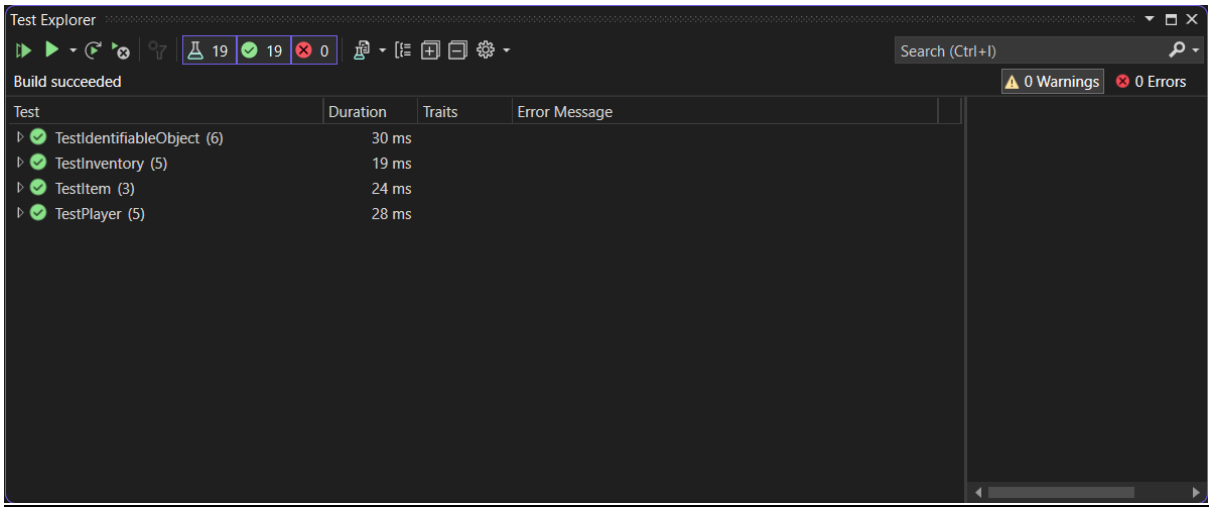
4.2P - Case Study - Iteration 2 - Players Items and Inventory

All unit tests passing:



```
1  namespace SwinAdventure
2  {
3      internal class Program
4      {
5          static void Main(string[] args)
6          {
7              IdentifiableObject id = new IdentifiableObject(new string[]
                 { "id1", "id2" });    // Example of Identifiable Object
8              Player player = new Player("Jayden", "the mighty
                 programmer");                    // Example of Player object
9          }
10     }
11 }
12
```

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace SwinAdventure
8  {
9      public class IdentifiableObject
10     {
11         private List<string> _identifiers;
12
13         public string FirstID
14         {
15             get
16             {
17                 if (_identifiers.Count > 0)
18                 {
19                     return _identifiers[0];
20                 }
21                 else
22                 {
23                     return "";
24                 }
25             }
26         }
27
28         public IdentifiableObject(string[] idents)
29         {
30             _identifiers = new List<string>();
31             for (int i = 0; i < idents.Length; i++)
32             {
33                 _identifiers.Add(idents[i].ToLower());
34             }
35         }
36
37         public bool AreYou(string id)
38         {
39             bool result = false;
40
41             foreach (string ident in _identifiers)
42             {
43                 if (ident == id.ToLower())
44                 {
45                     result = true;
46                     break;
47                 }
48             }
49
```

```
50              return result;
51          }
52
53          public void AddIdentifier(string id)
54          {
55              _identifiers.Add(id.ToLower());
56          }
57      }
58  }
59
```

```
1  using System;
2  using System.Collections.Generic;
3  using System.ComponentModel.Design;
4  using System.Linq;
5  using System.Text;
6  using System.Threading.Tasks;
7
8  namespace SwinAdventure
9  {
10     public abstract class GameObject : IdentifiableObject
11     {
12         private string _description;
13         private string _name;
14
15         public string Name
16         {
17             get
18             {
19                 return _name;
20             }
21         }
22
23         public string ShortDescription
24         {
25             get
26             {
27                 return string.Format("{0} ({1})", Name, base.FirstID);
28             }
29         }
30
31         public virtual string FullDescription
32         {
33             get
34             {
35                 return _description;
36             }
37         }
38
39         public GameObject(string[] ids, string name, string desc) : base
             (ids)
40         {
41             _name = name;
42             _description = desc;
43         }
44     }
45 }
46
```

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace SwinAdventure
8  {
9      public class Item : GameObject
10     {
11         public Item(string[] idents, string name, string desc) : base
             (idents, name, desc) { }
12     }
13 }
14
```

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace SwinAdventure
8  {
9      public class Inventory
10     {
11         private List<Item> _items;
12
13         public string ItemList
14         {
15             get
16             {
17                 string itemList = "";
18                 foreach (Item item in _items)
19                 {
20                     itemList += (string.Format("\n  {0}",
                       item.ShortDescription));
21                 }
22
23                 return itemList;
24             }
25         }
26
27         public Inventory()
28         {
29             _items = new List<Item>();
30         }
31
32         public bool HasItem(string id)
33         {
34             return Fetch(id) != null;
35         }
36
37         public void Put(Item itm)
38         {
39             _items.Add(itm);
40         }
41
42         public Item Take(string id)
43         {
44             foreach (Item item in _items)
45             {
46                 if (item.AreYou(id))
47                 {
48                     _items.Remove(item);
```

```
49                      return item;
50                  }
51              }
52              return null;
53          }
54
55          public Item Fetch(string id)
56          {
57              foreach (Item item in _items)
58              {
59                  if (item.AreYou(id))
60                  {
61                      return item;
62                  }
63              }
64              return null;
65          }
66
67      }
68  }
69
```

```
1  using System;
2  using System.Collections.Generic;
3  using System.Linq;
4  using System.Text;
5  using System.Threading.Tasks;
6
7  namespace SwinAdventure
8  {
9      public class Player : GameObject
10     {
11         private Inventory _inventory;
12
13         public override string FullDescription
14         {
15             get
16             {
17                 return string.Format("You are {0}, {1}.\nYou are carrying:
                       {2}", Name, base.FullDescription, Inventory.ItemList);
18             }
19         }
20
21         public Inventory Inventory
22         {
23             get
24             {
25                 return _inventory;
26             }
27         }
28
29         public Player(string name, string desc) : base(new string[] {"me",
             "inventory"}, name, desc)
30         {
31             _inventory = new Inventory();
32         }
33
34         public GameObject Locate(string id)
35         {
36             if (AreYou(id))
37             {
38                 return this;
39             }
40             else if (Inventory.Fetch(id) != null)
41             {
42                 return Inventory.Fetch(id);
43             }
44             else
45             {
46                 return null;
47             }
```

```
48          }
49      }
50  }
51
```

```
1  using SwinAdventure;
2
3  namespace TestIdentifiableObject
4  {
5      public class Tests
6      {
7
8          [Test]
9          public void TestAreYou()
10         {
11             IdentifiableObject myIdents = new IdentifiableObject(new string
                 [] { "fred", "bob" });
12
13             bool fred = myIdents.AreYou("fred");
14             Assert.That(fred, Is.EqualTo(true));
15             bool bob = myIdents.AreYou("bob");
16             Assert.That(bob, Is.EqualTo(true));
17         }
18
19         [Test]
20
21         public void TestNotAreYou()
22         {
23             IdentifiableObject myIdents = new IdentifiableObject(new string
                 [] { "fred", "bob" });
24
25             bool wilma = myIdents.AreYou("wilma");
26             Assert.That(wilma, Is.EqualTo(false));
27             bool boby = myIdents.AreYou("boby");
28             Assert.That(boby, Is.EqualTo(false));
29         }
30
31         [Test]
32
33         public void TestCaseSensitive()
34         {
35             IdentifiableObject myIdents = new IdentifiableObject(new string
                 [] { "fred", "bob" });
36
37             bool fred = myIdents.AreYou("FRED");
38             Assert.That(fred, Is.EqualTo(true));
39             bool bob = myIdents.AreYou("bOB");
40             Assert.That(bob, Is.EqualTo(true));
41         }
42
43         [Test]
44
45         public void TestFirstID()
46         {
```

```
47              IdentifiableObject myIdents = new IdentifiableObject(new string ↪
                  [] { "fred", "bob" });
48
49              string firstID = myIdents.FirstID;
50              Assert.That(firstID, Is.EqualTo("fred"));
51          }
52
53          [Test]
54
55          public void TestFirstIDNoIDs()
56          {
57              IdentifiableObject myIdents = new IdentifiableObject(new string ↪
                  [] {});
58
59              string firstID = myIdents.FirstID;
60              Assert.That(firstID, Is.EqualTo(""));
61          }
62
63          [Test]
64
65          public void TestAddIDs()
66          {
67              IdentifiableObject myIdents = new IdentifiableObject(new string ↪
                  [] { "fred", "bob" });
68              myIdents.AddIdentifier("wilma");
69
70              bool fred = myIdents.AreYou("fred");
71              Assert.That(fred, Is.EqualTo(true));
72              bool bob = myIdents.AreYou("bob");
73              Assert.That(bob, Is.EqualTo(true));
74              bool wilma = myIdents.AreYou("wilma");
75              Assert.That(wilma, Is.EqualTo(true));
76          }
77      }
78  }
```

```
1  using SwinAdventure;
2  using System.Reflection.Metadata;
3
4  namespace TestItem
5  {
6      public class Tests
7      {
8          [Test]
9          public void TestItemIsIdentifiable()
10         {
11             // testing identifiers of Item object
12             Item bronzeSword = new Item(new string[] { "sword", "bronze
                 sword" }, "a bronze sword", "bronze sword description");
13             bool testBronzeSwordID1 = bronzeSword.AreYou("sword");
14             bool testBronzeSwordID2 = bronzeSword.AreYou("bronze sword");
15             Assert.That(testBronzeSwordID1, Is.EqualTo(true));
16             Assert.That(testBronzeSwordID2, Is.EqualTo(true));
17         }
18
19         [Test]
20
21         public void TestItemShortDescription()
22         {
23             Item bronzeSword = new Item(new string[] { "sword", "bronze
                 sword" }, "a bronze sword", "bronze sword description");
24             string testBronzeSword = bronzeSword.ShortDescription;
25             Assert.That(testBronzeSword, Is.EqualTo("a bronze sword
                 (sword)"));
26         }
27
28         [Test]
29
30         public void TestItemFullDescription()
31         {
32             Item bronzeSword = new Item(new string[] { "sword", "bronze
                 sword" }, "a bronze sword", "bronze sword description");
33             string testBronzeSword = bronzeSword.FullDescription;
34             Assert.That(testBronzeSword, Is.EqualTo("bronze sword
                 description"));
35         }
36     }
37 }
```

```
1  using SwinAdventure;
2
3  namespace TestInventory
4  {
5      public class Tests
6      {
7
8          [Test]
9          public void TestFindItem()
10         {
11             Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                   shovel", "shovel description");
12             Item bronzeSword = new Item(new string[] { "sword", "bronze
                   sword" }, "a bronze sword", "bronze sword description");
13             Inventory testInventory = new Inventory();
14             testInventory.Put(shovel);
15             testInventory.Put(bronzeSword);
16
17             bool testShovel = testInventory.HasItem("shovel");
18             bool testBronzeSword = testInventory.HasItem("sword");
19             Assert.That(testShovel, Is.EqualTo(true));
20             Assert.That(testBronzeSword, Is.EqualTo(true));
21         }
22
23         [Test]
24         public void TestNoItemFind()
25         {
26             Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                   shovel", "shovel description");
27             Item bronzeSword = new Item(new string[] { "sword", "bronze
                   sword" }, "a bronze sword", "bronze sword description");
28             Inventory testInventory = new Inventory();
29             testInventory.Put(shovel);
30             testInventory.Put(bronzeSword);
31
32             bool testSmallComputer = testInventory.HasItem("pc");
33             Assert.That(testSmallComputer, Is.EqualTo(false));
34         }
35
36         [Test]
37         public void TestFetchItem()
38         {
39             Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                   shovel", "shovel description");
40             Item bronzeSword = new Item(new string[] { "sword", "bronze
                   sword" }, "a bronze sword", "bronze sword description");
41             Inventory testInventory = new Inventory();
42             testInventory.Put(shovel);
43             testInventory.Put(bronzeSword);
```

```
44
45              Item testShovel = testInventory.Fetch("shovel");
46              Item testBronzeSword = testInventory.Fetch("sword");
47              Assert.That(testShovel, Is.EqualTo(shovel));
48              Assert.That(testBronzeSword, Is.EqualTo(bronzeSword));
49          }
50
51          [Test]
52          public void TestTakeItem()
53          {
54              Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                  shovel", "shovel description");
55              Item bronzeSword = new Item(new string[] { "sword", "bronze
                  sword" }, "a bronze sword", "bronze sword description");
56              Inventory testInventory = new Inventory();
57              testInventory.Put(shovel);
58              testInventory.Put(bronzeSword);
59
60              Item testFetchShovel = testInventory.Take("shovel");
61              bool testShovelInInventory = testInventory.HasItem("shovel");
62              Assert.That(testFetchShovel, Is.EqualTo(shovel));
63              Assert.That(testShovelInInventory, Is.EqualTo(false));
64          }
65
66          [Test]
67          public void TestItemList()
68          {
69              Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                  shovel", "shovel description");
70              Item bronzeSword = new Item(new string[] { "sword", "bronze
                  sword" }, "a bronze sword", "bronze sword description");
71              Inventory testInventory = new Inventory();
72              testInventory.Put(shovel);
73              testInventory.Put(bronzeSword);
74
75              string testInventoryList = testInventory.ItemList;
76              Assert.That(testInventoryList, Is.EqualTo("\n  a shovel
                  (shovel)\n  a bronze sword (sword)"));
77          }
78      }
79  }
```

```
1  using SwinAdventure;
2
3  namespace TestPlayer
4  {
5      public class Tests
6      {
7          [Test]
8          public void TestPlayerIsIdentifiable()
9          {
10             Player p = new Player("Tester", "the mighty test player");
11
12             bool testPMe = p.AreYou("me");
13             bool testPInventory = p.AreYou("inventory");
14             Assert.That(testPMe, Is.EqualTo(true));
15             Assert.That(testPInventory, Is.EqualTo(true));
16         }
17
18         [Test]
19         public void TestPlayerLocatesItems()
20         {
21             Player p = new Player("Tester", "the mighty test player");
22             Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                 shovel", "shovel description");
23             Item bronzeSword = new Item(new string[] { "sword", "bronze
                 sword" }, "a bronze sword", "bronze sword description");
24             p.Inventory.Put(shovel);
25             p.Inventory.Put(bronzeSword);
26
27             GameObject testLocateShovel = p.Locate("shovel");
28             GameObject testLocateBronzeSword = p.Locate("sword");
29             Assert.That(testLocateShovel, Is.EqualTo(shovel));
30             Assert.That(testLocateBronzeSword, Is.EqualTo(bronzeSword));
31         }
32
33         [Test]
34         public void TestPlayerLocatesItself()
35         {
36             Player p = new Player("Tester", "the mighty test player");
37
38             GameObject testLocatePMe = p.Locate("me");
39             GameObject testLocatePInventory = p.Locate("inventory");
40             Assert.That(testLocatePMe, Is.EqualTo(p));
41             Assert.That(testLocatePInventory, Is.EqualTo(p));
42         }
43
44         [Test]
45         public void TestPlayerLocatesNothing()
46         {
47             Player p = new Player("Tester", "the mighty test player");
```

```
48              Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                  shovel", "shovel description");
49              Item bronzeSword = new Item(new string[] { "sword", "bronze
                  sword" }, "a bronze sword", "bronze sword description");
50              p.Inventory.Put(shovel);
51              p.Inventory.Put(bronzeSword);
52
53              GameObject testLocateNothing = p.Locate("nothing");
54              Assert.That(testLocateNothing, Is.EqualTo(null));
55          }
56
57          [Test]
58          public void TestPlayerFullDescription()
59          {
60              Player p = new Player("Tester", "the mighty test player");
61              Item shovel = new Item(new string[] { "shovel", "spade" }, "a
                  shovel", "shovel description");
62              Item bronzeSword = new Item(new string[] { "sword", "bronze
                  sword" }, "a bronze sword", "bronze sword description");
63              p.Inventory.Put(shovel);
64              p.Inventory.Put(bronzeSword);
65
66              string testFullDescription = p.FullDescription;
67              Assert.That(testFullDescription, Is.EqualTo("You are Tester,
                  the mighty test player.\nYou are carrying: \n  a shovel
                  (shovel)\n  a bronze sword (sword)"));
68
69          }
70      }
71  }
```