

The name of my game is “Survival in the City”. The game is quite simple. You spawn in a tent and your goal is to go to Shelter. To go to Shelter, you need to use the car in the car park. To use the car, you need two essential items: Gasoline and car engine. These items cannot be picked up from the ground like other items in the game, but you can get these items by picking up other items in the game and trading them to get gasoline and car engine.

In the city, there are 8 locations. Tent, where you spawn, supermarket, metro which can teleport you to another location in the city, pharmacy, police station, gas station, residential building and car park.

There are also 7 items in the game, some are used for trading, some are used for using the car and one of them is a bag, to increase the carrying capacity. There are 5 items which can be picked up directly from the ground are a sandwich and a water bottle from the supermarket, a med kit from pharmacy, and a knife and a bag from police station. There is also an NPC called stranger which spawns in gas station and rotates from gas station to residential building. When having the med kit and knife if you go to gas station and when stranger is there, you can type “trade stranger items” which removes med kit and knife from your inventory and replaces them with gasoline. When having the sandwich and water bottle and if you go to residential building and when stranger is there, you can trade items with stranger by typing “trade stranger items” again which removes sandwich and water bottle from your inventory replacing them with car engine. (A reminder that you cannot trade medkit and knife in residential building. It has to be the gas station.) After that, you can go to car park and use the car by typing “use” and the game will take you to shelter, the end point location outside of the city and the game will end here. However, there are a lot of items, and you cannot carry them at the same time, so you need to pick up a bag from the police station.

Now it’s time to explain how I manage to complete the base tasks. The first one was easy, I looked up the base code locations and replaced them with my locations. In the Game class, I introduced all the locations that I want to be in my game, and I gave them “Room” data type which is an object of my Room class. In the createRooms() method I created `roomName = new Room (string explanation, string roomName)`, I created a map in my head, making sure which room is where and how to go in between them. Then I set exit to all the rooms in my game.

The second task, items. I created an Item class and used item data type for this task. Still inside the createRooms() method, I introduced the items that want to be in my game, created them by typing: "Item itemName = new Item(string itemName)". Then I created a method called addItemToRoom(Room room, Item item) which adds my item to the room by using Sets.

The third task, items and their weights. Inside my Item class, I used a hashMap<itemName, itemWeight> and gave weight to items. Then I created another class, Inventory. Inside this Inventory class, I introduced an integer named max\_weight, which is 10 for the start of the game. I made an Inventory method pickupItem(String itemName). When you type "pickup 'itemName'" for example, "pickup sandwich" inside the room that sandwich locates, it picks up sandwich into your inventory with its weight. If the item that we are picking up is a bag, it increases max\_weight to 20. Now we can carry all the items in the game.

The fourth task is the win condition. As I said, the goal of the game is to go to the shelter. When we are in the shelter, the game congratulates you and the game is closed. To remind the way to go to the shelter. We must pick up all the items in the ground, trade them with the stranger (items that we give and stranger gives us change by the location. We must be in the right location to execute certain trades) and get gasoline and a car engine. After that we type "use" in the car park, and it takes us to the shelter.

The fifth base task, "back" method. In the Game method, I introduced an array list named roomHistory, which takes Room objects. In the "goRoom" I edited it in a way that, every time we go to a room, it adds that room into roomHistory (besides metro room). When we call the back() method, it deletes the last element in the roomHistory and makes the current room the last element after that removal. Which teleports us to the last room we were in.

The sixth and final base task was adding new methods in the game. In my game I have 11 methods in total. Their names are "help, go, quit, pickup, inspect, remove, look, trade, back, use, and backpack".

Help method prints the command words that we can use. Go method makes us go to the direction that we type after "go", quit method finishes the game. The pickup method is used as "pickup sandwich" which picks up the item off the ground if we are in the same room with the item. Inspect method is used as. "inspect sandwich" which returns the weight of the item. If the item is not in our inventory, it explains that we do not have it. Remove method is used as "remove sandwich" which removes an item that is currently in our inventory, reducing the total weight that we are carrying. If the item is not found, it explains that we do not have that item. The Look method is quite a useful method. After

saying “look” it says where we are, which items are inside the room and if the stranger is here or not. I’ve explained the back() method. The use method is using gasoline and car engine inside car park. If we don’t have the items, it says that we do not have those items. If we have those items but we are not in the car park, it tells us that we need to be in the car park. If all conditions are met, it takes us to the shelter and the game ends. The backpack method returns all the items we carry and the total weight we carry, if we don’t have any items, it tells us that our inventory is empty.

The first challenge task was adding a character to the game. I’ve added the stranger who spawns in gas station and moves to residential building and back every 3 time we go to a room. I added integer player movement count, which is defined as 0, and every time we go to a room, this count is increased by 1. If the count is divisible by 3, the stranger moves. When the stranger is in the gas station, we can trade a med kit and knife to receive gasoline. When the stranger is in the residential building, we can trade a sandwich and water bottle to receive car engine.

The second task was extending the parser to three-word commands. I added the third word in Parser and Command classes. I made the code work normally before this three-worded command. However, if the first two words are “trade stranger”, the parser reads the third word. In the process command method, I wrote if the three words that we type is “trade stranger items”, it calls the tradeItems method. And the tradeItems method is a method that understands where stranger is, if we have necessary items for the location, it removes our items and gives us the needed car part, which is gasoline and car engine.

The third task was adding a room that teleports us. I’ve created a metro room just like any other room in the game in createRooms method and I entered how to go to the metro by setting exit for other rooms to metro, however I did not enter metro’s setExit. Instead, inside of the goRoom method, I said if are in a room for example supermarket. If we say “go east” in supermarket (where metro locates) it takes us to a random room from other rooms inside the city (not the shelter and metro itself). I did this by creating an array that has the possible rooms that we can go to from the metro, I imported random() method, and said next room is a room randomly taken from this array.

To make my code easy to understand and manageable I made the following improvements. When doing this project, I made a lot of changes in the code, making sure that making a change won’t affect something that I did. For example, I used a hashMap in Item class that takes the information of items and adds to the game. It is easily editable. If I want to add a new item, I just enter a new item with its weight, and inside the createRoom, method I call addItemToRoom method with the location that I want to add it. By this my code becomes not only easily maintainable but also has high cohesion since storing the item datas in Item

class won't affect the Inventory class which is related to Item class. The items I've created are responsible driven design, since adding an item to your inventory can change the capacity of your inventory, like the bag item.

Now as I've explained my code let's make a walkthrough. We create a game class instance, and we call void play() method. Now the game has started, and we are in the tent. We go east to supermarket by typing "go east". Inside the supermarket there are items. We say "look" to see the items, and we see water\_bottle and sandwich. We type "pickup sandwich" and "pickup water\_bottle". Now, as we have the sandwich and water\_bottle which are necessary items for trading to get car engine. We go south twice from supermarket and go to residential building. We type "look" to see if the stranger is here. Luckily he is here. Now we type "trade stranger items" and get the car engine. Now we are running low in carrying space. So, we go north once and then east, from the residential building to the police station. Now we type "look" to see what's around, and we see the bag item. First, we say "pickup bag" which increases the carrying capacity to 20kg. Now we also pick up knife by saying "pickup knife". Now we go west from the police station to the pharmacy. We type "look" and see med kit. We type "pickup medkit". Now we have medkit and knife to trade with the stranger to get gasoline. We go south, then west from the pharmacy to the gas station. We type "look" and realize stranger is not here. The stranger makes a move every 3 times we go somewhere. So, we just need to move to some other room and come back. I type "go north" and then "go south". After that I check if the stranger is here by typing "look" and he is here. So, I type "trade stranger items" and receive gasoline. Now we have to go to the car park. We say "go east" twice and we are in the car park with gasoline and car engine. Now we say "use", the game congratulates us, we win by going to the shelter, and the game ends.

I haven't used the metro, since it randomly locates us somewhere. Instead, I walked through every room, but you can go to metro and try your luck with it.