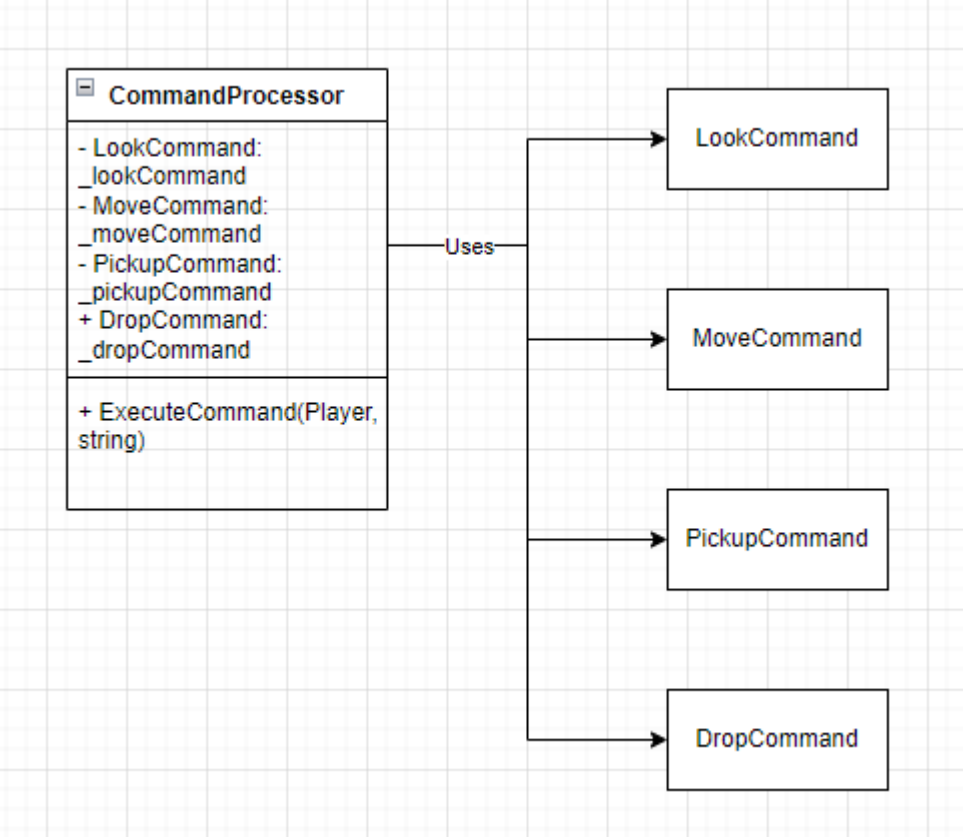
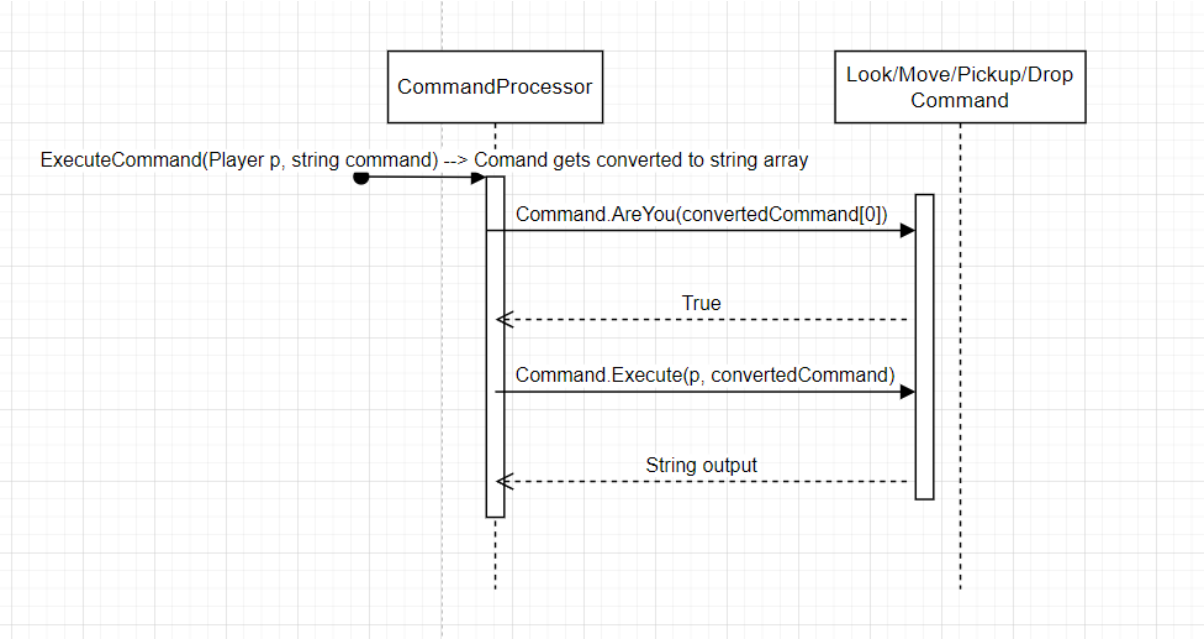
Iteration 8: Command Processor

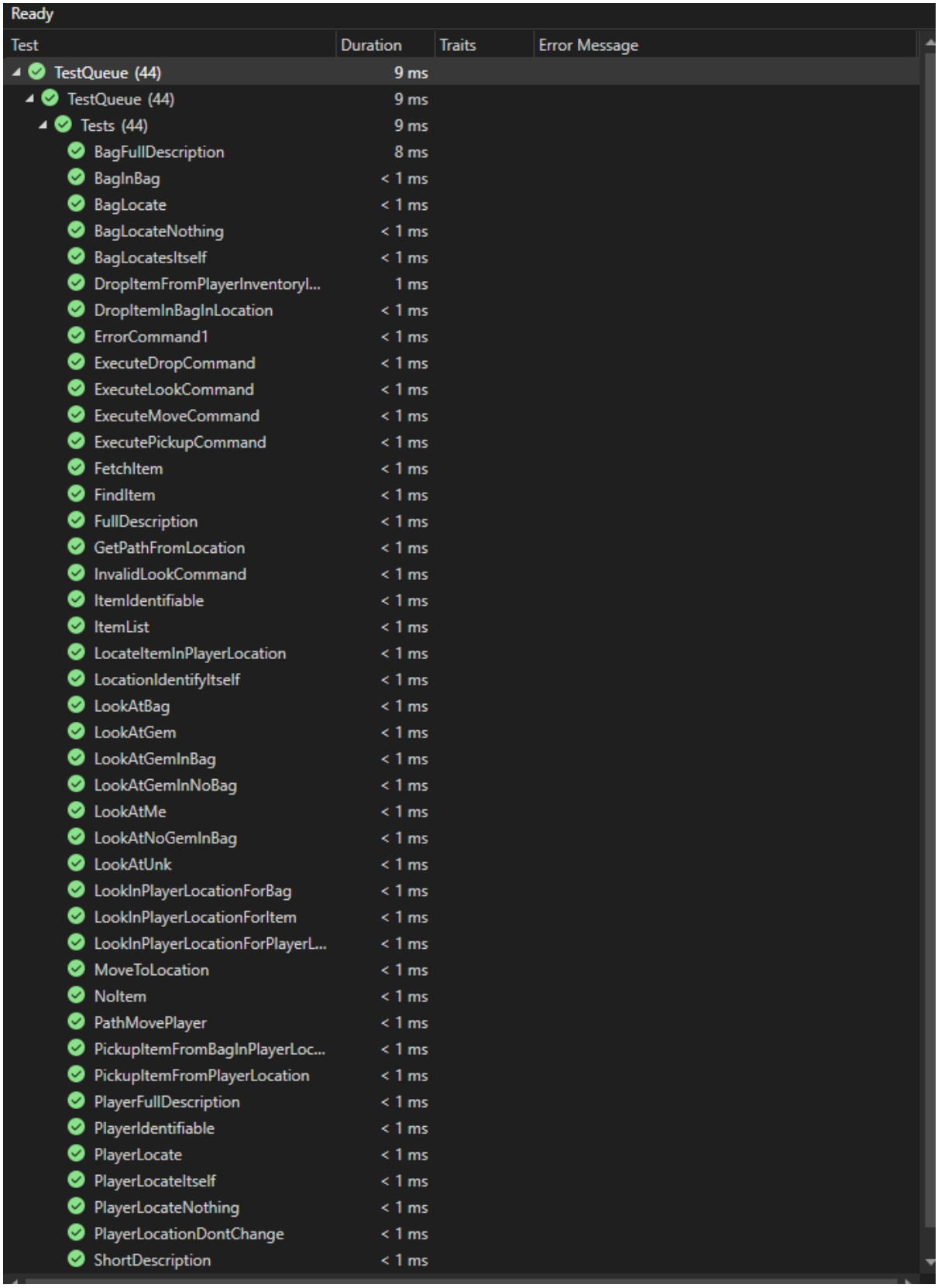
UML




Sequence Diagram




Unit Test results




Test file

```
using SwinAdventure;
```

```
using Path = SwinAdventure.Path;

namespace TestQueue
{
   public class Tests
   {
      Item item1 = new Item(new string[] { "sword" }, "sword", "a sword");
      Item item2 = new Item(new string[] { "shield" }, "shield", "a shield");
      Item item3 = new Item(new string[] { "shiba" }, "shiba", "a shiba");
      Item item4 = new Item(new string[] { "gem" }, "gem", "a gem");

      [SetUp]
      public void Setup()
      {
      }

      // Test the Item class
      [Test]
      public void ItemIdentifiable()
      {
         Assert.IsTrue(item1.AreYou("sword"));
      }

      [Test]
      public void ShortDescription()
      {
         Assert.That(item1.ShortDescription, Is.EqualTo("a sword (sword)"));
      }

      [Test]
      public void FullDescription()
      {
         Assert.That(item1.FullDescription, Is.EqualTo("a sword"));
      }

      // Test the Inventory class
      [Test]
      public void FindItem()
      {
         Inventory inventory = new Inventory();
         inventory.Put(item1);

         Assert.IsTrue(inventory.HasItem("sword"));
      }

      [Test]
      public void NoItem()
      {
         Inventory inventory = new Inventory();
         Assert.IsFalse(inventory.HasItem("sword"));
      }
```

```
    [Test]
    public void FetchItem()
    {
        Inventory inventory = new Inventory();
        inventory.Put(item1);

        Assert.That(item1, Is.EqualTo(inventory.Fetch("sword")));
        Assert.IsTrue(inventory.HasItem("sword"));
    }

    [Test]
    public void TakeItem()
    {
        Inventory inventory = new Inventory();
        inventory.Put(item1);

        Assert.That(item1, Is.EqualTo(inventory.Take("sword")));
        Assert.IsFalse(inventory.HasItem("sword"));
    }

    [Test]
    public void ItemList()
    {

        Inventory inventory = new Inventory();
        inventory.Put(item1);
        inventory.Put(item2);

        //the list string below is the expected output, consisting of every item in the following
format: name ( first id)
        Assert.That(inventory.ItemList, Is.EqualTo("\t a sword (sword)\n\t a shield (shield)\n"));

    }

    // Test the Player class
    [Test]
    public void PlayerIdentifiable()
    {
        Player player = new Player("Tan", "A player");

        Assert.IsTrue(player.AreYou("me"));
        Assert.IsTrue(player.AreYou("inventory"));
    }


    [Test]
    public void PlayerLocate()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
```

```
        Assert.That(item1, Is.EqualTo(player.Locate("sword")));
    }

    [Test]
    public void PlayerLocateItself()
    {
        Player player = new Player("Tan", "A player");
        Assert.That(player, Is.EqualTo(player.Locate("me")));
        Assert.That(player, Is.EqualTo(player.Locate("inventory")));
    }

    [Test]
    public void PlayerLocateNothing()
    {
        Player player = new Player("Tan", "A player");
        Assert.That(player.Locate("sword"), Is.Null);
    }

    [Test]
    public void PlayerFullDescription()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
        player.Inventory.Put(item2);

        //the list string below is the expected output, consisting of every item in the following
format: name ( first id)
        Assert.That(player.FullDescription, Is.EqualTo("You are Tan A player\nYou are
carrying:\n\t a sword (sword)\n\t a shield (shield)\n"));
    }

    //Test the Bag class
    [Test]
    public void BagLocate()
    {
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        backpack.Inventory.Put(item1);
        backpack.Inventory.Put(item2);
        backpack.Inventory.Put(item3);

        //ask to return item and item stays in backpack
        Assert.That(item3, Is.EqualTo(backpack.Locate("shiba")));
        Assert.IsTrue(backpack.Inventory.HasItem("shiba"));

    }

    [Test]
    public void BagLocatesItself()
    {
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
```

```
        Assert.That(backpack, Is.EqualTo(backpack.Locate("backpack")));
    }

    [Test]
    public void BagLocateNothing()
    {
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        Assert.That(backpack.Locate("sword"), Is.Null);
    }

    [Test]
    public void BagFullDescription()
    {
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "A backpack");
        backpack.Inventory.Put(item1);
        backpack.Inventory.Put(item2);
        backpack.Inventory.Put(item3);

        //the list string below is the expected output, consisting of every item in the following
format: name ( first id)
        Assert.That(backpack.FullDescription, Is.EqualTo("A backpack\nYou look in the
backpack and see:\n\t a sword (sword)\n\t a shield (shield)\n\t a shiba (shiba)\n"));
    }

    [Test]
    public void BagInBag()
    {
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        Bag satchel = new Bag(new string[] { "satchel" }, "satchel", "a satchel");

        backpack.Inventory.Put(satchel);

        Assert.That(satchel, Is.EqualTo(backpack.Locate("satchel")));
    }

    //Test for the LookCommand class
    [Test]
    public void LookAtMe()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
        player.Inventory.Put(item2);
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "You are Tan A player\nYou are carrying:\n\t a sword
(sword)\n\t a shield (shield)\n";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "me"
});
        Assert.That(testDescription, Is.EqualTo(expectedDescription));

    }
```

```
    [Test]
    public void LookAtGem()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item4);
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "a gem";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "gem"
});
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookAtUnk()
    {
        Player player = new Player("Tan", "A player");
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "I can't find the gem in the Tan";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "gem"
});
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookAtGemInBag()
    {
        Player player = new Player("Tan", "A player");
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        player.Inventory.Put(backpack);
        backpack.Inventory.Put(item4);
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "a gem";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "gem",
"in", "backpack" });
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookAtBag()
    {
        Player player = new Player("Tan", "A player");
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "A backpack");
        backpack.Inventory.Put(item1);
        backpack.Inventory.Put(item2);
        player.Inventory.Put(backpack);
        LookCommand LookCommand = new LookCommand();
```

```
        string expectedDescription = "A backpack\nYou look in the backpack and see:\n\t a
sword (sword)\n\t a shield (shield)\n";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at",
"backpack" });
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookAtGemInNoBag()
    {
        Player player = new Player("Tan", "A player");
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "I can't find the backpack";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "gem",
"in", "backpack" });
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookAtNoGemInBag()
    {
        Player player = new Player("Tan", "A player");
        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        player.Inventory.Put(backpack);
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "I can't find the gem in the backpack";
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at", "gem",
"in", "backpack" });
        Assert.That(testDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void InvalidLookCommand()
    {
        Player player = new Player("Tan", "A player");
        LookCommand LookCommand = new LookCommand();

        string expectedDescription = "I don't know how to look like that";

        //only 2 arguments
        string testDescription = LookCommand.Execute(player, new string[] { "look", "at" });
        Assert.That(testDescription, Is.EqualTo(expectedDescription));

        //4 arguments
        string testDescription2 = LookCommand.Execute(player, new string[] { "look", "at",
"gem", "in" });
        Assert.That(testDescription2, Is.EqualTo(expectedDescription));

        //5 arguments but the 4th argument is not "in"
```

```
        string testDescription3 = LookCommand.Execute(player, new string[] { "look", "at", "a",
"at", "b" });
        string expectedDescription2 = "What do you want to look in?";
        Assert.That(testDescription3, Is.EqualTo(expectedDescription2));

        //5 arguments but the 2nd argument is not "at"
        string testDescription4 = LookCommand.Execute(player, new string[] { "look", "in", "a",
"in", "b" });
        string expectedDescription3 = "What do you want to look at?";
        Assert.That(testDescription4, Is.EqualTo(expectedDescription3));
    }

    //Test for Location
    [Test]
    public void LookInPlayerLocationForItem()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item1);

        LookCommand LookCommand = new LookCommand();
        string textDescription = LookCommand.Execute(player, new string[] { "look", "at",
"sword" });
        string expectedDescription = "a sword";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookInPlayerLocationForBag()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");

        Bag backpack = new Bag(new string[] { "backpack" }, "backpack", "a backpack");
        backpack.Inventory.Put(item1);

        player.Location.Inventory.Put(backpack);


        LookCommand LookCommand = new LookCommand();
        string textDescription = LookCommand.Execute(player, new string[] { "look", "at",
"sword", "in", "backpack" });
        string expectedDescription = "a sword";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LookInPlayerLocationForPlayerLocationWhichHasItem()
    {
```

```
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");

        player.Location.Inventory.Put(item1);

        LookCommand LookCommand = new LookCommand();
        string textDescription = LookCommand.Execute(player, new string[] { "look", "at",
"sword", "in", "Garden" });
        string expectedDescription = "a sword";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void LocationIdentifyItself()
    {
        Location location = new Location(new string[] { "Garden" }, "Garden", "A garden filled
with butterflies");
        Assert.IsTrue(location.AreYou("Garden"));
    }

    [Test]
    public void LocateItemInPlayerLocation()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item1);

        Assert.That(item1, Is.EqualTo(player.Location.Locate("sword")));
    }

    //Test for MoveCommand
    [Test]
    public void MoveToLocation()
    {
        Player player = new Player("Tan", "A player");
        Location Garden = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        Location Forest = new Location(new string[] { "Forest" }, "Forest", "A forest filled with
trees");
        player.Location = Garden;

        Path path = new Path(Direction.North, "north", "You go through a door", Forest);
        player.Location.AddPath(path);

        MoveCommand moveCommand = new MoveCommand();
        string textDescription = moveCommand.Execute(player, new string[] { "move", "north" });
        string expectedDescription = "You head North\nYou go through a door\nYou have
arrived in a small Forest";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
```

```
    }

    [Test]
    public void GetPathFromLocation()
    {
        Location Garden = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        Location Forest = new Location(new string[] { "Forest" }, "Forest", "A forest filled with
trees");

        Path path = new Path(Direction.NorthEast, "northeast", "You go through a door", Forest);
        Garden.AddPath(path);

        Assert.That(path, Is.EqualTo(Garden.GetPath(Direction.NorthEast)));
    }

    [Test]
    public void PathMovePlayer()
    {
        Player player = new Player("Tan", "A player");
        Location Garden = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        Location Forest = new Location(new string[] { "Forest" }, "Forest", "A forest filled with
trees");
        player.Location = Garden;

        Path path = new Path(Direction.West, "west", "You go through a door", Forest);


        path.Move(player);
        Assert.That(player.Location, Is.EqualTo(Forest));
    }

    [Test]
    public void PlayerLocationDontChange()
    {
        Player player = new Player("Tan", "A player");
        Location Garden = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        Location Forest = new Location(new string[] { "Forest" }, "Forest", "A forest filled with
trees");
        player.Location = Garden;

        Path path = new Path(Direction.North, "north", "You go through a door", Forest);
        player.Location.AddPath(path);

        MoveCommand moveCommand = new MoveCommand();
        string textDescription = moveCommand.Execute(player, new string[] { "move", "south"
});
        Assert.That(player.Location, Is.EqualTo(Garden));
    }
```

```
    //Test for PickupCommand
    [Test]
    public void ErrorCommand1()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item1);

        PickupCommand pickupCommand = new PickupCommand();
        string textDescription = pickupCommand.Execute(player, new string[] { "pickup",
"sword", "in" });
        string expectedDescription = "I don't know how to pickup like that";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    public void ErrorCommand2()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item1);

        PickupCommand pickupCommand = new PickupCommand();
        string textDescription = pickupCommand.Execute(player, new string[] { "equip", "sword"
});
        string expectedDescription = "Error in pickup input";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void PickupItemFromPlayerLocation()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item3);

        PickupCommand pickupCommand = new PickupCommand();
        string textDescription = pickupCommand.Execute(player, new string[] { "pickup", "shiba"
});
        string expectedDescription = "You have picked up the shiba";

        //Check string output and if item is in player inventory
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
        Assert.That(item3, Is.EqualTo(player.Inventory.Fetch("shiba")));
    }

    [Test]
    public void PickupItemFromBagInPlayerLocation()
```

```
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");

        Bag chest = new Bag(new string[] { "chest" }, "chest", "a chest");
        chest.Inventory.Put(item3);

        player.Location.Inventory.Put(chest);

        PickupCommand pickupCommand = new PickupCommand();
        string textDescription = pickupCommand.Execute(player, new string[] { "pickup",
"shiba", "from", "chest" });
        string expectedDescription = "You have picked up the shiba from the chest";

        //Check string output and if item is in player inventory
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
        Assert.That(item3, Is.EqualTo(player.Inventory.Fetch("shiba")));
    }

    //Test for Command Processor
    [Test]
    public void ExecuteLookCommand()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
        player.Inventory.Put(item2);

        CommandProcessor commandProcessor = new CommandProcessor();
        string textDescription = commandProcessor.ExecuteCommand(player, "look at me");
        string expectedDescription = "You are Tan A player\nYou are carrying:\n\t a sword
(sword)\n\t a shield (shield)\n";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void ExecuteMoveCommand()
    {
        Player player = new Player("Tan", "A player");
        Location Garden = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        Location Forest = new Location(new string[] { "Forest" }, "Forest", "A forest filled with
trees");
        player.Location = Garden;

        Path path = new Path(Direction.North, "north", "You go through a door", Forest);
        player.Location.AddPath(path);

        CommandProcessor commandProcessor = new CommandProcessor();
        string textDescription = commandProcessor.ExecuteCommand(player, "move north");
```

```
        string expectedDescription = "You head North\nYou go through a door\nYou have
arrived in a small Forest";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void ExecutePickupCommand()
    {
        Player player = new Player("Tan", "A player");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(item3);

        CommandProcessor commandProcessor = new CommandProcessor();
        string textDescription = commandProcessor.ExecuteCommand(player, "pickup shiba");
        string expectedDescription = "You have picked up the shiba";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }

    [Test]
    public void ExecuteDropCommand()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");

        CommandProcessor commandProcessor = new CommandProcessor();
        string textDescription = commandProcessor.ExecuteCommand(player, "drop sword");
        string expectedDescription = "You have dropped the sword";
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
    }


    //Test for DropCommand
    [Test]
    public void DropItemFromPlayerInventoryInPlayerLocation()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");

        DropCommand dropCommand = new DropCommand();
        string textDescription = dropCommand.Execute(player, new string[] { "drop", "sword" });
        string expectedDescription = "You have dropped the sword";

        //Check string output, if item is in player inventory
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
        Assert.IsFalse(player.Inventory.HasItem("sword"));
        Assert.IsTrue(player.Location.Inventory.HasItem("sword"));
```

```
    }

    [Test]
    public void DropItemInBagInLocation()
    {
        Player player = new Player("Tan", "A player");
        player.Inventory.Put(item1);

        Bag chest = new Bag(new string[] { "chest" }, "chest", "a chest");
        player.Location = new Location(new string[] { "Garden" }, "Garden", "A garden filled with
butterflies");
        player.Location.Inventory.Put(chest);

        DropCommand dropCommand = new DropCommand();
        string textDescription = dropCommand.Execute(player, new string[] { "put", "sword", "in",
"chest" });
        string expectedDescription = "You have dropped the sword in the chest";

        //Check string output and if item is in player inventory
        Assert.That(textDescription, Is.EqualTo(expectedDescription));
        Assert.IsFalse(player.Inventory.HasItem("sword"));
        Assert.IsTrue(chest.Inventory.HasItem("sword"));
    }
  }
}
```

Command Processor

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class CommandProcessor
    {
        LookCommand _lookCommand = new LookCommand();
        MoveCommand _moveCommand = new MoveCommand();
        PickupCommand _pickupCommand = new PickupCommand();
        DropCommand _dropCommand = new DropCommand();

        public CommandProcessor()
        {
        }

        public string ExecuteCommand(Player p, string command)
        {
            // Trim trailing spaces from the command
            command = command.TrimEnd();
            // Split the command into an array of words contained within the
command
            string[] convertedCommand = command.Split(' ');

            if (_lookCommand.AreYou(convertedCommand[0]))
```

```
            {
                return _lookCommand.Execute(p, convertedCommand);
            }
            else if (_moveCommand.AreYou(convertedCommand[0]))
            {
                return _moveCommand.Execute(p, convertedCommand);
            }
            else if (_pickupCommand.AreYou(convertedCommand[0]))
            {
                return _pickupCommand.Execute(p, convertedCommand);
            }
            else if (_dropCommand.AreYou(convertedCommand[0]))
            {
                return _dropCommand.Execute(p, convertedCommand);
            }
            else
            {
                return "I don't know how to " + convertedCommand[0];
            }
        }
    }
}
```

IHaveInventory

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public interface IHaveInventory
    {
        GameObject? Locate(string id);
        string Name { get; }

        Inventory Inventory { get; }
    }
}
```

Program

```
namespace SwinAdventure
{
    internal class Program
    {
        static string GetNonEmptyInput(string prompt)
        {
            string? input;
            do
            {
                Console.WriteLine(prompt);
                input = Console.ReadLine();

                // Trim the input to remove any leading or trailing white
spaces
```

```
                input = input?.TrimEnd();

                if (string.IsNullOrWhiteSpace(input))
                {
                    Console.WriteLine("Input cannot be empty. Please enter a
valid value.");
                }
            } while (string.IsNullOrWhiteSpace(input));

            return input;
        }

        static void Main(string[] args)
        {
            //SET UP PLAYER
            string playerName = GetNonEmptyInput("Enter the player's name:");
            string playerDescription = GetNonEmptyInput("Enter the player's
description:");
            Player player = new Player(playerName, playerDescription);


            //SET UP EACH LOCATIONS


            //Home - Starting Location of the player
            Location home = new Location(new string[] { "home" }, "Home", "Your
cozy home.");
            player.Location = home;

            Item shiba = new Item(new string[] { "shiba", "dog" }, "Shiba",
"Your cute companion");
            Item nitendo = new Item(new string[] { "switch", "nitendo" },
"Nitendo Switch", "A gaming console");
            home.Inventory.Put(shiba);
            home.Inventory.Put(nitendo);


            //Park - North of Home
            Location park = new Location(new string[] { "park" }, "Park", "A
beautiful park");
            home.AddPath(new Path(Direction.North, "North", "A path to the
park", park));
            park.AddPath(new Path(Direction.South, "South", "A path to home",
home));
            Item pinkPlant = new Item(new string[] { "plant", "pink" }, "Pink
Plant", "A pink plant that seems to be poisonous");
            Item shovel = new Item(new string[] { "shovel" }, "Shovel", "A
rusted shovel");
            park.Inventory.Put(pinkPlant);
            park.Inventory.Put(shovel);


            //Cave - East of Park
            Location dungeon = new Location(new string[] { "dungeon" },
"Dungeon", "A dark and scary dungeon");
            park.AddPath(new Path(Direction.East, "East", "A path to the
dungeon", dungeon));
            dungeon.AddPath(new Path(Direction.West, "West", "A path to the
park", park));
            Item sword = new Item(new string[] { "sword" }, "Sword", "A shiny
sword");
            Item staff = new Item(new string[] { "staff", "stick" }, "Staff",
"A wooden (magical?) staff");
```

```
            Bag chest = new Bag(new string[] { "chest" }, "Chest", "A wooden
chest");
            chest.Inventory.Put(sword);
            chest.Inventory.Put(staff);
            dungeon.Inventory.Put(chest);


            //PROGRAM LOOP
            while (true)
            {
                Console.WriteLine("Enter a command:");
                string? command = Console.ReadLine();

                CommandProcessor commandProcessor = new CommandProcessor();

                if (string.IsNullOrWhiteSpace(command))
                {
                    Console.WriteLine("Please enter a command");
                }
                else if (command.ToLower() == "exit")
                {
                    break;
                }
                else if (command.ToLower() == "inv" || command.ToLower() ==
"inventory")
                {
                    Console.WriteLine("\n" + player.FullDescription + "\n");
                }
                else
                {
                    Console.WriteLine("\n" +
commandProcessor.ExecuteCommand(player, command) + "\n");
                }
            }
        }
    }
}
```

DropCommand

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class DropCommand : Command
    {
        public DropCommand() : base(new string[] { "put", "drop" })
        {
        }

        public override string Execute(Player p, string[] text)
        {
            if (text.Length != 2 && text.Length != 4)
            {
                return "I don't know how to drop like that";
            }
```

```
            else if (text[0].ToLower() != "drop" && text[0].ToLower() != "put")
            {
                return "Error in drop input";
            }
            else if (text.Length == 2)
            {
                Item? thing = DropIn(text[1], p);
                if (thing == null)
                {
                    return "I can't find the " + text[1];
                }
                else
                {
                    p.Inventory.Take((Item)thing);
                    p.Location.Inventory.Put(thing);
                    return "You have dropped the " + thing.Name;
                }
            }
            else if (text.Length == 4)
            {
                if (text[2].ToLower() != "in")
                {
                    return "Where do you want to drop this item?";

                }
                else if (text[3].ToLower() == "room")
                {
                    Item? thing = DropIn(text[1], p);
                    if (thing == null)
                    {
                        return "I can't find the " + text[1] + "to drop";
                    }
                    else
                    {
                        p.Inventory.Take((Item)thing);
                        p.Location.Inventory.Put(thing);
                        return "You have dropped the " + thing.Name + " in the
room";

                    }
                }
                else
                {
                    IHaveInventory? container = FetchContainer(p, text[3]) as
IHaveInventory;

                    // Check if container is null after the cast
                    if (container == null)
                    {
                        return "I can't find the " + text[4];
                    }
                    else
                    {
                        Item? thing = DropIn(text[1], p);
                        if (thing == null)
                        {
                            return "I can't find the " + text[1] + "to drop";
                        }
                        else
                        {
                            p.Inventory.Take((Item)thing);
                            container.Inventory.Put(thing);
```

```
                            return "You have dropped the " + thing.Name + " in
the " + container.Name;
                        }

                    }
                }
            }
            //default return
            return "I don't know how to drop like that";
        }

        public IHaveInventory? FetchContainer(Player p, string containerId)
        {
            if (p.Locate(containerId) != null)
            {
                return p.Locate(containerId) as IHaveInventory;
            }
            else
            {
                return null;
            }
        }

        public Item? DropIn(string thingId, IHaveInventory containerId)
        {
            Item? thing = (Item?)containerId.Locate(thingId);

            if (thing == null)
            {
                return null;
            }
            else
            {
                return thing;
            }
        }
    }
}
```

PickupCommand

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class PickupCommand : Command
    {
        public PickupCommand() : base(new string[] { "pickup", "take" })
        {
        }

        public override string Execute(Player p, string[] text)
        {
            if (text.Length != 2 && text.Length != 4)
            {
```

```
                return "I don't know how to pickup like that";
            }
            else if (text[0].ToLower() != "pickup" && text[0].ToLower() !=
"take")
            {
                return "Error in pickup input";
            }
            else if (text.Length == 2)
            {
                Item? thing = PickUpIn(text[1], p);
                if (thing == null)
                {
                    return "I can't find the " + text[1];
                }
                else if (p.Inventory.HasItem(thing.Name))
                {
                    return "You already have the " + thing.Name;
                } else
                {
                    p.Inventory.Put((Item)thing);
                    p.Location.Inventory.Take((Item)thing);
                    return "You have picked up the " + thing.Name;
                }
            }
            else if (text.Length == 4)
            {
                if (text[2].ToLower() != "from")
                {
                    return "Where is this item?";

                } else if (text[3].ToLower() == "room")
                {
                    IHaveInventory room = p.Location;
                    Item? thing = PickUpIn(text[1], room);

                    if (thing == null)
                    {
                        return "I can't find the " + text[1] + " in the room";
                    }
                    else if (p.Inventory.HasItem(thing.Name))
                    {
                        return "You already have the " + thing.Name;
                    }
                    else
                    {
                        p.Inventory.Put((Item)thing);
                        p.Location.Inventory.Take((Item)thing);
                        return "You have picked up the " + thing.Name + " from
the room";
                    }
                } else
                {
                    IHaveInventory? container = FetchContainer(p, text[3]) as
IHaveInventory;

                    // Check if container is null after the cast
                    if (container == null)
                    {
                        return "I can't find the " + text[4];
                    }
                    else
                    {
                        // Look at the thing in the container
```

```
                        Item? thing = PickUpIn(text[1], container);
                        if (thing == null)
                        {
                            return "I can't find the " + text[1] + " in the " +
container.Name;
                        }
                        else if (p.Inventory.HasItem(thing.Name))
                        {
                            return "You already have the " + thing.Name;
                        }
                        else
                        {
                            p.Inventory.Put((Item)thing);
                            container.Inventory.Take((Item)thing);
                            return "You have picked up the " + thing.Name + "
from the " + container.Name;
                        }
                    }
                }
            }
            //default return
            return "I don't know how to pickup like that";
        }

        public IHaveInventory? FetchContainer(Player p, string containerId)
        {
            if (p.Locate(containerId) != null)
            {
                return p.Locate(containerId) as IHaveInventory;
            }
            else
            {
                return null;
            }
        }

        public Item? PickUpIn(string thingId, IHaveInventory containerId)
        {
            Item? thing = (Item?)containerId.Locate(thingId);

            if (thing == null)
            {
                return null;
            }
            else
            {

                return thing;
            }
        }
    }
}
```

MoveCommand

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
```

```
namespace SwinAdventure
{
    public class MoveCommand : Command
    {
        public MoveCommand() : base(new string[] { "move" , "go", "head",
"leave" })
        {
        }

        public override string Execute(Player p, string[] text)
        {
            if (text.Length != 2)
            {
                return "I don't know how to move like that";
            }
            else if (text[0].ToLower() != "move" && text[0].ToLower() != "go"
&& text[0].ToLower() != "head" && text[0].ToLower() != "leave")
            {
                return "Error in move input";
            }
            else if (text[1].ToLower() != "north" && text[1].ToLower() !=
"south" && text[1].ToLower() != "east" && text[1].ToLower() != "west")
            {
                return "I don't know how to move like that";
            }
            else
            {
                if (text[1].ToLower() == "north" || text[1].ToLower() == "n")
                {
                    return p.Move(Direction.North);
                }
                else if (text[1].ToLower() == "south" || text[1].ToLower() ==
"s")
                {
                    return p.Move(Direction.South);
                }
                else if (text[1].ToLower() == "east" || text[1].ToLower() ==
"e")
                {
                    return p.Move(Direction.East);
                }
                else if (text[1].ToLower() == "west" || text[1].ToLower() ==
"w")
                {
                    return p.Move(Direction.West);

                } else if (text[1].ToLower() == "northeast" ||
text[1].ToLower() == "ne")
                {
                    return p.Move(Direction.NorthEast);

                } else if (text[1].ToLower() == "northwest" ||
text[1].ToLower() == "nw")
                {
                    return p.Move(Direction.NorthWest);

                } else if (text[1].ToLower() == "southeast" ||
text[1].ToLower() == "se")
                {
                    return p.Move(Direction.SouthEast);
```

```
                } else if (text[1].ToLower() == "southwest" ||
text[1].ToLower() == "sw")
                {
                    return p.Move(Direction.SouthWest);

                } else if (text[1].ToLower() == "up")
                {
                    return p.Move(Direction.Up);

                } else if (text[1].ToLower() == "down")
                {
                    return p.Move(Direction.Down);

                } else
                {
                    return "I don't know how to move like that";
                }
            }
        }
    }
}
```

LookCommand

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class LookCommand : Command
    {
        public LookCommand() : base(new string[] { "look" })
        {
        }

        public override string Execute(Player p, string[] text)
        {
            if (text.Length == 1 && text[0].ToLower() == "look")
            {
                return p.Location.FullDescription;
            }
            if (text.Length != 3 && text.Length != 5)
            {
                return "I don't know how to look like that";
            }
            else if (text[0].ToLower() != "look")
            {
                return "Error in look input";
            }
            else if (text[1].ToLower() != "at")
            {
                return "What do you want to look at?";
            }
            else if (text.Length == 3)
            {
                return LookAtIn(text[2], p);
            }
```

```
            else if (text.Length == 5)
            {
                if (text[3].ToLower() != "in")
                {
                    return "What do you want to look in?";
                }
                else
                {
                    IHaveInventory? container = FetchContainer(p, text[4]) as
IHaveInventory;

                    // Check if container is null after the cast
                    if (container == null)
                    {
                        return "I can't find the " + text[4];
                    }
                    else
                    {
                        // Look at the thing in the container
                        return LookAtIn(text[2], container);
                    }
                }
            }
            //default return
            return "I don't know how to look like that";
        }

        public IHaveInventory? FetchContainer(Player p, string containerId)
        {
            if (p.Locate(containerId) != null)
            {
                return p.Locate(containerId) as IHaveInventory;
            }
            else
            {
                return null;
            }
        }

        public string LookAtIn(string thingId, IHaveInventory containerId)
        {
            GameObject? thing = containerId.Locate(thingId);

            if (thing == null)
            {
                return "I can't find the " + thingId + " in the " +
containerId.Name;
            }
            else
            {
                return thing.FullDescription;
            }
        }
    }
}
```

Player

```
using System;
using System.Collections.Generic;
```

```
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class Player : GameObject, IHaveInventory
    {
        private Inventory _inventory = new Inventory();
        private Location _location;

        public Player(string name, string desc) : base(new string[] { "me",
"inventory" }, name, desc)
        {

        }

        public string Move (Direction direction)
        {
            Path? path = Location.GetPath(direction);

            if (path == null)
            {
                return "There is no path in that direction";
            }
            else
            {
                Location = path.DestinationLocation;
                return "You head " + path.PathDirection.ToString() + "\n" +
path.FullDescription + "\nYou have arrived in a small " +
path.DestinationLocation.Name;
            }
        }

        public Location Location
        {
            get
            {
                return _location;
            }
            set
            {
                _location = value;
            }
        }

        public Inventory Inventory
        {
            get
            {
                return _inventory;
            }
        }

        public GameObject? Locate(string id)
        {
            if (AreYou(id))
            {
                return this;
            }
            else if (Inventory.HasItem(id))
            {
                return Inventory.Fetch(id);
```

```
            }
            else if (Location != null)
            {
                    return Location.Locate(id);
            }
            else
            {
                return null;
            }
        }

        public override string FullDescription
        {
            get
            {
                return "You are " + Name + " " + Description + "\nYou are
carrying:\n" + _inventory.ItemList;
            }
        }

        GameObject? IHaveInventory.Locate(string id)
        {
            return Locate(id);
        }

        string IHaveInventory.Name
        {
            get
            {
                return Name;
            }
        }

        Inventory IHaveInventory.Inventory
        {
            get
            {
                return Inventory;
            }
        }
    }
}
```

Bag

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using static SwinAdventure.LookCommand;
using static SwinAdventure.PickupCommand;

namespace SwinAdventure
{
    public class Bag : Item, IHaveInventory
    {
        private Inventory _inventory = new Inventory();

        public Bag(string[] idents, string name, string desc) : base(idents,
name, desc)
```

```
        {
        }

        public Item? Locate(string id)
        {
            if (AreYou(id))
            {
                return this;
            }
           else
                return _inventory.Fetch(id);
        }

        public override string FullDescription
        {
            get
            {
                if (Inventory.ItemList == "")
                {
                    return Description + "The " + Name + " is empty.";
                }
                else
                return Description + "\nYou look in the " + Name + " and
see:\n" + _inventory.ItemList;
            }
        }

        public Inventory Inventory
        {
            get
            {
                return _inventory;
            }
        }

        GameObject? IHaveInventory.Locate(string id)
        {
            return Locate(id);
        }

        string IHaveInventory.Name
        {
            get
            {
                return Name;
            }
        }

        Inventory IHaveInventory.Inventory
        {
            get
            {
                return Inventory;
            }
        }
    }
}
```

Location

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Xml.Linq;
using static SwinAdventure.LookCommand;

namespace SwinAdventure
{
    public class Location : GameObject, IHaveInventory
    {
        private Inventory _inventory = new Inventory();
        private List<Path> _paths = new List<Path>();

        public Location(string[] ids, string name, string description) :
base(ids, name, description)
        {
        }

        public List<Path> Paths
        {
            get
            {
                return _paths;
            }
        }

        public void AddPath(Path path)
        {
            _paths.Add(path);
        }

        public Path? GetPath (Direction Direction)
        {
            foreach (Path path in Paths)
            {
                if (path.AreYou(Direction.ToString()))
                {
                    return path;
                }
            }
            return null;
        }

        public Inventory Inventory
        {
            get
            {
                return _inventory;
            }
        }

        public GameObject? Locate(string id)
        {
            if (AreYou(id))
            {
                   return this;
            }
            return _inventory.Fetch(id);
        }

        public string GetExits()
```

```
        {
            if (_paths.Count == 0)
            {
                return "There are no exits.";
            }

            StringBuilder exits = new StringBuilder();

            foreach (Path path in _paths)
            {
                exits.Append(path.PathDirection.ToString() + ", ");
            }

            // Remove the trailing ", "
            if (exits.Length > 2)
            {
                exits.Length -= 2;
            }

            return "There are exits to the " + exits.ToString() + ".";
        }

        public override string FullDescription
        {
            get
            {
                return "You are in a small " + Name + "\n" + Description + "\n"
+ GetExits() +  "\n\n" + "In this room you can see:\n" + Inventory.ItemList;
            }
        }

        GameObject? IHaveInventory.Locate(string id)
        {
            return Locate(id);
        }

        string IHaveInventory.Name
        {
            get
            {
                return Name;
            }
        }

        Inventory IHaveInventory.Inventory
        {
            get
            {
                return Inventory;
            }
        }
    }
}
```