﻿using System;

using Microsoft.VisualStudio.TestTools.UnitTesting;

using System.Collections.Generic;

using SecurityLibrary;

namespace SecurityPackageTest

{

[TestClass]

public class ColumnarTest

{

string mainPlain1 = "attackpostponeduntiltwoam";

string mainPlain2 = "attackpostponeduntiltwoamxxx";

List<int> mainkey = new List<int>() { 4, 3, 1, 2, 5, 6, 7 };

string mainCipher1 = "ttnaaptmtsuoaodwcoiknlpet".ToUpper();

string mainCipher2 = "ttnaaptmtsuoaodwcoixknlxpetx".ToUpper();

string mainPlain3 = "computerscience";

string mainPlain4 = "computersciencex";

string mainCipher3 = "ctipscoeemrnuce".ToUpper();

string mainCipher4 = "cusnpremeieotcc".ToUpper();

string mainCipher5 = "cusnprexmeieotcc".ToUpper();

List<int> mainkey1 = new List<int>() { 1, 3, 4, 2, 5 };

List<int> mainkey2 = new List<int>() { 1, 4, 3, 2 };

string newPlain = "defendtheeastwallofthecastleee";

string newCipher = "nalceehwttdttfseeleedsoaefeahl";

List<int> newKey = new List<int>() { 3, 2, 6, 4, 1, 5 };

[TestMethod]

public void ColumnarTestEnc1()

{

Columnar algorithm = new Columnar();

string cipher = algorithm.Encrypt(mainPlain1, mainkey);

// Add x's or not

Assert.IsTrue(cipher.Equals(mainCipher1, StringComparison.InvariantCultureIgnoreCase)

|| cipher.Equals(mainCipher2, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestDec1()

{

Columnar algorithm = new Columnar();

string plain1 = algorithm.Decrypt(mainCipher1, mainkey);

string plain2 = algorithm.Decrypt(mainCipher2, mainkey);

Assert.IsTrue(plain1.Equals(mainPlain1, StringComparison.InvariantCultureIgnoreCase)

|| plain2.Equals(mainPlain2, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestAnalysis1()

{

Columnar algorithm = new Columnar();

List<int> key1 = algorithm.Analyse(mainPlain1, mainCipher1);

List<int> key2 = algorithm.Analyse(mainPlain2, mainCipher2);

for (int i = 0; i < mainkey.Count; i++)

{

Assert.IsTrue(mainkey[i] == key1[i] || mainkey[i] == key2[i]);

}

}

[TestMethod]

public void ColumnarTestEnc2()

{

Columnar algorithm = new Columnar();

string cipher = algorithm.Encrypt(mainPlain3, mainkey1);

Assert.IsTrue(cipher.Equals(mainCipher3, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestEnc3()

{

Columnar algorithm = new Columnar();

string cipher = algorithm.Encrypt(mainPlain3, mainkey2);

Assert.IsTrue(cipher.Equals(mainCipher4, StringComparison.InvariantCultureIgnoreCase)

|| cipher.Equals(mainCipher5, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestDec2()

{

Columnar algorithm = new Columnar();

string plain = algorithm.Decrypt(mainCipher3, mainkey1);

Assert.IsTrue(plain.Equals(mainPlain3, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestDec3()

{

Columnar algorithm = new Columnar();

string plain1 = algorithm.Decrypt(mainCipher4, mainkey2);

string plain2 = algorithm.Decrypt(mainCipher5, mainkey2);

Assert.IsTrue(plain1.Equals(mainPlain3, StringComparison.InvariantCultureIgnoreCase)

|| plain2.Equals(mainPlain4, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarTestAnalysis2()

{

Columnar algorithm = new Columnar();

List<int> key = algorithm.Analyse(mainPlain3, mainCipher3);

for (int i = 0; i < mainkey1.Count; i++)

{

Assert.IsTrue(mainkey1[i] == key[i]);

}

}

[TestMethod]

public void ColumnarTestAnalysis3()

{

Columnar algorithm = new Columnar();

List<int> key1 = algorithm.Analyse(mainPlain3, mainCipher4);

List<int> key2 = algorithm.Analyse(mainPlain4, mainCipher5);

for (int i = 0; i < mainkey2.Count; i++)

{

Assert.IsTrue(mainkey2[i] == key1[i] || mainkey2[i] == key2[i]);

}

}

[TestMethod]

public void ColumnarNewTestEnc()

{

Columnar algorithm = new Columnar();

string cipher = algorithm.Encrypt(newPlain, newKey);

Assert.IsTrue(cipher.Equals(newCipher, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarNewTestDec()

{

Columnar algorithm = new Columnar();

string plain1 = algorithm.Decrypt(newCipher, newKey);

Assert.IsTrue(plain1.Equals(newPlain, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void ColumnarNewTestAnalysis()

{

Columnar algorithm = new Columnar();

List<int> key1 = algorithm.Analyse(newPlain, newCipher);

for (int i = 0; i < newKey.Count; i++)

{

Assert.IsTrue(newKey[i] == key1[i]);

}

}

}

}