Swinburne University of Technology

COS20007 Object Oriented Programming

# Case Study - Iteration 7 - Paths

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```
using System;

namespace SwinAdventure
{
    public class Path : GameObject
    {
        private Location _destination;
        private bool _isLocked;

        public Path(string[] ids, string name, string desc, Location destination) :
↪   base(ids, name, desc)
        {
            _destination = destination;
        }

        public Location Destination
        {
            get
            {
                return _destination;
            }
        }

        public override string FullDescription
        {
            get
            {
                return $"{Destination.Name} is in the {Name}";
            }
        }

        public bool IsLocked
        {
            get
            {
                return _isLocked;
            }
            set
            {
                _isLocked = value;
            }
        }

        public string Move(Player player)
        {
            if (IsLocked)
            {
                return "The path is locked.";
            }
            player.Location = Destination;
            return Destination.Name;
        }
    }
}

```

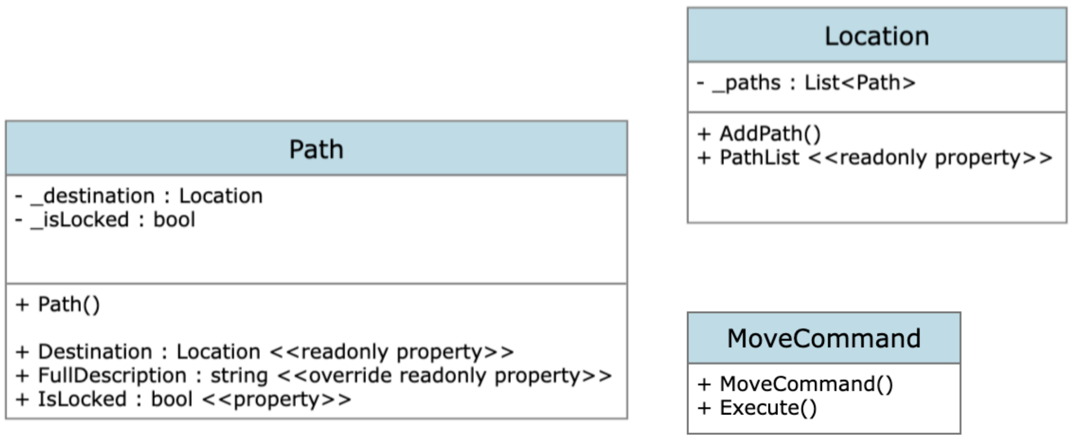
```
using Path = SwinAdventure.Path;

namespace SwinAdventureTest
{
    [TestFixture]
    public class TestPath
    {
        Path path;
        Location jungle;

        [SetUp]
        public void Setup()
        {
            jungle = new Location("a jungle", "This is a scary  jungle");
            path = new Path(new string[] { "south", "s" }, "south", "this is south",
    ↪   jungle);
        }

        [Test]
        public void TestPathIsIdentifiable()
        {
            Assert.That(path.AreYou("south"), Is.True);
            Assert.That(path.AreYou("s"), Is.True);
            Assert.That(path.AreYou("north"), Is.False);
        }

        [Test]
        public void TestFullDesc()
        {
            string actual = path.FullDescription;
            string expected = "a jungle is in the south";
            Assert.That(actual, Is.EqualTo(expected));
        }
    }
}

```

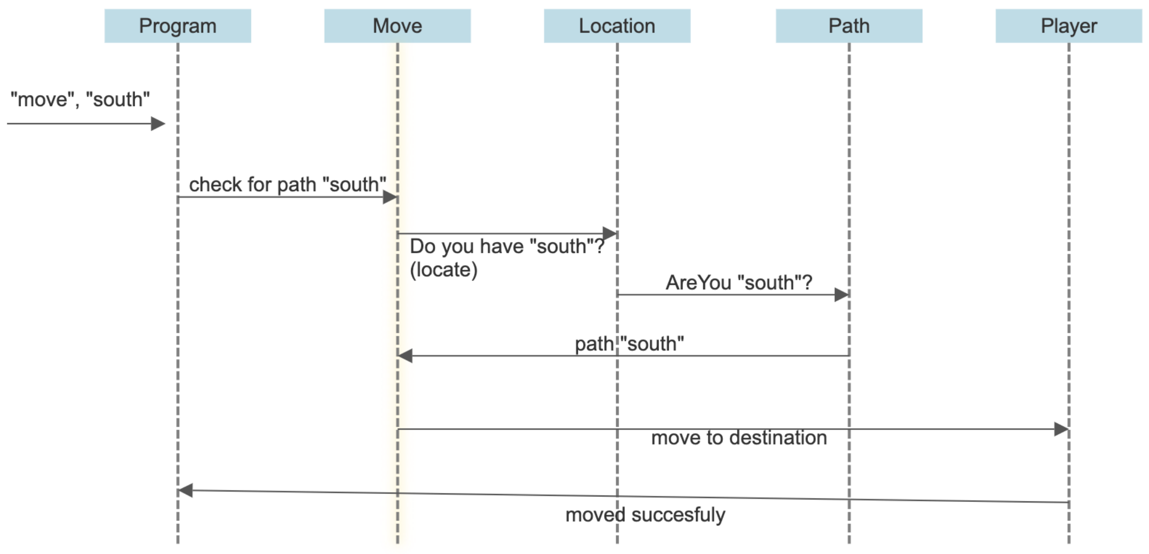
```csharp
using System;
using System.Collections.Generic;
using System.IO;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace SwinAdventure
{
    public class Location : GameObject, IHaveInventory
    {
        //local variables
        private Inventory _inventory;
        private List<Path> _paths;

        //constructor
        public Location(string name, string desc) : base(new string[] { "house",
↪   "here" }, name, desc)
        {
            _inventory = new Inventory();
            _paths = new List<Path>();
        }

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

        public Path findPath(string path)
        {
            foreach (Path p in _paths)
            {
                if (p.AreYou(path))
                {
                    return p;
                }
            }
            return null;
        }

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

        //properties
        public string PathList
{
    get
    {
        if (_paths.Count == 0)
        {
            return "There are no exits.";
        }

        if (_paths.Count == 1)
        {
            return "There is an exit " + _paths[0].Name + ".";
        }

        StringBuilder list = new StringBuilder("There are exits to ");
        foreach (Path path in _paths)
        {
            if (path != _paths.First())
            {
                list.Append(", ");
            }

            if (path == _paths.Last())
            {
                list.Append("and ");
            }

            list.Append(path.Name);
        }

        list.Append(".");

        return list.ToString();
    }
}


        public override string FullDescription
        {
            get
            {
                return $"You are in {Name}\n{Description}\n{PathList}\nHere you can
↪   see:\n{_inventory.ItemList}";
            }
        }

        public Inventory Inventory
        {
            get
            {
                return _inventory;
            }
        }
    }
}
```

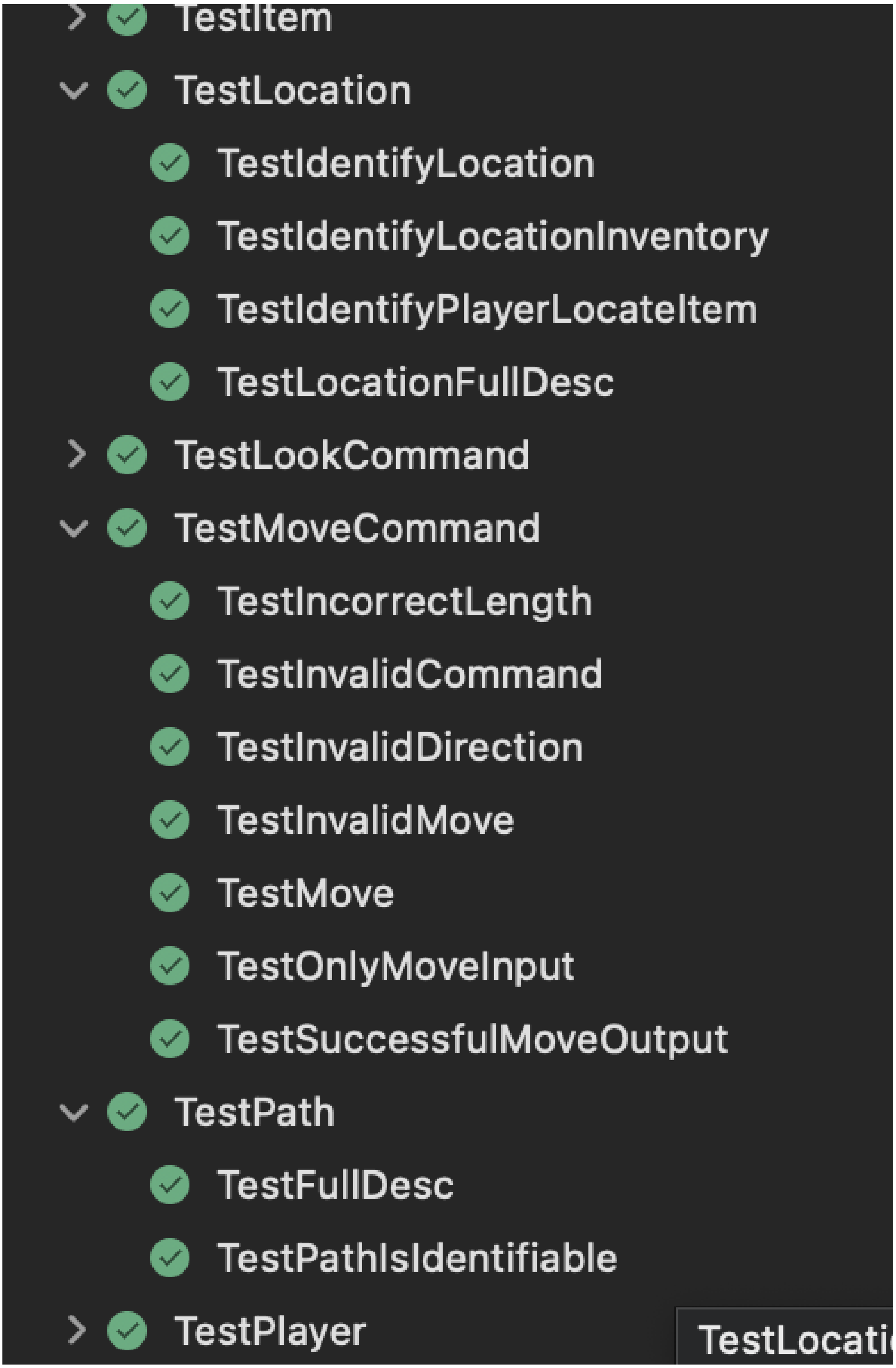
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;



namespace SwinAdventureTest
{
    public class TestLocation
    {
        Location location;
        Location destination;
        SwinAdventure.Path path;
        Player player;
        Item knife;

        [SetUp]
        public void Setup()
        {
            location = new Location("a jungle", "This is a jungle");
            destination = new Location("a tower", "This is a tilted tower");
            path = new SwinAdventure.Path(new string[] { "south" }, "south", "this is
↪   south", destination);
            player = new Player("bob", "the builder");
            knife = new Item(new string[] { "Knife" }, "a sharp knife", "This is a
↪   sharp knife");

            location.Inventory.Put(knife);
            player.Location = location;
        }

        [Test]
        public void TestIdentifyLocation()
        {
            Assert.That(location.Locate("house"), Is.SameAs(location));
        }

        [Test]
        public void TestIdentifyLocationInventory()
        {
            Assert.That(location.Locate("knife"), Is.SameAs(knife));
        }

        [Test]
        public void TestIdentifyPlayerLocateItem()
        {
            Assert.That(player.Locate("knife"), Is.SameAs(knife));
        }

        [Test]
        public void TestLocationFullDesc()
        {
            location.AddPath(path);
            string expected = "You are in a jungle\nThis is a jungle\nThere is an
↪  exit south.\nHere you can see:\na sharp knife (knife)\n";
            Assert.That(location.FullDescription, Is.EqualTo(expected));
        }
    }
}

```

```
using System;

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 == 1)
            {
                return "Where do you want to move?";
            }
            else if (text.Length > 2)
            {
                return "Error in move input";
            }
            else
            {
                string direction = text[1].ToLower();

                if (!IsValidMoveCommand(text[0]))
                {
                    return "Error in move input";
                }

                Path path = p.Location.findPath(direction);
                if (path != null)
                {
                    p.Move(path);
                    return $"You went {path.Name}\nYou have arrived in {path.Destination.Name}";
                }

                return "Error in direction!";
            }
        }

        private bool IsValidMoveCommand(string command)
        {
            IdentifiableObject identifiable = new IdentifiableObject(new string[] { command });
            return identifiable.AreYou("move") || identifiable.AreYou("go") ||
                   identifiable.AreYou("head") || identifiable.AreYou("leave");
        }


    }
}
```

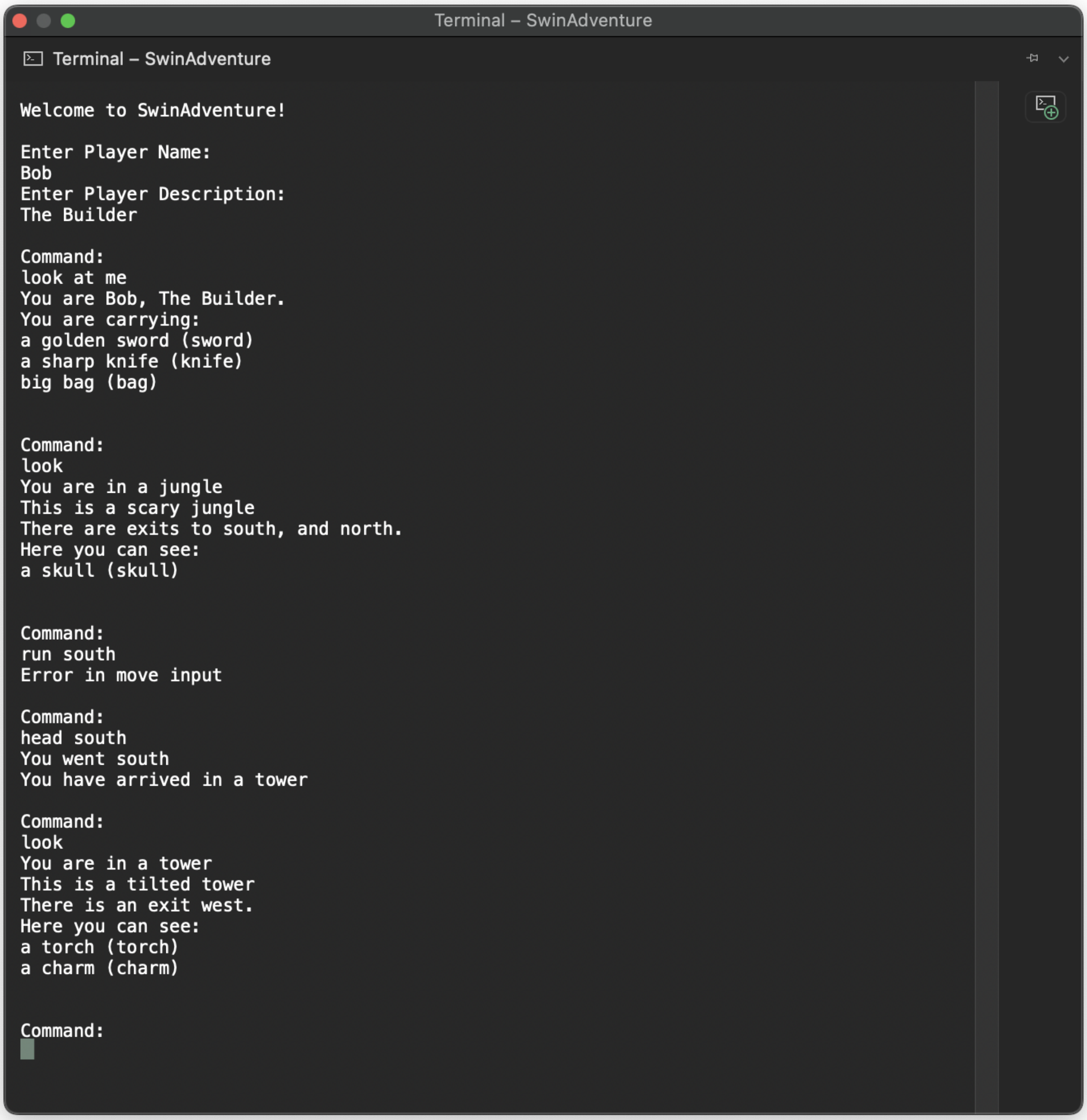
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using Path = SwinAdventure.Path;

namespace SwinAdventureTest
{
    public class TestMoveCommand
    {
        MoveCommand move;
        Location location;
        Location destination;
        Path path;
        Player player;

        [SetUp]
        public void Setup()
        {
            move = new MoveCommand();
            location = new Location("a jungle", "This is a creepy jungle");
            destination = new Location("a tower", "This is a tilted tower");
            path = new Path(new string[] { "south" }, "south", "this is south",
    ↪  destination);
            player = new Player("bob", "the builder");

            player.Location = location;
            location.AddPath(path);
        }

        [Test]
        public void TestMove()
        {
            Assert.That(player.Location, Is.SameAs(location));
            move.Execute(player, new string[] { "move", "south" });
            Assert.That(player.Location, Is.SameAs(destination));
        }

        [Test]
        public void TestInvalidMove()
        {
            Assert.That(player.Location, Is.SameAs(location));
            move.Execute(player, new string[] { "move", "east" });
            Assert.That(player.Location, Is.SameAs(location));
        }

        [Test]
        public void TestSuccessfulMoveOutput()
        {
            string actual = move.Execute(player, new string[] { "move", "south" });
            string expected = "You went south\nYou have arrived in a tower";

            Assert.That(actual, Is.EqualTo(expected));
        }

        [Test]
        public void TestIncorrectLength()
        {
            string actual = move.Execute(player, new string[] { "move", "to", "north"
    });
            string expected = "Error in move input";

            Assert.That(actual, Is.EqualTo(expected));
        }

        [Test]
        public void TestInvalidCommand()
        {
            string actual = move.Execute(player, new string[] { "run", "south" });
            string expected = "Error in move input";

            Assert.That(actual, Is.EqualTo(expected));

        }

        [Test]
        public void TestOnlyMoveInput()
        {
            string actual = move.Execute(player, new string[] { "move" });
            string expected = "Where do you want to move?";

            Assert.That(actual, Is.EqualTo(expected));
        }

        [Test]
        public void TestInvalidDirection()
        {
            string actual = move.Execute(player, new string[] { "move", "east" });
            string expected = "Error in direction!";

            Assert.That(actual, Is.EqualTo(expected));
        }
    }
}
```


Location
- _paths : List<Path>
+ AddPath()
+ PathList <<readonly property>>
Path
- _destination : Location
- _isLocked : bool
+ Path()
+ Destination : Location <<readonly property>>
+ FullDescription : string <<override readonly property>>
+ IsLocked : bool <<property>>
MoveCommand
+ MoveCommand()
+ Execute()


Program
Move
Location
Path
Player
"move", "south"
check for path "south"
Do you have "south"?
(locate)
AreYou "south"?
path "south"
move to destination
moved succesfuly



```
> ✓ TestItem
v ✓ TestLocation
    ✓ TestIdentifyLocation
    ✓ TestIdentifyLocationInventory
    ✓ TestIdentifyPlayerLocateItem
    ✓ TestLocationFullDesc
> ✓ TestLookCommand
v ✓ TestMoveCommand
    ✓ TestIncorrectLength
    ✓ TestInvalidCommand
    ✓ TestInvalidDirection
    ✓ TestInvalidMove
    ✓ TestMove
    ✓ TestOnlyMoveInput
    ✓ TestSuccessfulMoveOutput
v ✓ TestPath
    ✓ TestFullDesc
    ✓ TestPathIsIdentifiable
> ✓ TestPlayer                    TestLocati
```



```
Welcome to SwinAdventure!

Enter Player Name:
Bob
Enter Player Description:
The Builder

Command:
look at me
You are Bob, The Builder.
You are carrying:
a golden sword (sword)
a sharp knife (knife)
big bag (bag)


Command:
look
You are in a jungle
This is a scary jungle
There are exits to south, and north.
Here you can see:
a skull (skull)


Command:
run south
Error in move input

Command:
head south
You went south
You have arrived in a tower

Command:
look
You are in a tower
This is a tilted tower
There is an exit west.
Here you can see:
a torch (torch)
a charm (charm)


Command:
```