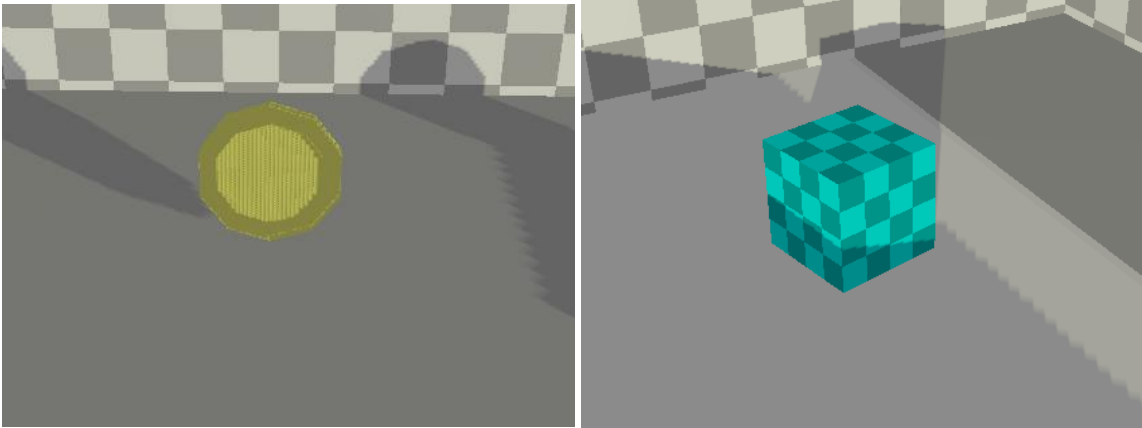
Maze, Wall, Floor (AABB + Plane). For creating a game environment.



Player goat (Sphere) and different AI (AABB, Capsule) are using different volumes and can be controlled by forces. Player goat also can change the facing direction with the usage of torque.



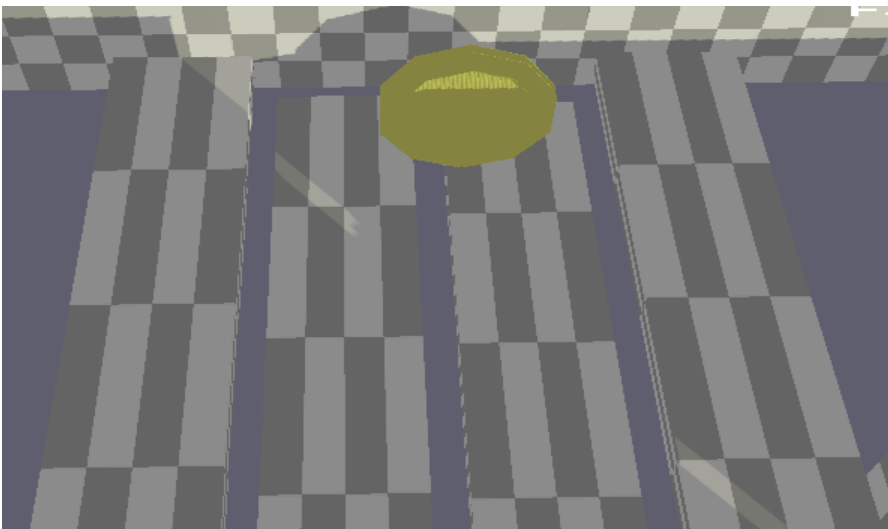
Coins (Sphere) and key (AABB) can be destroyed once the player goat touches them. They will have “disappear” effect because of the different collision layers.



Door (OBB) will be opened if player goat touches it with the key

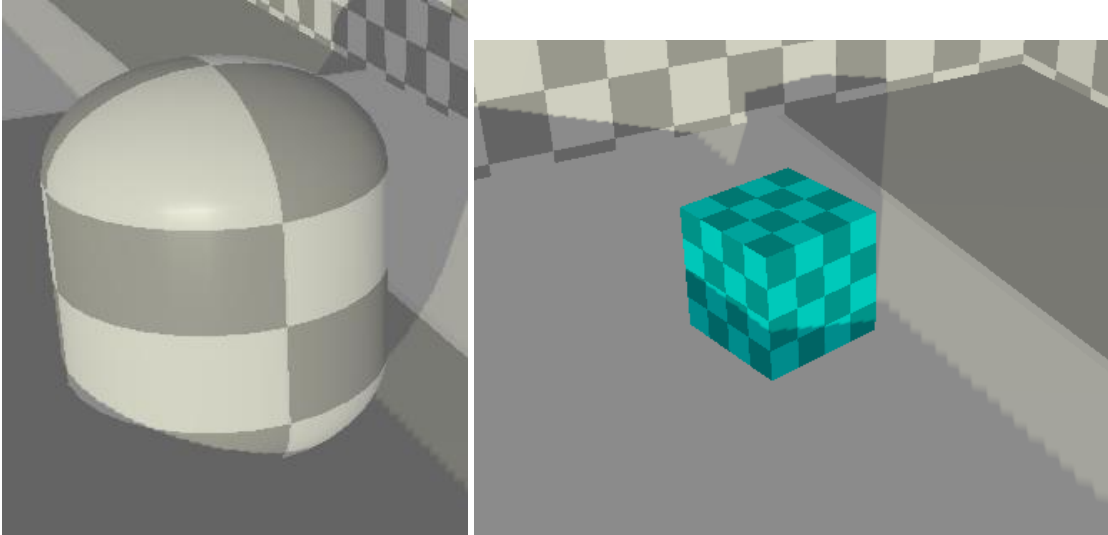


A constraint bridge at the end of the maze



3. AI

Simple state AI (usage of State Machines) without any pathfinding. It can block the way of getting the key. Also, the key itself contains state machines for noticing player.



A pathfinding AI can hunt player goat anytime in Level Two. (However, the implementation of using behavior tree is not working. Therefore, I changed this pathfinding AI with State Machines).

This AI has 3 modes. Idle, chase and chase close. When the AI catches the goat in the game, player will lose 1 score and AI will stop for a second and chase player again.



YouTube Link

<https://youtu.be/0DRBuSr6iA0>