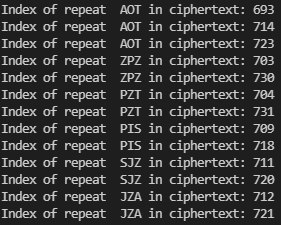
**Cipher Text 3**

Having solved all the other encryptions first I have determined by process of elimination this one is the stream cipher. I tried various arrangements of a possible stream relating to character n-1, shifting based on either the potential plaintext or ciphertext value. I also tried varying the shift of the first letter, a shift of 26-(n-1). None of the methods which I tried broke the ciphertext into any readable English.

**Cipher Text 8**

Cipher for this text is Vigenère with a key of “APP”. To decrypt this text, I applied a test for the shift and permutation ciphers, neither of which resulted in a likely candidate. Testing the text for repeated sequences indicated groupings of repeated trigrams with intervals of 9, 15 and 21 between repeats.



The common denominator between these is 3, so I grouped the letters into every third letter, looked at the letter frequencies.

{'A': 9.35, 'B': 1.27, 'C': 3.09, 'D': 3.33, 'E': 13.23, 'F': 2.3, 'G': 1.43, 'H': 5.07, 'I': 5.55, 'J': 1.11, 'K': 0.87, 'L': 3.01, 'M': 3.09, 'N': 7.37, 'O': 7.77, 'P': 1.82, 'Q': 0.16, 'R': 6.26, 'S': 6.42, 'T': 8.08, 'U': 3.8, 'V': 1.74, 'W': 1.58, 'X': 0.4, 'Y': 1.66, 'Z': 0.24}

{'A': 2.61, 'B': 2.54, 'C': 6.97, 'D': 8.32, 'E': 1.51, 'F': 0.0, 'G': 7.37, 'H': 6.34, 'I': 8.4, 'J': 3.8, 'K': 0.79, 'L': 1.58, 'M': 0.32, 'N': 1.82, 'O': 0.24, 'P': 9.83, 'Q': 1.51, 'R': 2.54, 'S': 4.83, 'T': 12.36, 'U': 1.9, 'V': 2.22, 'W': 4.6, 'X': 6.1, 'Y': 0.79, 'Z': 0.71}

{'A': 3.57, 'B': 1.98, 'C': 7.45, 'D': 5.87, 'E': 2.38, 'F': 0.16, 'G': 8.41, 'H': 6.03, 'I': 9.12, 'J': 2.3, 'K': 1.03, 'L': 1.27, 'M': 0.24, 'N': 1.51, 'O': 0.08, 'P': 9.6, 'Q': 1.51, 'R': 2.62, 'S': 6.19, 'T': 12.85, 'U': 1.9, 'V': 1.67, 'W': 4.52, 'X': 6.03, 'Y': 0.32, 'Z': 1.43}

I applied the appropriate shift to align with English letter frequencies. By looking for a frequency between 8 and 10 followed by a frequency between 10 and 13 five spaces later I found potential key letters. In this case, the first grouping aligned with English, so a shift of 0(A), and the other two groups had similar frequencies peaking on the shifted “T”, so a shift of -14 (P) to revert to plaintext was applied. The resulting text clearly describes a Japanese amphibious assault on Java.

thejapaneseamphibiousforcesgatheredtostrikeatjavaandonfebruarythemainamericanbritishdutchaustraliancommandabdacomnavalforceunderdoormansailednortheastfromsurabayatointerceptaconvoyoftheeasterninvasionforceapproachingfromthemakassarstraittheabdaforceconsistedoftwoheavycruisershmsexeterandusshoustonthreelightcruisershnlmsderuyterdoormansflagshiphnlmsjavahmasperthandninedestroyershmselectrahmsencounterhmsjupiterhnlmskortenaerhnlmswittedewithussaldenussjohndedwardsussjohndfordandusspauljonesthejapanesetaskforceprotectingtheconvoycommandedbyrearadmiraltakeotakagiconsistedoftwoheavynachiandhaguroandtwolightcruisersnakaandjintsuanddestroyersyudachisamidaremurasameharusameminegumoasagumoyukikazetokitsukazeamatsukazehatsukazeyamakazekawakazesazanamiandushioincludingthethdestroyersquadronunderthecommandofrearadmiralshojinishimurathejapaneseheavycruisersweremuchmorepowerfularmedwithteninmmgunseachandsuperbtorpedoesbycomparisonexeterwasarmedonlywithsixinmmgunswhilehoustoncarriednineinmmgunsonlysixremainedoperableafterheraftturrethadbeenknockedoutinanearlierairattacktheabdaforceengagedthejapaneseinthejavaseaandthebattleragedintermittentlyfrommidafternoontomidnightasthealliestriedtoreachandattackthetrooptransportsofthejavainvasionfleetbuttheywererepulsedbysuperiorfirepowertheallieshadlocalairsuperiorityduringthedaylighthoursbecausejapaneseairpowercouldnotreachthefleetinthebadweathertheweatheralsohinderedcommunicationsmakingcooperationbetweenthemanyalliedpartiesinvolvedinreconnaissanceaircoverandfleetheadquartersevenworsethanitalreadywasthejapanesealsojammedtheradiofrequenciesexeterwastheonlyshipinthebattleequippedwithradaranemergingtechnologyatthetimethebattleconsistedofaseriesofattemptsoverasevenhourperiodbydoormanscombinedstrikingforcetoreachandattacktheinvasionconvoyeachwasrebuffedbytheescortforcewithheavylossesbeinginflictedonthealliesthefleetssightedeachotherataboutonfebruaryandclosedtofiringrangeopeningfireatbothsidesexhibitedpoorgunneryandtorpedoskillsduringthisphaseofthebattledespiteherrecentrefitwiththeadditionofmoderntypegunerycontrolradarexetersgunfiredidnotcomeclosetothejapaneseshipswhilehoustononlymanagedtoachieveastraddleononeoftheopposingcruiserstheonlynotableresultofthegunneryexchangewasexeterbeingcriticallydamagedbyahitintheboilerroomfromaninmmshelltheshipthenlimpedawaytosurabayaescortedbywittedewiththejapaneselaunchedtwohugetorpedosalvoesinallbutscoredonlyonehitonkortenaershewasstruckbyalonglancebrokeintwoandsankrapidlyafterthehitelectracoveringexeterengagedinaduelwithjintsuandasagumoscoringseveralhitsbutsufferingseveredamagetohersuperstructureafteraseriousfirestartedonelectraandherremainingturretranoutofammunitionabandonshipwasorderedonthejapanesesideonlyasagumowasforcedtoretirebecauseofdamagethealliedfleetbrokeoffandturnedawayaroundcoveredbyasmokescreenlaidbythefourdestroyersofusdestroyerdivisiondesdivtheyalsolaunchedatorpedoattackbutattoolongarangetobeeffectivedoormansforceturnedsouthtowardthejavacoastthenwestandnorthasnightfellinanattempttoevadethejapaneseescortgroupandfallontheconvoyitwasatthispointtheshipsofdesdivtheirtorpedoesexpendedleftontheirowninitiativetoreturntosurabayashortlyafteratjupiterranontoamineandwassunkwhileaboutminuteslaterthefleetpassedwherekortenaerhadsunkearlierandencounterwasdetachedtopickupsurvivorsdoormanscommandnowreducedtofourcruisersagainencounteredthejapaneseescortgroupatbothcolumnsexchangedfireinthedarknessatlongrangeuntilderuyterandjavaweresunkbyonedevastatingtorpedosalvodoormanandmostofhiscrewwentdownwithderuyteronlyweresavedfrombothshipsonlythecruisersperthandhoustonremainedlowonfuelandammunitionandfollowingdoormanslastinstructionsthetwoshipsretiredarrivingattanjungpriokonfebruaryalthoughthealliedfleetdidnotreachtheinvasionfleetthebattledidgivethedefendersofjavaaonedayrespite

**Cipher Text 13**

The cipher for text 8 is the shift method with a key of 14.

To aid in decryption the text was ran through a python script to provide the frequency of each letter occurring in the cipher text. As the result was close to a normal distribution of English texts with mismatched letters, the text was decrypted through a shifting algorithm for all 25 key possibilities with correction for wrapping outside the normal alphabet ASCII range.

atlexingtonscxamradardetectedtheinboundjapaneseaircraftatarangeofnmimikmandvectoredninewildcatstointerceptexpectingthejapanesetorpedobomberstobeatamuchloweraltitudethantheyactuallyweresixofthewildcatswerestationedtoolowandthusmissedthejapaneseaircraftastheypassedbyoverheadbecauseoftheheavylossesinaircraftsufferedthenightbeforethejapanesecouldnotexecuteafulltorpedoattackonbothcarrierslieutenantcommandershigekazushimazakicommandingthejapanesetorpedoplanessenttoattacklexingtonandfourtoattackyorktownawildcatshotdownoneandpatrollingyorktownsbdsdestroyedthreemoreasthejapanesetorpedoplanesdescendedtotakeattackpositionfoursbdswereshotdownbyzerosescortingthetorpedoplanesthejapaneseattackbeganatasthecarriersstationedydmapartandtheirescortsopenedfirewithantiaircraftgunsthefourtorpedoplaneswhichattackedyorktownallmissedtheremainingtorpedoplanessuccessfullyemployedapincerattackonlexingtonwhichhadamuchlargerturningradiusthanyorktownandathitherwithtwotypetorpedoesthefirsttorpedobuckledtheportaviationgasolinestowagetanksundetectedgasolinevaporsspreadintosurroundingcompartmentsthesecondtorpedorupturedtheportwatermainreducingwaterpressuretothethreeforwardfireroomsandforcingtheassociatedboilerstobeshutdowntheshiphowevercouldstillmakeknmphkmhwithherremainingboilersfourofthejapanesetorpedoplaneswereshotdownbyantiaircraftfirethejapanesedivebomberscircledtoattackfromupwindandthusdidnotbegintheirdivesfromftmuntilthreetofourminutesafterthetorpedoplanesbegantheirattackstheshkakudivebombersundertakahashilineduponlexingtonwhiletheremainingdirectedbytamotsuematargetedyorktownescortingzerosshieldedtakahashisaircraftfromfourlexingtoncapwildcatswhichattemptedtointervenebuttwowildcatscirclingaboveyorktownwereabletodisruptemasformationtakahashisbombersdamagedlexingtonwithtwobombhitsandseveralnearmissescausingfireswhichwerecontainedbyatyorktownwashitinthecenterofherflightdeckbyasinglekglbsemiarmorpiercingbombwhichpenetratedfourdecksbeforeexplodingcausingseverestructuraldamagetoanaviationstorageroomandkillingorseriouslywoundingmenuptonearmissesdamagedyorktownshullbelowthewaterlinetwoofthedivebomberswereshotdownbyacapwildcatduringtheattackasthejapaneseaircraftcompletedtheirattacksandbegantowithdrawbelievingthattheyinflictedfataldamagetobothcarrierstheyranagauntletofcapwildcatsandsbdsintheensuingaerialduelsthreesbdsandthreewildcatsfortheusandthreetorpedobombersonedivebomberandonezeroforthejapaneseweredownedbytheusandjapanesestrikegroupswereontheirwaybacktotheirrespectivecarriersduringtheirreturnaircraftfromthetwoadversariespassedeachotherintheairresultinginmoreairtoairaltercationskannosandtakahashisaircraftwereshotdownkillingbothofthemrecoveryreassessmentandretreateditsourceeditbetathestrikeforceswithmanydamagedaircraftreachedandlandedontheirrespectivecarriersbetweenandinspiteofdamageyorktownandlexingtonwerebothabletorecoveraircraftfromtheirreturningairgroupsduringrecoveryoperationsforvariousreasonstheuslostanadditionalfivesbdstwotbdsandawildcatandthejapaneselosttwozerosfivedivebombersandonetorpedoplanefortysixoftheoriginalaircraftfromthejapanesestrikeforcereturnedfromthemissionandlandedonzuikakuofthesethreemorezerosfourdivebombersandfivetorpedoplaneswerejudgeddamagedbeyondrepairandwereimmediatelyjettisonedintotheoceanastfrecovereditsaircraftfletcherassessedthesituationthereturningaviatorsreportedtheyheavilydamagedonecarrierbutthatanotherhadescapeddamagefletchernotedthatbothhiscarrierswerehurtandthathisairgroupshadsufferedhighfighterlossesfuelwasalsoaconcernduetothelossofneoshoatfitchnotifiedfletcherthathehadreportsoftwoundamagedjapanesecarriersandthatthiswassupportedbyradiointerceptsbelievingthathefacedoverwhelmingjapanesecarriersuperiorityfletcherelectedtowithdrawtffromthebattlefletcherradioedmacarthurtheapproximatepositionofthejapanesecarriersandsuggestedthatheattackwithhislandbasedbombersaroundharainformedtakagithatonlyzeroseightdivebombersandfourtorpedoplanesfromthecarrierswerecurrentlyoperationaltakagiwasworriedabouthisshipsfuellevelshiscruiserswereatandsomeofhisdestroyerswereaslowasattakaginotifiedinouehisfliershadsunktwoamericancarriersyorktownandasaratogaclassbutheavylossesinaircraftmeanthecouldnotcontinuetoprovideaircoverfortheinvasioninouewhosereconnaissanceaircraftsightedcracesshipsearlierthatdayrecalledtheinvasionconvoytorabaulpostponedmotojulyandorderedhisforcestoassemblenortheastofthesolomonstobegintheryoperationzuikakuandherescortsturnedtowardsrabaulwhileshkakuheadedforjapan

**Cipher Text 18**

Transform, 10 rows by 8 columns permutation cipher. To decrypt this text, I built a test sentence – “THEQUICKBROWNFOXJUMPSOVERTHELAZYDOG”. I then encrypted the text by hand and devised an algorithm to return the text to its plaintext state. I then applied a loop to run through each possible combination of transform from 2x2 and up, as anything smaller than a 2x2 is trivial to recognize a pattern by hand. Applying the algorithm and testing for multiple English words present in the results indicated either a 10x4 or 10x8 transform. The 10 row by 8 column transform was the only one that was not still garbled in some way.

intheindianoceanraidofmarchaprilaircraftfromshkakualongwiththerestofkidobutaiattackedcolomboceylononaprilsinkingtwoshipsinharborandseverelydamagingsupportfacilitiesthetaskforcealsofoundandsanktworoyalnavyheavycruisershmscornwallanddorsetshireonthesamedayaswellastheaircraftcarrierhmshermesonapriloffbatticaloathefifthcarrierdivisionwasthendeployedtotruktosupportoperationmotheplannedcaptureofportmoresbyinnewguineaduringthisoperationshkakusaircrafthelpedsinktheamericanaircraftcarrierusslexingtonduringthebattleofthecoralseabutwasherselfseverelydamagedonmaybydivebombersfromussyorktownandlexingtonwhichscoredthreebombhitsoneonthecarriersportbowonetostarboardattheforwardendoftheflightdeckandonejustabafttheislandfiresbrokeoutbutwereeventuallycontainedandextinguishedtheresultingdamagerequiredshkakutoreturntojapanformajorrepairsonthejourneybackthecarriershippedsomuchwaterthroughherdamagedbowshenearlycapsizedinheavyseasmaintainingahighrateofspeedinordertoavoidacordonofamericansubmarinesouthuntingforhershearrivedatkureonmayandentereddrydockonjunerepairswerecompletedwithintendaysandalittleovertwoweekslateronjulyshewasformallyreassignedtostrikingforcerdfleetcarrierdivisionthetimerequiredforrepairscombinedwiththeaircraftandaircrewlossesincurredbyherandzuikakukeptbothcarriersfromparticipatinginthebattleofmidwayfollowingherreturntofrontlinedutybothshkakuandhersistershipzuikakuwiththeadditionofthelightcarrierzuihwereredesignatedasfirstcarrierdivisionandtookpartintwofurtherbattlesinthebattleoftheeasternsolomonswheretheydamagedussenterpriseandthebattleofthesantacruzislandswheretheycrippledusshornethornetwasabandonedandlatersunkbyjapanesedestroyersmakigumoandakigumobutshokakuwasinturndamagedbydivebombersofenterprisewhichthereforepreventedthebombardmentofnearbyhendersonfieldandonceagainkeptheroutofactionformonthsleavingotherjapanesedefensiveoperationsinthepacificlackingsufficientairpoweratsantacruzonoctobershkakuwasagainseriouslydamagedtakingatleastthreeandpossiblyasmanyassixlbbombhitsfromagroupoffifteendouglassbddivebomberslaunchedfromhornetwithamplewarningoftheincomingamericanstrikeshkakusaviationfuelmainstotheflightdeckandhangarshadbeendraineddownandshehadfewaircraftonboardatthetimeoftheattackasaresultnomajorfiresbrokeoutandherseaworthinesswaspreservedherflightdeckandhangarshoweverwereleftinshamblesandshewasunabletoconductfurtherairoperationsduringtheremainderofthebattleafterseveralmonthsofrepairsandtrainingshkakunowunderthecommandofcaptainmatsubarahiroshiwasassignedinmaytoacounterattackagainstthealeutianislandsbuttheoperationwascancelledafterthealliedvictoryatattufortherestofshewasbasedattrukthenreturnedtojapanformaintenancelateintheyearinshkakuwasdeployedtothelinggaislandssouthofsingaporeonjuneshedepartedwiththemobilefleetforoperationagoacounterattackagainstalliedforcesinthemarianaislandsherstrikewavessufferedheavylossesfromuscombatairpatrolsandantiaircraftfirebutsomesurvivedandreturnedsafelytothecarrieroneofherdysuiseistrikegroupscomposedofveteransfromthecoralseaandsantacruzengagementsbrokethroughandoneplaneallegedlystruckhomewithabombthatdamagedusssouthdakotabbandcausedmanycasualtiesbutthisgroupsufferedheavylossesthemselvesduringthebattleofthephilippineseashewasstruckatonjunebythreepossiblyfourtorpedoesfromthesubmarineusscavallacommanderhermanjkosslerasshkakuhadbeenintheprocessofrefuelingandrearmingaircraftandwasinanextremelyvulnerablepositionthetorpedoesstartedfiresthatprovedimpossibletocontrolatanaerialbombexplodeddetonatingaviationfuelvaporswhichhadspreadthroughouttheshipabandonshipwasorderedbutbeforetheevacuationhadprogressedveryfarshkakuabruptlytookonwaterforwardandsankquicklybowfirstatpositionnetakingmenwithherthelightcruiseryahagianddestroyersurakazewakatsukiandhatsuzukirescuedcaptainmatsubaraandmenie

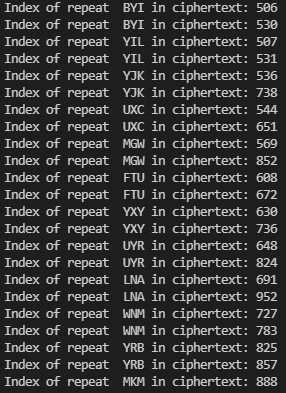
**Cipher Text 23**

Transform, reversed by decrypting 8x3 column transformation results in an article about the USS Archerfish. This selection was decrypted with the same methods as Cipher Text 18.

archerfishwasreactivatedatnewlondoninjulyplacedbackincommissiononaugustandagainjoinedsubronatkeywestonjanuaryshegotunderwayforacruiseunderthetechnicalsupervisionofthenavyhydrographicofficeonthisdeploymentshevisitedrecifebrazilandtrinidaduponcompletionofthatmissionsheprovidedservicesforthefleettrainingcommandsatkeywestandguantanamobayinthistimeshealsoportrayedtheussseatigerinthemovieoperationpetticoatfortheunderwateranddistancescenesandshotsonoctoberapproximatelymilessouthwestofkeywestovervestalshoalarcherfishbottomedatfeetmcommandergeorgefbondandchiefenginemancyriltuckfieldsafelycompletedasecondfootbuoyantascentfromtheforwardescapetrunkbothmenreceivedthelegionofmeritinforestablishingthefeasibilityofdeepsubmarineescapebylockingoutinearlyarcherfishwaschosentoparticipateinoperationseascanascientificstudyofmarineweatherconditionswatercompositionoceandepthsandtemperaturerangessheenteredthephiladelphianavalshipyardinjanuarytobespeciallyequippedforthisnewmissionduringthistimethevesselwasredesignatedanauxiliarysubmarinewithhullclassificationsymbolagssembarkingateamofcivilianscientistsshecommencedthefirstphaseofseascanonmayonthecruisethesubmarinevisitedportsmouthenglandhammerfestandbergennorwayfaslanescotlandthulegodthaabandjulianehabgreenlandbelfastnorthernirelandandhalifaxnovascotiabeforemooringatnewlondonondecemberaftersixweeksofupkeeparcherfishgotunderwayonjanuaryforthepacificphaseofseascantransitedthepanamacanalonfebruaryandproceededviasandiegotohawaiisheleftpearlharboronmarchduringheroperationsthesubmarinevisitedyokosukaandhakodatejapanhongkongsubicbayphilippinesbangkokthailandpenangmalayacolomboceylonandfremantleaustraliaandclosedoutmooredatyokosukaphasetwoofoperationseascancontinuedduringtheearlymonthsofwithoperationsinthewesternpacificareaandportcallsatsasebojapanguamandcebucityphilippinesearlyinmarchthesubmarinecompletedphasetwoandproceededviapagopagotopearlharboronaprilsheenteredthesanfrancisconavalshipyardforoverhaulaftercompletionofoverhaulthesubmarinemovedtosandiegoforatwoweekupkeepshethencommencedphasethreeofseascanintheeasternpacificareawithstopsinpearlharborandmidwayatollandreturnedtosandiegoforthechristmasholidaysarcherfishdepartedsandiegoonjanuaryboundforyokosukawhereshebeganathreeweekupkeepperiodfollowingtwoandonehalfmonthsofoperationsshereturnedtotheunitedstatesforabriefvisittosanfranciscocaliforniabeforereenteringpearlharborearlyinmaylatemayandmostofjuneweredevotedtosurveyingoffthenorthwestcoastoftheunitedstatesandcanadawithportcallsinportlandoregonseattlewashingtonandvancouverbritishcolumbiathesubmarinewasbackinyokosukafordrydockinginjulyandaugustbeforebeginningthreemonthsofcontinuoussurveyinginthemidpacificbrokenonlybybrieffuelingandupkeepstopsatmidwayandpearlharborshedepartedyokosukaonnovemberforanextendedcruisetothesouthernhemispherearrivedinaustraliainmiddecemberandtookathreeweekholidayinnewcastleandsydneyfromthelatterportarcherfishtraveledtoguamforatwoweekupkeepinlatejanuaryandfinallyreachedpearlharboronmarchdepartingpearlharboronmarchtheshipcontinuedseascanoperationsintheeasternpacificshevisitedsanfranciscoinaprilandvancouverinmaybeforereturningtopearlharboronmayendingthethirdphaseofseascanarcherfishbegananextendedfourthandfinalphaseofoperationseascanwhensheleftpearlharboronjuneandheadedfortheeasternpacificshemadeportcallsduringjulyatseattleandolympiawashingtonandreturnedtopearlharboronaugustforathreeweekupkeepanddrydockingbeforeundertakingacruisetothesouthpacificthesubmarinesailedonseptemberforthefijiislandsafterbrieflytouchingsuvasheheadedforaucklandnewzealandforandayvisithernextstopwaswellingtonnewzealandbutsheleftnewzealandonoctoberandarrivedinyokosukaonnovembershegotunderwayagainonnovembertocontinuesurveyoperationsinthecarolineislandsareaafterspendingnewyearseveinguamtheshipsailedforsubicbayphilippineswheresheclosedtheyearinupkeepahfhsaitreiwrcv

**Cipher Text 28**

Cipher for this text was Vigenère. A frequency analysis of the text resulted in letter frequencies ranging from ~2-4 and ~5-7. The change in letter frequency suggested either not an English alphabet or the use of a substitution cipher. Since we know the text is from English Wikipedia articles, the text must have been encrypted using a substitution cipher. To test if the text was Vigenère, I used a function to search the text for repeated letter sequences and the spacing between them.



Spacings for cipher text 28 were mostly 24 and 32 spaces apart. I decided to start testing for a key length of 2,4,8, or 16. By using a function to take each letter position in groupings of key length and performing a frequency analysis, a key length of 8 most closely matched English letter frequencies.

{'A': 8.2, 'B': 1.5, 'C': 2.8, 'D': 4.3, 'E': 13.0, 'F': 2.2, 'G': 2.0, 'H': 6.1, 'I': 7.0, 'J': 0.15, 'K': 0.77, 'L': 4.0, 'M': 2.4, 'N': 6.7, 'O': 7.5, 'P': 1.9, 'Q': 0.095, 'R': 6.0, 'S': 6.3, 'T': 9.1, 'U': 2.8, 'V': 0.98, 'W': 2.4, 'X': 0.15, 'Y': 2.0, 'Z': 0.074}

{'A': 1.04, 'B': 3.92, 'C': 6.27, 'D': 0.26, 'E': 1.57, 'F': 4.18, 'G': 2.61, 'H': 3.92, 'I': 7.31, 'J': 0.78, 'K': 0.52, 'L': 5.74, 'M': 7.05, 'N': 12.53, 'O': 1.83, 'P': 2.87, 'Q': 1.57, 'R': 0.0, 'S': 2.09, 'T': 0.0, 'U': 12.53, 'V': 2.09, 'W': 3.13, 'X': 3.66, 'Y': 11.23, 'Z': 1.31}{'A': 0.26, 'B': 2.35, 'C': 0.0, 'D': 0.78, 'E': 0.26, 'F': 8.62, 'G': 1.83, 'H': 4.18, 'I': 2.35, 'J': 11.75, 'K': 3.66, 'L': 1.57, 'M': 5.48, 'N': 5.48, 'O': 0.78, 'P': 1.04, 'Q': 4.7, 'R': 2.61, 'S': 5.48, 'T': 6.53, 'U': 2.09, 'V': 0.0, 'W': 8.09, 'X': 6.27, 'Y': 10.97, 'Z': 2.87}

{'A': 2.87, 'B': 3.92, 'C': 11.23, 'D': 3.66, 'E': 1.83, 'F': 7.57, 'G': 6.79, 'H': 0.0, 'I': 3.66, 'J': 2.87, 'K': 1.83, 'L': 6.01, 'M': 7.83, 'N': 0.78, 'O': 0.0, 'P': 4.96, 'Q': 4.7, 'R': 12.01, 'S': 2.35, 'T': 0.26, 'U': 1.57, 'V': 0.0, 'W': 3.13, 'X': 0.26, 'Y': 7.83, 'Z': 2.09}

{'A': 2.35, 'B': 5.22, 'C': 7.57, 'D': 0.26, 'E': 1.57, 'F': 2.35, 'G': 2.09, 'H': 5.22, 'I': 6.79, 'J': 1.83, 'K': 0.26, 'L': 6.27, 'M': 6.79, 'N': 9.4, 'O': 3.13, 'P': 1.57, 'Q': 1.83, 'R': 0.0, 'S': 2.09, 'T': 0.26, 'U': 8.88, 'V': 2.35, 'W': 3.13, 'X': 2.87, 'Y': 13.32, 'Z': 2.61}

{'A': 1.57, 'B': 1.04, 'C': 3.92, 'D': 6.79, 'E': 0.26, 'F': 2.09, 'G': 3.66, 'H': 4.7, 'I': 5.22, 'J': 7.31, 'K': 3.13, 'L': 0.0, 'M': 7.57, 'N': 5.48, 'O': 10.97, 'P': 3.13, 'Q': 1.04, 'R': 1.57, 'S': 0.0, 'T': 2.09, 'U': 0.26, 'V': 8.62, 'W': 2.09, 'X': 2.87, 'Y': 3.39, 'Z': 11.23}

{'A': 8.62, 'B': 0.0, 'C': 1.04, 'D': 3.66, 'E': 1.57, 'F': 6.53, 'G': 6.27, 'H': 1.31, 'I': 0.0, 'J': 7.05, 'K': 9.14, 'L': 11.49, 'M': 2.87, 'N': 0.26, 'O': 2.35, 'P': 0.0, 'Q': 1.04, 'R': 0.0, 'S': 8.36, 'T': 2.09, 'U': 3.66, 'V': 1.83, 'W': 11.49, 'X': 2.35, 'Y': 1.04, 'Z': 6.01}

{'A': 0.26, 'B': 3.66, 'C': 0.26, 'D': 1.04, 'E': 0.0, 'F': 9.92, 'G': 1.57, 'H': 3.39, 'I': 2.09, 'J': 13.58, 'K': 2.61, 'L': 1.31, 'M': 7.05, 'N': 7.31, 'O': 0.0, 'P': 2.35, 'Q': 4.18, 'R': 2.61, 'S': 6.79, 'T': 5.22, 'U': 0.52, 'V': 0.0, 'W': 6.27, 'X': 5.74, 'Y': 9.66, 'Z': 2.61}

{'A': 1.57, 'B': 0.0, 'C': 1.83, 'D': 0.0, 'E': 12.53, 'F': 1.83, 'G': 4.18, 'H': 2.61, 'I': 12.01, 'J': 2.09, 'K': 2.35, 'L': 6.01, 'M': 6.53, 'N': 0.26, 'O': 1.04, 'P': 2.87, 'Q': 2.35, 'R': 6.79, 'S': 4.7, 'T': 2.35, 'U': 0.0, 'V': 6.01, 'W': 6.53, 'X': 9.4, 'Y': 2.87, 'Z': 1.31}

After finding the potential key length, I aligned the letter frequencies for each group superimposed with English letter frequencies and counted the amount of alignment shifts until they best aligned with English, accounting for A and E being common and X,Y, and Z being most uncommon. Using a function to shift each letter position by a potential key I adjusted each letter in the key starting with all “A” and running possible letters to find a key of “UFYUVSFE”, resulting in text about the movie JAWS. The text is from the Wikipedia article on the great white shark.

morethananydocumentedattackpeterbenchleysbestsellingnoveljawsandthesubsequentfilmadaptationdirectedbystevenspielbergprovidedthegreatwhitesharkwiththeimageofbeingamaneaterinthepublicmindwhilegreatwhitesharkshavekilledhumanstheytypicallydonottargetthemforexampleinthemediterraneanseatherehavebeenconfirmedattacksagainsthumansinthelasttwocenturiesmostofwhichwerenonfatalmanyoftheincidentsseemedtobetestbitesgreatwhitesharksalsotestbitebuoysflotsamandotherunfamiliarobjectsandtheymightgrabahumanorasurfboardtoidentifywhatitisotherincidentsseemtobecasesofmistakenidentityinwhichasharkambushesabatherorsurferfrombelowbelievingthesilhouetteisfromasealmanyattacksoccurinwaterswithlowvisibilityorothersituationswhichimpairthesharkssensesthespeciesappearstonotlikethetasteofhumansoratleastfindsthetasteunfamiliarfurtherresearchshowsthattheycantellinonebitewhetherornottheobjectisworthattackinghumansforthemostpartaretoobonyfortheirlikingtheymuchpreferafatproteinrichsealhoweversomeresearchershavehypothesizedthatthereasontheproportionoffatalitiesislowisnotbecausesharksdonotlikehumanfleshbutbecausehumansareoftenabletoescapeafterthefirstbiteinthesjohnmccoskerthechairofaquaticbiologyatcaliforniaacademynotedthatdiverswhodovesoloandwereattackedbygreatwhitesweregenerallyatleastpartiallyconsumedwhilediverswhofollowedthebuddysystemweregenerallyrescuedbytheirbuddymccoskerandtimothyctricasanauthorandprofessorattheuniversityofhawaiisuggestthatastandardpatternforgreatwhitesistomakeaninitialdevastatingattackandthenwaitforthepreytoweakenbeforeconsumingthewoundedanimalhumansabilitytomoveoutofreachwiththehelpofothersthusfoilingtheattackisunusualforagreatwhitespreyhumansarenotappropriatepreybecausethesharksdigestionistooslowtocopewithahumanshighratioofbonetomuscleandfataccordinglyinmostrecordedattacksgreatwhitesbrokeoffcontactafterthefirstbitefatalitiesareusuallycausedbybloodlossfromtheinitialbiteratherthanfromcriticalorganlossorfromwholeconsumptionfromuntiltherehavebeenatotalofunprovokedgreatwhitesharkattacksfatalasharkconservationistjimmyhallreportedanddocumentedhispersonalencounterwithaverylargegreatwhitesharknicknamedschatziindecemberinwatersoffhawaiithisencounterreceivedworldwideattentionasitremainedentirelypeacefuljhallwasatfirstcautiousbutlaterswamwiththissharkwithoutcageprotectionandtoucheditrepeatedlywhilefilmingitsimultaneouslyagroupofgreatwhitesharkswasbelievedtoberesponsibleforanattackonaswimmeratmuriwaibeachinaucklandnewzealandinfebruarythoughinitialreportsplacedtheblameonabronzewhaleritwasthefirstconfirmedsharkattackfatalityinthecountrysincegreatwhitesharksinfrequentlyattackandsometimesevensinkboatsonlyfiveoftheauthenticatedunprovokedsharkattacksreportedfromthepacificcoastduringthethcenturyinvolvedkayakersinafewcasestheyhaveattackedboatsuptometresftinlengththeyhavebumpedorknockedpeopleoverboardusuallyattackingtheboatfromthesterninonecaseinalargesharkleaptcompletelyintothesouthafricanfishingboatluckyjimknockingacrewmanintotheseatricasandmccoskersunderwaterobservationssuggestthatsharksareattractedtoboatsduetotheelectricalfieldstheygenerate