

Q1 Commands

5 Points

List the commands used in the game to reach the first ciphertext.

list
climb
read
enter
read

Q2 Cryptosystem

5 Points

What cryptosystem was used in this level?

Substitution Cipher

Q3 Analysis

25 Points

What tools and observations were used to figure our the cryptosystem? (Explain in less than 100 words)

First, we calculated the frequencies excluding the spaces, newlines, and digits. We got the highest frequency for 'c' (14%) and 'f' (10.5%) so we replace them with 'e' and 't' respectively. After this, we got many occurrences of "tie" in the text therefore replacement of 'i' with 'h' makes it "the". Then 'm' with 'r', a' with 'g', 'e' with 'f', 'h' with 'a' and 'p' with 'c' gave us words like "interest", "interesting", "can", "first". After this, we got the password "iRqy9U1qdgT". Digit decryption:
Let n shifted n place/s
=> (n + n) % 10 = 2
=> n = 1 or 6
As "places" is plural so n = 6.
So the final password we got is "iRqy3U5qdgT".

Q4 Mapping

10 Points

What is the plaintext space and ciphertext space?

What is the mapping between the elements of plaintext space and the elements of ciphertext space? (Explain in less than 100 words)

The plain text space is the set of all words and symbols and digits that is human-understandable.
The ciphertext is the encrypted text of plaintext which is not human readable, we need a proper cipher to decrypt it.

Following is the mapping of ciphertext space to plaintext space:

a->g
c->e
d->m
e->f
f->t
g->o
h->a
i->h
j->p
k->s
l->w
m->r
n->b
o->i
p->c
q->n
r->y
s->v
u->l
v->u
x->q
y->d

0->4
1->5
2->6
3->7
4->8
5->9
6->0
7->1
8->2
9->3

Q5 Password

5 Points

What is the final command used to clear this level?

iRqy3U5qdgT

Q6 Codes

0 Points

Upload any code that you have used to solve this level

▼ frequency.cpp Download

```
1  #include <bits/stdc++.h>
2  using namespace std;
3
4  int main()
5  {
6      ofstream file;
7      file.open("encrypted.txt", ios::out);
8
9      if (!file)
10     {
11         cout << "Error in creating file!!!";
12         return 0;
13     }
14
15     file << "omkf pi hdn cmgef icphsck .H krg vphqkc c,\n";
16     file << "ic mco kqgf ioqag eo qfcmckf oq ficpihdn\n";
17     file << "cm .Kg dcgeficu hfc m pi hdn cmklo uuncdgm c\n";
18     file << "oqfc mc kfoq afihqfiokgq c!Fi cpgy cvkc yeg\n";
19     file << "mfio kdck kha cokh kodjuck vn k fofvfo\n";
20     file << "gqpojicmoqli opiyoa of kihsc nccqki oefc\n";
21     file << "ynr2 juhpck. Fi c jhkklgm yok oMr9V1x ya\n";
22     file << "flofigvffic xvgfck. Fio kokfice";
23     file.close();
24
25     char ch;
26     map<char, int> mp;
27     int T = 0;
28     fstream fin("encrypted.txt", fstream::in);
29     while (fin >> noskipws >> ch)
30     {
31         if (ch >= '0' and ch <= '9' or !((ch >= 'a' and ch <= 'z') or (ch >= 'A' and
ch <= 'Z'))))
32             continue;
33         mp[tolower(ch)]++;
34         T++;
35     }
36
37     map<char, float> mp2;
38
39     for (auto p : mp)
40     {
41         mp2[p.first] = ((float)(p.second) * (100)) / T;
42     }
43
44     multimap<float, char> mp3;
45     for (auto p : mp2)
46     {
47         mp3.insert({p.second, p.first});
48     }
49
50     for (auto p : mp3)
51         cout << p.first << " : " << p.second << endl;
52     return 0;
53 }
```

Q7 Team Name

0 Points

Bhois