# Unit-test for OrangeTree

[TestClass]

public class UnitTest1

{

private OrangeTree orangeTree;

[TestInitialize]

public void SetupForTest()

{

// Start an orange tree

orangeTree = new OrangeTree();

orangeTree.SetAge(0);

orangeTree.SetHeight(6);

orangeTree.SetTreeAlive(true);

}

[TestMethod]

public void ShouldIncrementTheTreesAgeWithEachPassingYear()

{

//Act

orangeTree.OneYearPasses();

//Assert

Assert.AreEqual(1, orangeTree.GetAge());

}

[TestMethod]

public void ShouldIncrementTheTreesHeightByTwoWithEachPassingYear()

{

//Act

orangeTree.OneYearPasses();

//Assert

Assert.AreEqual(8, orangeTree.GetHeight());

}

[TestMethod]

public void ShouldDieAfter80Years()

{

//Act

for (int i = 1; i <= 80; i++)

{

orangeTree.OneYearPasses();

}

//Assert

Assert.AreEqual(false, orangeTree.GetTreeAlive());

}

[TestMethod]

public void ShouldProduceFruitAfter2Years()

{

orangeTree.OneYearPasses();

Assert.AreEqual(0, orangeTree.GetNumOranges());

orangeTree.OneYearPasses();

Assert.AreEqual(5, orangeTree.GetNumOranges());

}

[TestMethod]

public void ShouldIncreaseFruitProductionBy5PiecesEachYearAfterMaturity()

{

orangeTree.OneYearPasses();

orangeTree.OneYearPasses();

Assert.AreEqual(5, orangeTree.GetNumOranges());

orangeTree.OneYearPasses();

Assert.AreEqual(10, orangeTree.GetNumOranges());

}

[TestMethod]

public void ShouldCountNumberOfOrangesEatenThisYear()

{

orangeTree.OneYearPasses();

orangeTree.OneYearPasses();

orangeTree.EatOrange(1);

Assert.AreEqual(1, orangeTree.GetOrangesEaten());

orangeTree.EatOrange(3);

Assert.AreEqual(4, orangeTree.GetOrangesEaten());

Assert.AreEqual(1, orangeTree.GetNumOranges());

}

[TestMethod]

public void OrangesEatenOneYearPasses()

{

//Act

orangeTree.OneYearPasses();

orangeTree.OneYearPasses();

orangeTree.EatOrange(1);

orangeTree.EatOrange(3);

orangeTree.OneYearPasses();

//Assert

Assert.AreEqual(0, orangeTree.GetOrangesEaten());

Assert.AreEqual(10, orangeTree.GetNumOranges());

}

[TestMethod]

public void DeadTreeDoNotGrowAndProduceFruit()

{

//Act

for (int i = 1; i <= 80; i++)

{

orangeTree.OneYearPasses();

}

//Assert

Assert.AreEqual(false, orangeTree.GetTreeAlive());

orangeTree.OneYearPasses();

Assert.AreEqual(0, orangeTree.GetNumOranges());

Assert.AreEqual(164, orangeTree.GetHeight());

Assert.AreEqual(81, orangeTree.GetAge());

orangeTree.OneYearPasses();

Assert.AreEqual(0, orangeTree.GetNumOranges());

Assert.AreEqual(164, orangeTree.GetHeight());

Assert.AreEqual(82, orangeTree.GetAge());

}

}