Task 4 (Creative) Design Rationale
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Creating a TreasureRoom Map:

For this creative task, a new mysterious room is needed to be added. I decided to make a new game map as this adds to the mystery of the task as the player cannot see the actual room on their map.

This treasure room is very small and simply contains a room full of floors, a chest, an open door and some coins scattered about the place.

The idea behind the implementation of this room was to give the player a small side mission that they can complete in order to get an advantage when it comes to fighting bowser or other enemies.

Adding a secret key item:

The secret key item further enhances the mysterious and difficult nature of the task. Adding an item to unlock the door is simply there to make it engaging and slightly more difficult as the player will need to find the key to unlock the locked door on the map.

I extended item as it is something that can be picked up and stored in an inventory, much like a real life key, so inheriting it from Item seemed necessary.

The secret key simply grants the player a capability that allows them to unlock the locked door. It doesn't have any other features.

Hiding the secret key until the player gets nearby:

This aspect of the game was implemented in the Player class. Hard-coding the coordinates of the secret key limited the complexity of the task and allowed me to access those coordinates in the Player class. It is made in this class because I couldn't access the Player's coordinates in the secret key class itself.

Besides, the way this works is that I created a new method called getDistance(). This method takes the coordinates of the key and the location of the player and calculates the distance between the two using Pythagoras' Theorem. If this distance is less than or equal to 5 blocks, the key shows up on the map. If the player is more than 5 blocks away, it disappears. This is simply done by using the addItem() and removeItem() methods.

Adding a hint to Toad's monologue:

I thought it would be fun to add a clue to this side mission into Toad's dialogue, because, without it, the player would only find the key by stumbling upon it accidentally. I thought it would be nice to add one clue, so that the player is aware that the key is hidden somewhere. This is done simply by adding in another line that Toad can say, and by adding a couple of

conditions to it so that Toad doesn't say that line when the player has the key or has picked it up before.

Adding various game-enhancing features like unlocking the door and opening the chest:

These features I added include a LockedDoor, OpenDoor, Chest and OpenChest. While all of these features are not 100% necessary for the game to function, I thought it would be more engaging for the player to be able to unlock the door and have it change look and the same with the chest.

The Locked Door is a child class of Ground as it cannot be picked up or consumed and is something that can be entered. Like the warp pipe.

It is on the map, locked until the player approaches it with the capability TREASURE_KEY. If they have the capability, an unlock door action appears for the player. This unlock door action allows the player to change the door from being locked ( ]), to being open ([ ). When the door is open, the player will have an available action called EnterDoor. This acts like the teleport action, except it is simpler and has a menu description of "Mario enters the door". I added this because it seems more realistic and it's fun to have some specific features and actions for this task.

When in the treasure room, the player can open the chest (=). Once opened, the player will have the opportunity to take items from it by using the TakeChestItemAction. This action differs from other similar ones like PickUpItemAction as it removes the item from the Chest's inventory, not the location. The Open chest action also changes the chest from closed (=) to open (-).

This is simply to add to the engagement of the game and to give the player a slight advantage when it comes to fights with the enemies.