Quiz1

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1. Please write a program to find out the frequencies of letters in the ciphertext down below.

   Answer: 在 311552022.cpp 檔裡面

2. Use these plaintext frequency count information as a reference to break this encrypted messages.

Answer:

A COMPUTER SCIENTIST MUST OFTEN

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ANALYZING AND EXPLORE

THE FLOOD OF ADVANCED KNOWLEDGE WHICH

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3. Assume C is Ciphertext, P is Plaintext. Can you find out a particular relationship in between C and P?

Answer:

Cipher	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Plaintext	**L**	**U**	**D**	**M**	**V**	**E**	**N**	**W**	**F**	**O**	**X**	**G**	**P**
	11	**20**	**3**	**12**	**21**	**4**	**13**	**22**	**5**	**14**	**23**	**6**	**15**

N	**O**	**P**	**Q**	**R**	**S**	**T**	**U**	**V**	**W**	**X**	**Y**	**Z**
13	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
Y	H	Q	Z	I	R	A	J	S	B	K	T	C
24	7	16	25	8	17	0	9	18	1	10	19	2

4. Suppose f(x) = ax + b (mod 26) where x is plaintext, please solve the value of a and b.

Answer: a = 3, b = 19

5. What is the key size of the mono alphabetic substitution cipher? Such size make exhaustive search becomes difficult?

Answer: 26!

6. (Bonus) What is the key space in this affine substitution cipher we solved

f(x)= ax+b ?

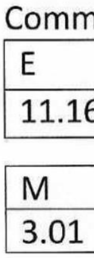
Answer: 12 x 26 = 312

Ciphertext:

T ZJDMBYFS VZRFGYRVY DBVY JIYFG
FKMFSRFGZF T IFFARGL JI GJY
ITS SFDJEFC ISJD TATSD JG
TGTANQRGL TGC FKMAJSF
YOF IAJJC JI TCETGZFC XGJHAFCLF HORZO
FTZO NFTS WSRGLV HRYO RY

Ciphertext’s letter frequency count:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
6	2	6	5	2	19	12	0	7	12	2	4	3	2	5	0	1	9	9	12	0	4	1	1	9	6



Comm

E
11.16

M
3.01