﻿using System;

using Microsoft.VisualStudio.TestTools.UnitTesting;

using SecurityLibrary;

using System.Collections.Generic;

using System.Linq;

using System.Text.RegularExpressions;

namespace SecurityPackageTest

{

[TestClass]

public class MonoalphabeticTest

{

string mainPlain = "meetmeafterthetogaparty";

string mainCipher = "phhwphdiwhuwkhwrjdsduwb".ToUpper();

string mainKey = "defghijklmnopqrstuvwxyzabc";

string mainPlain1 = "abcdefghijklmnopqrstuvwxyz";

string mainCipher1 = "isyvkjruxedzqmctplofnbwgah".ToUpper();

string mainKey1 = "isyvkjruxedzqmctplofnbwgah";

string mainPlain2 = "hellosecuritymonoalphabetic";

string mainCipher2 = "ukzzcokynlxfaqcmciztuiskfxy".ToUpper();

string newPlain = "ENGLISHASTRONOMERWILLIAMLASSELLDISCOVEREDTRITON".ToLower();

string newCipher = "EGSDAMTUMOLHGHFELWADDAUFDUMMEDDVAMIHQELEVOLAOHG".ToUpper();

string newKey = "UNIVERSTABCDFGHJKLMOPQWXYZ".ToLower();

[TestMethod]

public void MonoTestEnc1()

{

Monoalphabetic algorithm = new Monoalphabetic();

string cipher = algorithm.Encrypt(mainPlain, mainKey);

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

}

[TestMethod]

public void MonoTestDec1()

{

Monoalphabetic algorithm = new Monoalphabetic();

string plain = algorithm.Decrypt(mainCipher, mainKey);

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

}

[TestMethod]

public void MonoTestAnalysisNaive1()

{

Regex regex = new Regex("d.{3}hijk.{4}p.rs.u.w.{4}b.");

Monoalphabetic algorithm = new Monoalphabetic();

string key = algorithm.Analyse(mainPlain, mainCipher);

List<char> keyChar = new List<char>(key);

Assert.AreEqual(key.Length, 26);

Assert.AreEqual(keyChar.Distinct().Count(), 26);

Assert.IsTrue(regex.Match(key).Success);

}

[TestMethod]

public void MonoTestEnc2()

{

Monoalphabetic algorithm = new Monoalphabetic();

string cipher = algorithm.Encrypt(mainPlain1, mainKey1);

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

}

[TestMethod]

public void MonoTestDec2()

{

Monoalphabetic algorithm = new Monoalphabetic();

string plain = algorithm.Decrypt(mainCipher1, mainKey1);

Assert.IsTrue(plain.Equals(mainPlain1, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void MonoTestAnalysisNaive2()

{

Monoalphabetic algorithm = new Monoalphabetic();

string key = algorithm.Analyse(mainPlain1, mainCipher1);

List<char> keyChar = new List<char>(key);

Assert.AreEqual(key.Length, 26);

Assert.AreEqual(keyChar.Distinct().Count(), 26);

Assert.IsTrue(key.Equals(mainKey1, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void MonoTestEnc3()

{

Monoalphabetic algorithm = new Monoalphabetic();

string cipher = algorithm.Encrypt(mainPlain2, mainKey1);

Assert.IsTrue(cipher.Equals(mainCipher2, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void MonoTestDec3()

{

Monoalphabetic algorithm = new Monoalphabetic();

string plain = algorithm.Decrypt(mainCipher2, mainKey1);

Assert.IsTrue(plain.Equals(mainPlain2, StringComparison.InvariantCultureIgnoreCase));

}

[TestMethod]

public void MonoTestAnalysisNaive3()

{

Regex regex = new Regex("isy.k.{2}ux.{2}zqmct.lofn.{3}a.");

Monoalphabetic algorithm = new Monoalphabetic();

string key = algorithm.Analyse(mainPlain2, mainCipher2);

List<char> keyChar = new List<char>(key);

Assert.AreEqual(key.Length, 26);

Assert.AreEqual(keyChar.Distinct().Count(), 26);

Assert.IsTrue(regex.Match(key).Success);

}

string largePlain = "JULYPREVIOUSMONTHNEXTMONTHMEMBERSUPDATEFIRSTSCREENEDITORIALBACKONMYSOAPBOXWHYISITTHATUSEOFTHEENGLISHLANGUAGEISGETTINGSOVERYSLOPPYHOWLONGAGOWASITWHENGRAMMARCEASEDTOBEANESSENTIALELEMENTOFWRITINGADECENTESSAYAWHILEAGOTHEREWASACAMPAIGNTODOAWAYWITHTHEABERRANTAPOSTROPHENOWITSEEMSWENEEDANEWCAMPAIGNTOCONTENDWITHTHEABERRANTHYPHENYESIKNOWTHEREISAVASTDIFFERENCEBETWEENABLACKCABDRIVERANDABLACKCABDRIVERBUTNONEOFMYREFERENCEBOOKSINVITESHYPHENATIONOFBLACKCABORDRIVERANEXTREMEEXAMPLEPERHAPSBUTIMGETTINGTIREDOFSORTINGOUTHYPHENATEDWORDSANDREPLACINGTHEHYPHENWITHACOMMAORSEMICOLONORCREATINGANEWSENTENCENOOFCOURSEIMNOTPERFECTNOONEISBUTINOTONLYABHORTHEINAPPROPRIATEUSEOFAHYPHENIALSORECOGNISEASPLITINFINITIVEWHENISEEONEITMAYBEACCEPTABLEFORTHESTARSHIPENTERPRISETOBOLDLYGOBUTIDONOTTHINKTHATLOCALORGANISATIONSSHOULDBEENCOURAGEDTOPROACTIVELYENGAGEDEPARTMENTOFWORKANDPENSIONSPRESSRELEASEIRELYONJULIETOCHECKTHEPROOFCOPYOFUPDATEBEFOREYOUSEEITANDSHEWONTLETCARELESSUSEOFGRAMMARSLIPTHROUGHOOPSISHOULDNOWSAYIUSEDTORELYONJULIEASIWROTETHATBEFORESHEHANDEDINHERNOTICENOBEFOREYOUASKIDONTTHINKITWASANYTHINGISAIDORDIDSPECIFICALLYASMANYREADERSWILLKNOWADSETPROVIDEDOFFICESPACEFORTHEADMINISTRATIONFUNCTIONSOFNAEGAWITHJULIEWORKINGFORNAEGAFORTWELVEHOURSAWEEKINTHATSPACETHATCONTRACTCAMETOANABRUPTENDINMAYANDICANNOTFINDWORKWITHINTHEADSETSETUPTOMAKEUPTHOSEMISSINGHOURSSORATHERTHANTRYTOFINDASECONDPARTTIMEJOBJULIEHASFOUNDHERSELFFULLTIMEWORKSHEWILLBEGREATLYMISSEDNOTLEASTFORHERABILITYTOSPOTANABERRANTHYPHENORAPOSTROPHECHANGESAREAFOOTWELLTHEYWOULDHAVETOBEWOULDNTTHEYDAWNYESTHEONEWHOWRITESTHEFUNNYCOMMENTSINUPDATEWILLBETAKINGOVERJULIESJOBOFTHENEWSPAPERSTHETIMINGISRIGHTASHERYOUNGESTSTARTSFULLTIMESCHOOLINSEPTEMBERRUTHWARNERWHOMMANYOFYOUALREADYKNOWASADSETSDATAMANAGERALSOINCONTROLOFTHEWEBSITEWILLBETAKINGOVERASMEMBERSHIPSECRETARYASFORHELPINTHEOFFICEIMINTERVIEWINGFOURPEOPLETOMORROWANDEXPECTTOBEABLETOAPPOINTONEOFTHEMTOSTARTONAUGUSTTHATGIVESHERTHEYAREALLFEMALETHREEWEEKSTOFINDHERFEETBEFOREIGOONHOLIDAYFORAWEEKINEVERTHOUGHTTHATIDBEBLESSINGMOBILEPHONESBUTITHINKTHATITMIGHTBENEEDEDANDTHEFAMILYWILLFORONCEHAVETOACCEPTITTHEWIDERWORLDTHELSCHASBEENTAKINGABITOFAHAMMERINGTHISMONTHWITHTHEASSOCIATIONOFCOLLEGESSTILLASSERTINGTHATTHEREARECLEARTENSIONSBETWEENTHECENTREANDTHEARMSANDINSTITUTEOFDIRECTORSSAYINGTHATTHEORGANISATIONHASMADELITTLEIFANYIMPACTONBUSINESSTHEFUNDINGOFLEARNINGANDTHEPEOPLEWHOUNDERTAKEITCONTINUESTODOMINATETHEEDUCATIONALPRESSWHILSTTHEPROVISIONOFADDITIONALMONEYUNDERTHECOMPREHENSIVESPENDINGREVIEWISWELCOMEDITSNOTENOUGHISITEVERITSEEMSTHETHEPOWERSTHATBEAREWAKINGUPTOTHEIDEATHATMAYBEJUSTMAYBEAIMINGFORAPAPERLESSSOCIETYWASNOTSUCHAGOODIDEAATLEASTNOTUNTILYOUCANBECERTAINOFBEINGABLETORETRIEVETHEINFORMATIONCREATEDWELCOMETONEWMEMBERSCAMBRIDGESHIREGRIDFORLEARNINGCONTACTLILYDAINTERTELLOGWOODMANAGEMENTCONSULTANTSLTDCONTACTVELMABENNETTTELDETAILSOFTHEWORKOFTHESETWOORGANISATIONSWILLBEPLACEDONTHEADSETWEBSITEJUSTASSOONASWEGETTHEMTOTOPOFPAGETOINDEXCIPDURGESCAUTIONONEMPLOYEERIGHTSREVIEWPATRICIAHEWITTSECRETARYOFSTATEFORTRADEANDINDUSTRYHASTODAYJULYLAUNCHEDAREVIEWOFTHEEMPLOYMENTRELATIONSACTTHEREVIEWWILLLOOKATCOMPULSORYTRADEUNIONRECOGNITIONMEASURESALTHOUGHCHANGESWILLBELIMITEDACCORDINGTOTHEDTITHECIPDEXPRESSESCAUTIONABOUTTHEINITIATIVEDIANESINCLAIRLEADPUBLICPOLICYADVISERRESPONDEDTHELAWISWORKINGWELLATTHEMOMENTANDISFINELYBALANCEDBETWEENEMPLOYERSANDEMPLOYEESFORINSTANCEMANYTRADEUNIONSARECURRENTLYWINNINGCLAIMSUNDERTHEACTWEHOPETHATTHEGOVERNMENTALLOWSTHISLEGISLATIONTOBEDDOWNBEFORECHANGESARECONSIDEREDTHEDTIHASALSOLAUNCHEDACONSULTATIONDOCUMENTTODAYONIMPLEMENTINGTHEEUDIRECTIVEONINFORMINGANDCONSULTINGSTAFFINTHEUKTHISISDUETOCOMEINTOEFFECTINTHEUKFORORGANISATIONSOFMORETHANSTAFFBYMARCHANDFORSMALLERORGANISATIONSBYMARCHORGANISATIONSEMPLOYINGLESSTHANPEOPLEARELIKELYTOBEEXCLUDEDCIPDPRESSRELEASEJULYTOTOPOFPAGETOINDEXJOHNSONHERALDSNEWERAFORBRITISHFIRMSNEWPROPOSALSTOCUTREDTAPEANDSAVESMALLBUSINESSESAROUNDMILLIONAYEARWEREUNVEILEDTODAYJULYWITHTHEPUBLICATIONOFTHEGOVERNMENTWHITEPAPERMODERNISINGCOMPANYLAWTHEWHITEPAPERREFLECTSTHECHANGESINTHEBUSINESSENVIRONMENTINRECENTYEARSPARTICULARLYTHEGROWTHOFSMALLBUSINESSESANDADVANCESINCOMMUNICATIONSTECHNOLOGYANDINCLUDESPLANSTOSIMPLIFYTHELAWANDREDUCEBURDENSONSMALLFIRMSIMPROVETRANSPARENCYTOINCREASECONFIDENCEINBUSINESSANDIMPROVEGOVERNANCETOENCOURAGEANDSUPPORTRESPONSIBLEBUSINESSOTHERKEYPROPOSALSINCLUDEDIRECTORSDUTIESWILLBESETOUTCLEARLYINSTATUTEFORTHEFIRSTTIMECORPORATEDIRECTORSWILLBEPROHIBITEDPRIVATECOMPANIESNOLONGERWILLHAVETOAPPOINTCOMPANYSECRETARIESPRIVATECOMPANIESNOLONGERWILLHAVETOHOLDAGMSUNLESSMEMBERSWANTTHEMCOMPANIESWILLBEABLETOEXPLOITTHEINTERNETANDEMAILTOMAKEDECISIONSCOMPANIESWILLHAVESIMPLERREPORTSANDACCOUNTSACCOUNTSWILLBEFILEDMOREQUICKLYWITHINSEVENMONTHSFORPRIVATECOMPANIESANDSIXMONTHSFORPUBLICCOMPANIESQUOTEDCOMPANIESWILLHAVETOPOSTREPORTSONWEBSITESBEFORETHISTHELARGESTCOMPANIESWILLPUBLISHANOPERATINGANDFINANCIALREVIEWCOMPANIESANDTHEIRDIRECTORSCONVICTEDOFFLOUTINGCOMPANYLAWCOULDBENAMEDINACENTRALREGISTERTHEWHITEPAPERISAVAILABLEONLINEATWWWDTIGOVUKCOMPANIESBILLASUMMARYOFTHEMEASURESOFPARTICULARINTERESTTOSMALLBUSINESSISALSOAVAILABLEDTIPRESSRELEASEPJULYTOTOPOFPAGETOINDEXCBIPRAISESCOMPANYLAWREFORMPLANSTHECONFEDERATIONOFBRITISHINDUSTRYCBIISBACKINGGOVERNMENTPROPOSALSTOREFORMCOMPANYLAWITISHOPEDTHATTHISWILLSIMPLIFYTHEREGIMEFORSMALLFIRMSWHILEIMPROVINGACCOUNTABILITYFORLARGEROGANISATIONSTHECBIISPRAISINGGOVERNMENTPLANSTOIMPLEMENTTHERECOMMENDATIONSOFTHECOMPANYLAWREVIEWITISHOPEDTHATTHISWILLMAKETHELAWCLEARERANDMOREEFFECTIVEHRLOOKJULYTOTOPOFPAGETOINDEXPATRICIAHEWITTANNOUNCESNEWAPPOINTMENTSTOTHESMALLBUSINESSCOUNCILSECRETARYOFSTATEFORTRADEANDINDUSTRYPATRICIAHEWITTTODAYJULYANNOUNCEDTHEFULLNEWMEMBERSHIPOFTHESMALLBUSINESSCOUNCILSBCTHEMEMBERSWORKWITHTHECHAIRMANWILLIAMSARGENTTOADVISETHEGOVERNMENTONISSUESAFFECTINGSMALLBUSINESSESTHESBCREPRESENTSAWIDERANGEOFSECTORSINCLUDINGMANUFACTURINGRETAILSOCIALENTERPRISETOURISMBUSINESSSUPPORTENVIRONMENTALBUSINESSESMEDIAANDENTERTAINMENTRECRUITMENTACCOUNTANCYANDACADEMIATHEMEMBERSHIPREPRESENTSALLPARTSOFTHEUKANDINCLUDESPEOPLEOFDIFFERENTAGESANDBACKGROUNDSDTIPRESSRELEASEPJULYUPDATECOMMENTTHEPRESSRELEASELISTSTHEPEOPLEWITHSHORTBIOGSANDSOMEOFTHEMREALLYAREFROMSMALLBUSINESSESTOTOPOFPAGETOINDEXSMALLBUSINESSSECTORGROWTHEQUIVALENTTOOVERNEWSTARTUPSEVERYDAYNIGELGRIFFITHSHAILSNETINCREASEINBUSINESSPOPULATIONNEWFIGURESPUBLISHEDTODAYJULYSHOWTHEREWASANETINCREASEOFMORETHANFIRMSOPERATINGINTHEUKINCOMPAREDTOTHEPREVIOUSYEAREQUIVALENTTOOVERNEWBUSINESSESSTARTINGUPEVERYDAYACCORDINGTONEWSTATISTICSFROMTHEDTISSMALLBUSINESSSERVICESBSTHEBUSINESSPOPULATIONTOTALLEDLASTYEARCOMPAREDTOINTHEYEAROTHERFINDINGSSHOWTHEREWEREMILLIONMOREBUSINESSESTHANINTHEFIRSTYEARFORWHICHCOMPARABLEFIGURESAREAVAILABLETHENUMBEROFMEDIUMSIZEDBUSINESSESREACHEDFORTHEFIRSTTIMEINSEVENYEARSANDATLEASTOFBUSINESSESINALLINDUSTRIESWERESMESTHEFULLSTATISTICSCANBEDOWNLOADEDFROMTHESMALLBUSINESSSERVICEWEBSITEATWWWSBSGOVUKSTATISTICSDTIPRESSRELEASEPJULYTHEGAMECOMESTIMATESTHATWORLDCUPABSENTEEISMCOSTTHEUKAROUNDMILLIONTHISFIGUREISONLYATENTHOFTHEPREDICTEDCOSTSINCEMANYEMPLOYERSWERECOOPERATIVEANDALLOWEDEMPLOYEESTOEITHERCHANGETHEIRHOURSORWATCHTHEMATCHESATWORKHOWEVEROFFANSSTILLADMITTEDTOTAKINGATLEASTONEDAYASSICKLEAVEIRSEMPLOYMENTREVIEWISSUEJULYTOTOPOFPAGETOINDEXCOMMUNICATIONSKILLSLACKINGATTHETOPACCORDINGTONEWRESEARCHFROMTHEAZIZCORPORATIONBRITAINSTOPBUSINESSLEADERSARELARGELYUNHEARDUNRECOGNISEDANDCONSIDEREDUNABLETOCOMMUNICATEEFFECTIVELYBYTHEIRBUSINESSPEERSTHERESEARCHREVEALEDTHATWHILEOFUKCOMPANYDIRECTORSCONSIDERUSBUSINESSEXECUTIVESTOHAVEANEXCELLENTORGOODMEDIAIMAGEANDREPUTATIONONLYBELIEVETHESAMEOFUKEXECUTIVESINADDITIONFEELTHATTHEMEDIAIMAGEOFTHEUKSLEADINGBUSINESSEXECUTIVESISINNEEDOFIMPROVEMENTTRAININGZONELEARNINGWIREISSUEJULYTOTOPOFPAGETOINDEXTHEHUMBLELEADERANARTICLEINBULLETPOINTJUNEISSUEARGUESTHATHAVINGALARGERTHANLIFECORPORATEHEROASALEADERCANBEDETRIMENTALTOANORGANISATIONTHEMAINCRITICISMSOFTHISTYPEOFLEADERARETHATTHEYARESELFSERVINGMOREINTERESTEDINSELFPROMOTIONANDCELEBRITYTHANTEAMWORKTHEARTICLEFURTHERSUGGESTSTHATINMANYCASESTHEYFAILTOADDVALUEDONOTDELIVERSUSTAINABLERESULTSANDDONTWORKTOIMPROVEPERFORMANCETHEARTICLETELLSUSTHATTRULYTRANSFORMATIONALLEADERSHAVEANEQUALRATIOOFHUMILITYANDPROFESSIONALWILLTHEYAREABLEMANAGERSRATHERTHANAFGUREHEADFORTHEMEDIAANDCANENGENDEREMPLOYEETRUSTCOMMITMENTANDLOYALTYTHEYWILLALSOHAVEADESIRETOSHUNPUBLICITYCHANNELAMBTIONINTODEVELOPINGTHECOMPANYNOTTHEMSELVESGIVECREDITTOOTHERSAROUNDTHEMANDDESPISEMEDIOCRITYTOTOPOFPAGETOINDEXWHATAMESSPARTICPATIONASASMPLEMANAGERIALRULETOCOMPLEXIFYORGANISATIONSACTUALLYASERIOUSRESEARCHPAPERWHICHLOOKSATSOMEOFTHESIMPLERULESOFMANAGEMENTWHCHNTHEENDCANFOULUPOURLIVESFORGOODBUTONLYIFWELETTHEMWEALLIASSUMEKNOWOFTHEHORSEMADEBYACOMMITTEEINTODAYSCONSULTATIVECLMATEWECOULDBEHEADINGFORTRYINGTODEALINCAMELSUNLESSULTIMATELYTHEMANAGERIETHESINGLEPERSONRESPONSIBLEFORMAKINGANDIMPLEMENTNGTHEDECISIONDECIDESOURHORSESSHOULDNOTHAVEHUMPSWHETHERONEORTWOISIMMATERIALSOINTHEENDWEHAVETHEAUTOCRATICDICTATORIALVICTORIANPARENTWHOSEOFFSPRINGMIGHTIFDARINGTOQUESTIONRECEIVETHERESPONSEBECAUSEISAYITISJOURNALOFMANAGEMENTSTUDIESMARCHUPDATECOMMENTONTHEOTHERHANDTHEEUROPEANDIRECTIVESAYSTHOUSHALTCONSULTANDATLENGTHUNLESSTHEREARELESSTHANSTAFFINYOURORGANISATIONSORRYGUYSTHATMEANSTHATICANCONTINUETOBETHEAUTOCRATCDCTATORIALPARENTTYPEATLEASTINLAWIFNOTREALITYTOTOPOFPAGETOINDEXLEADERSNEEDMORETRAININGAYEARAFTERTHELIBRARYWORLDSRECRUTRETANANDLEADREPORTWARNEDOFFALLINGSTANDARDSINEXECUTIVEABILITYMUSEUMSAREFACINGASIMLARLEADERSHIPCRISISSPEAKINGATTHEANNUALMUSEUMDRECTORSCONFERENCELIZAMOSOFTHECOUNCILFOREXCELLENCEINMANAGEMENTANDLEADERSHIPTOLDDELEGATESTHATTHEYSHOULDHEEDTHEDSQUETBEINGVOICEDBYJUNIORANDMIDDLEMANAGERSINTHEPUBLICSECTORACCORDNGTOARECENTREPORTOFJUNIORANDMIDDLEMANAGERSCLAIMTHATLEADERSHPNTHEIRORGANISATIONISPOORMSAMOSBELIEVESTHATTHISMATTERSBECAUSEGOODLEADERSCANNSPIREANDENERGISETHEIREMPLOYEESWHICHHASAPOSTVEEFFECTONPERFORMANCELIBRARYANDINFORMATIONUPDATEJULYVOLTOTOPOFPAGETOINDEXPATHTOTHEGATEWAYISCLEAREDAYEARAGOANENTREPRENEURSEEKINGHELPTOSETUPACOMPANYINGLASGOWRISKEDBEINGKNOCKEDDOWNINARUSHOFAGENCIESBRANDISHINGMORETHANDIFFERENTSUPPORTPRODUCTSANDSERVICESNEWBUSINESSESFACEDABEWILDERINGCHOICEOFDIFFERENTPUBLICSECTORAGENCIESPROVIDINGACCESSTOOVERBUSINESSSUPPORTPARTNERSHPSMOSTLYKNOWNBYCONFUSINGTHREELETTERACRONYMSYETDESPITETHEWELTEROFSERVICESAVAILABLEWITHLITERALLYHUNDREDSOFADVISERSGRANTSANDTRAININGSCHEMESONOFFERRESEARCHSHOWEDTHATGLASGOWURGENTLYNEEDEDTOFINDBETTERWAYSTOIMPROVEITSBUSINESSBIRTHRATEANDITSINDIGENOUSCOMPANYSURVIVALRATETHEVULNERABILITYOFSMALLANDMEDIUMSIZEDENTERPRISESSMESTOFAILURENTHEIREARLYYEARSISCLEARANDINGLASGOWONLYOFSMESSURVIVELONGERTHANTHREEYEARSCOMPAREDTOTHENATIONALTHREEYEARSURVIVALRATEOFONTOPOFLOWERTHANAVERAGESURVIVALRATESGLASGOWALSOHADAPROBLEMWITHEUROPEANBUSINESSGRANTSBEINGLEFTUNCLAIMEDBECAUSEELIGIBLECOMPANESDDNOTAPPLYFORTHECASHONOFFERDUNCANTANNAHILLCHIEFEXECUTIVEOFGLASGOWCHAMBEROFCOMMERCESEZEDTHECHANCETOPOOLTHERESOURCESOFTHEPRIVATEANDPUBLCSECTORSINAMAJOREFFORTTOADDRESSTHESHORTCOMINGSOFTHESYSTEMANDCREATEASNGLEPOINTOFENTRYFORCOMPANIESSEEKNGHELPATANYSTAGEOFTHEIRDEVELOPMENTSMALLBUSINESSGATEWAYISATVALERIEDARROCHSCOTTISHHERALDJULYMYSCHOOLDAYSWERETHEHAPPESTDAYSOFMY".ToLower();

string largeCipher = "".ToUpper();

string largeKey = "defghijklmnopqrstuvwxyzabc";

[TestMethod]

public void MonoTestEnc4()

{

Monoalphabetic algorithm = new Monoalphabetic();

string cipher = algorithm.Encrypt(largePlain, largeKey);

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

}

[TestMethod]

public void MonoTestDec4()

{

Monoalphabetic algorithm = new Monoalphabetic();

string cipher = algorithm.Decrypt(largeCipher, largeKey);

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

}

[TestMethod]

public void MonoTestAnalysisFrequency()

{

Monoalphabetic algorithm = new Monoalphabetic();

string plain = algorithm.AnalyseUsingCharFrequency(largeCipher);

int count = Enumerable.Range(0, largePlain.Length)

.Count(i => largePlain[i] == plain[i]);

Assert.IsTrue(count \* 100 / largePlain.Length > 70);

}

[TestMethod]

public void MonoTestNewEnc()

{

Monoalphabetic algorithm = new Monoalphabetic();

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

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

}

[TestMethod]

public void MonoTestNewDec()

{

Monoalphabetic algorithm = new Monoalphabetic();

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

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

}

[TestMethod]

public void MonoTestNewAnalysisNaive()

{

Regex regex = new Regex("u.ive.sta.{2}dfgh.{2}lmo.qw.{3}");

Monoalphabetic algorithm = new Monoalphabetic();

string key = algorithm.Analyse(newPlain, newCipher);

List<char> keyChar = new List<char>(key);

Assert.AreEqual(key.Length, 26);

Assert.AreEqual(keyChar.Distinct().Count(), 26);

Assert.IsTrue(regex.Match(key).Success);

}

}

}