



Assignment Answer

CSE436, Computer and Networks Security

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General Notes

- I used C++ instead of python which I used in the assignment 1 as C++ is easier to mange hexadecimals and use vectors and also easier to extract exe.
- Vectors and Booleans are better for bit-level operations so I used them

Libraries used (Headers used): 1- "iostream" 2- "algorithm" 3- "DEVICES.h" 4- "vector"

- Functions used :
 - void left_shift_fn
 - void lon_long_to_vector_fn
 - unsigned long long lon_long_to_vector_fn
 - void split_vector_to_let_right_fn
 - void both_vectors
 - void make_permutation
 - int make_permutation_Test
 - void printkey
 - void K_creation_function
 - void BOX_fn
 - void S_function
 - void function_of_f
 - void make_round
 - void helper_Function
 - unsigned long long D_E_S_ALG

Screenshots

I used the same examples as in the description of project.

```
CAUsers\Omar Hazem\source\repos\ConsoleApplication3\Debug\ConsoleApplication3.exe

-----DES ALGORITHM STARTED-----

Enter
Decryption : 0
Encryption : 1
0

-----DES ALGORITHM STARTED-----

INSERT
THE KEY :
0000000000000000

-----DES ALGORITHM STARTED-----

INSERT
Your cipher text :
FFFFFFFFFFFFFFFF

-----DES ALGORITHM STARTED-----

INSERT
No. of decryptions you want :
2

-----DES ALGORITHM STARTED-----

The result is ffffffffffffffff

-----DES ALGORITHM ENDED-----
```

```
CAUsers\Omar Hazem\source\repos\ConsoleApplication3\Debug\ConsoleApplication3.exe

-----DES ALGORITHM STARTED-----

Enter
Decryption : 0
Encryption : 1
1

-----DES ALGORITHM STARTED-----

INSERT
THE KEY :
0000000000000000

-----DES ALGORITHM STARTED-----

INSERT
Your plain text :
FFFFFFFFFFFFFFFF

-----DES ALGORITHM STARTED-----

INSERT
No. of Encryptions you want :
1

-----DES ALGORITHM STARTED-----

The result is 355550b2150e2451

-----DES ALGORITHM ENDED-----
```