

FYSE 1280: Fall 2025
Breaking The Code: The Enigma of Alan Turing

Assignment 6

For Friday, September 26



Emil Post



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John von Neumann

Reading

Read Chapter 4 “God is Slick” of David Leavitt, *The Man Who Knew Too Much: Alan Turing and the Invention of the Computer*.

Read Chapter 5: “Princeton” in *Simply Turing*.

Exercises

Solve Cryptogram 1 which is attached.

(Optional Extra Credit) Solve Cryptogram 2 which is attached

Cryptogram 1

This cryptogram was created using a monoalphabetic substitution generated by a keyword used to scramble the alphabet. We have retained word divisions and other punctuation marks. The frequency distribution should provide a useful way to start decrypting. Once you have determined sufficiently many of the plaintext-ciphertext equivalences of letters, you can find the keyword and then use the KeywordCipher program to obtain the entire plaintext.

JY SME MU LDR KMU SJL ATEJYR MDLUY TU M EPTAA TU GJY CODA EGVYMK MUR
JY JMR CLUY YTCJGQ-ALOV RMQE ULS STGJLOG GMPTUC M ATEJ. TU GJY ATVEG
ALVGQ RMQE M BLQ JMR BYYU STGJ JTK. BOG MAGYV ALVGQ RMQE STGJLOG M
ATEJ GJY BLQ'E FMVYUGE JMR GLDR JTK GJMG GJY LDR KMU SME ULS
RYATUTGYDQ MUR ATUMDDQ EMDML, SJTIJ TE GJY SLVEG ALVK LA OUDOIPQ,
MUR GJY BLQ JMR CLUY MG GJYTV LVRYVE TU MULGJYV BLMG SJTIJ IMOCJG GJVY
CLLR ATEJ GJY ATVEG SYYP. TG KMRY GJY BLQ EMR GL EYY GJY LDR KMU ILKY TU
YMIJ RMQ STGJ JTE EPTAA YKFGQ MUR JY MDSMQE SYUG RLSU GL JYDF JTK
IMVVQ YTGJYV GJY ILTDYR DTUYE LV GJY CMAA MUR JMVFLU MUR GJY EMTD
GJMG SME AOVDYR MVLOUR GJY KMEG. GJY EMTD SME FMGIYR STGJ ADLOV
EMIPE MUR, AOVDYR, TG DLLPYR DTPY GJY ADMC LA FYVKMUYUG RYAYMG.

GJY LDR KMU SME GJTU MUR CMOUG STGJ RYYF SVTUPDYE TU GJY BMIP LA JTE
UYIP. GJY BVLSU BDLGIYE LA GJY BYUYWLDYUG EPTU IMUIYV GJY EOU BVTUCE
AVLK TGE VYADYIGTLU LU GJY GVLFTI EYM SYVY LU JTE IJYYPE. GJY BDLGIYE
VMU SYDD RLSU GJY ETRYE LA JTE AMIY MUR JTE JMURE JMR GJY RYYF-IVYMEYR
EIMVE AVLK JMURDTUC JYMWQ ATEJ LU GJY ILVRE. BOG ULUY LA GJY EY EIMVE
SYVY AVYEJ. GJYQ SYVY ME LDR ME YVLETLUE TU M ATEJDYEE RYEVVG.

YWYVQGJTUC MBLOG JTK SME LDR YHIYFG JTE YQYE MUR GJYQ SYVY GJY EMKY
ILDLV ME GJY EYM MUR SYVY IJYYVAOD MUR OURYAYMGYR.

"EMUGTMCL," GJY BLQ EMTR GL JTK ME GJYQ IDTKBYR GJY BMUP AVLK SJYVY GJY
EPTAA SME JMODYR OF. "T ILODR CL STGJ QLO MCMTU. SY'WY KMRY ELKY
KLUYQ."

GJY LDR KMU JMR GMOCJG GJY BLQ GL ATEJ MUR GJY BLQ DLWYR JTK.

"UL," GJY LDR KMU EMTR. "QLO'VY STGJ M DOIPQ BLMG. EGMQ STGJ GJYK."

"BOG VYKYKBYV JLS QLO SYUG YTCJGQ-EYWYU RMQE STGJLOG ATEJ MUR GJYU SY
IMOCJG BTC LUYE YWYVQ RMQ ALV GJVY SYYPE."

Frequency of Characters in Cryptogram 1

Letter	Counts	Frequency Distribution
A	46	*****
B	24	*****
C	20	*****
D	44	*****
E	86	*****
F	11	***
G	113	*****
H	1	
I	31	*****
J	113	*****
K	30	*****
L	90	*****
M	110	*****
N	0	
O	29	*****
P	17	*****
Q	36	*****
R	67	*****
S	42	*****
T	78	*****
U	81	*****
V	57	*****
W	7	**
X	0	
Y	162	***** *****
Z	0	

Suppressing Punctuation

If you remove all punctuation marks (spaces, periods, commas, quotation marks, and the like) from a plaintext message, it's still pretty easy to read as this example shows:

AFTERTWOTRIALSANDTHELARGESTCOUNTERTERRORISMINVESTIGATIONI
NBRTAINSSHISTORYTHREEMENWEREFFOUNDGUILTYONMONDAYOFPLOTT
INGTOBOMBATLEASTSEVENTRANSATLANTICAIRLINERSONASINGLEDAYWI
THLIQUIDEXPLOSIVESSMUGGLEDABOARDINSOFTDRINKBOTTLESANDDETO
NATEDBYDEVICESPOWEREDWITHAABATTERIES

On the other hand, if you take these punctuation marks out of a monoalphabetic substitution ciphertext, then it may be much harder to decrypt than one where you know where the word boundaries appear. For this reason, ciphertext was classically transmitted in blocks of 5 characters. Today it is usually sent as one long stream of characters. Cryptogram 2 was enciphered using a keyword. Determine the keyword and the plaintext.

(Optional Extra Credit)

CRYPTOGRAM 2

GKYUTBKGEPCSPVIAOGCGPVVQGKYVNPSCCKNEYSADPJITUGKYCUNEGKPGKPSRPD
DYUGKYFVYWTNOCSPQGGKYSPQNRGKYAPGGDYVYWTYETUBKTCTLFVYCCTNUCN
RGKYVYJYUGAPGGDYFTJGOVTUBFDYPCPUGDQGNKTLCYDRGKYTLFVYCCTNUKTC
UYECNRPWJTJGNVQENODSJYVPGYNVVYJPDdTUBGKYCYUSNRRBTWYUKTLAQGKYJ
NLLPUSYVTUJKTYPUSKTCRYDDNENRRTJYVCFVTUJYYPUSVYEEPCBPDDNFTUBPD
NUBYUZNQTUBGKYRYYDTUBCNRPLPUEKNKPCPGDYUBGKAYBOUGNPGGPTUPDN
UBSYCTVYSKPFFTUYCCPCCNNUPCKYJDNCYSKTCYQYCKTCYPVCCYYLSRTDDYSET
GKGKYVPGGDYNRGKYEKYYDCPUSGKYCYUCPGTNUNRWTJGNVQGGKYUKYAYBPUGN
TLPBTUYGKPGGKYVOCCTPUCEYVYVOUUTUBPEPQPUSGKPGKYKTLCYDREPCITDD
YSAOGKYMOTJIDQVNOCYSKTLCYDRETGKPRYYDTUBNRZNQPCTRDYPVUTUBPRVY
CKGKPGGKTCEPCUNGCNAOGGKPGNUGKYJNUGVPVQGGKYRVYUJJKPSVOUPEPQKYP
BPTUVYJPDDYSPDDGKYSYGPTDCNRGKYWTJGNVQPUSKTCNEUJPD LJNOVPBYSOVT
UBGKYAPGGDYPUSRYYDTUBVYPCCOVYSKYSNXYSNRRGKYSPVICGPVVQUTBKGEPC
CRNDDNEYSAPAVTBKGJKYYVRODLNVUTUBGKYCUNEEPCGKPETUBTUGKYCOUC
KTUYGKYKNVCYCBPDDNFYSMOTJIDQPUSNUANGKCTSYCNRGKYVNPSEYVYRNVYC
GCMRSTRRYVYUGITUSCRTYDSCPUSWTDDPBYPGPGNUYNRGKYFNCGCGPGTNUCKY
NWWYVGNIPJNUWNQNRNENOUSYSGKYNRRTJYVVTUJKPVBYNRGKYGVPUFCFNVGDND
DYSAPJITUGKYRVNUGJPVGCKNOGTUBPUSCJNDSTUBPCNDSTYVETGKJNPVCYPAOC
YTUYPJKNRGKYDNUBJPVGCTHNVLNVYFPDYSTVGQAPUSPBYSLYUEYVYAYTUBZN
DGYSNWYVGKYCGNUQVNPSCNLYNRGKYLEYVYGPDITUBNGKYVCEYVYYPGTUBAV
YPSGKYLNVYCYWYVYDQENOUSYSDNNIYSCTDYUGDQETGKGKYDPUBOTSTUGYVY
CGNRCTJIKTDSVYUPGGKYYUWNQKOVVQTUBFPCGGKYL

Frequency of Characters in Cryptogram 2

Letter	Counts	Frequency Distribution
A	18	*****
B	38	*****
C	86	*****
D	63	*****
E	32	*****
F	14	****
G	112	*****
H	1	
I	12	****
J	32	*****
K	89	*****
L	19	*****
M	2	
N	94	*****
O	24	*****
P	102	*****
Q	25	*****
R	44	*****
S	56	*****
T	87	*****
U	95	*****
V	75	*****
W	12	****
X	1	
Y	164	***** *****
Z	3	*