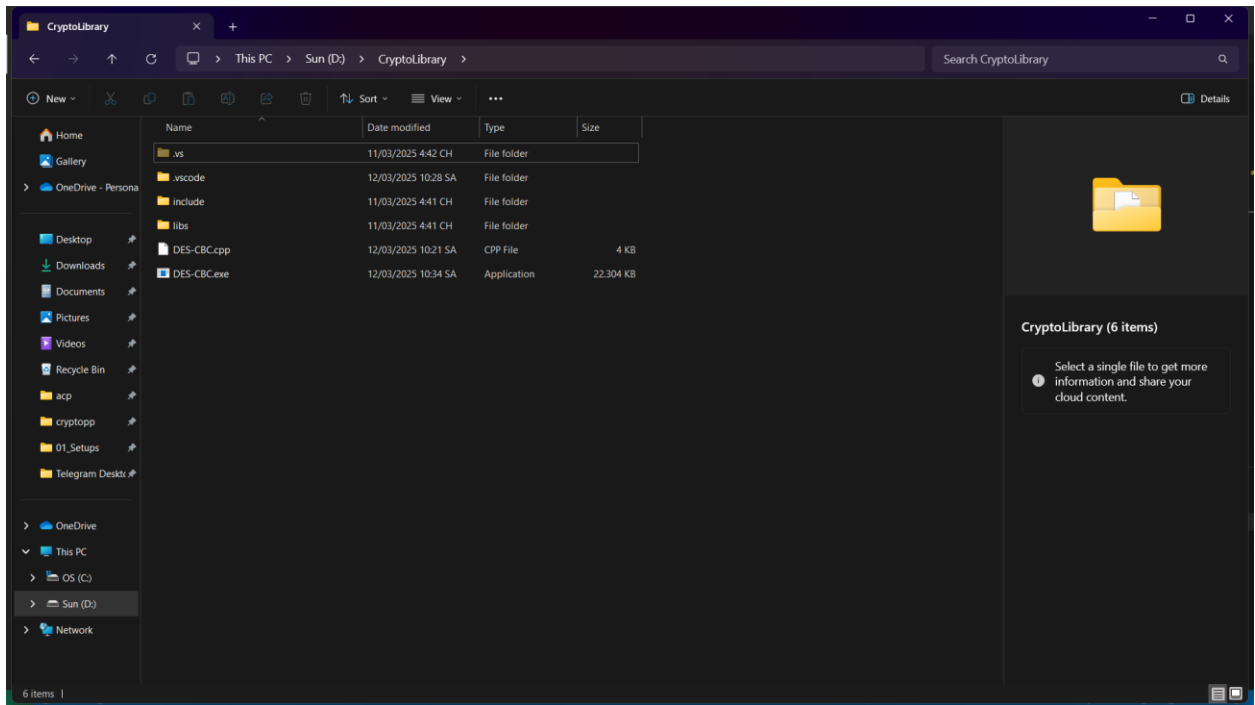
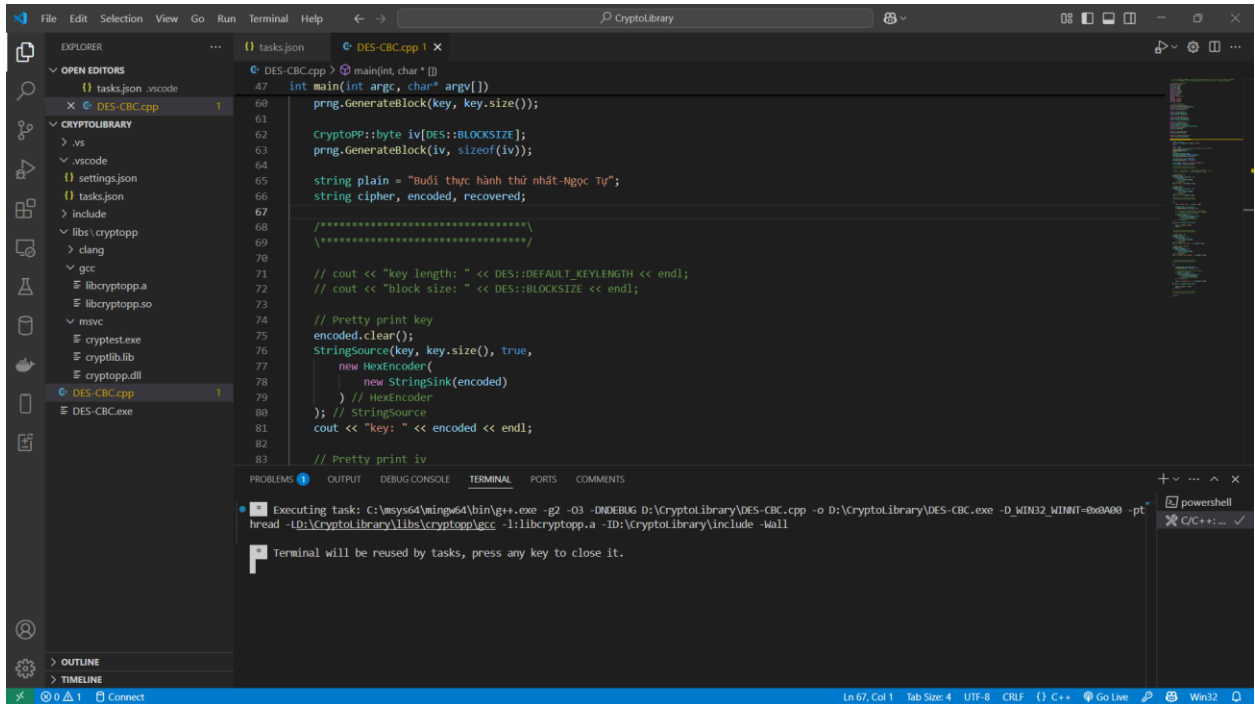
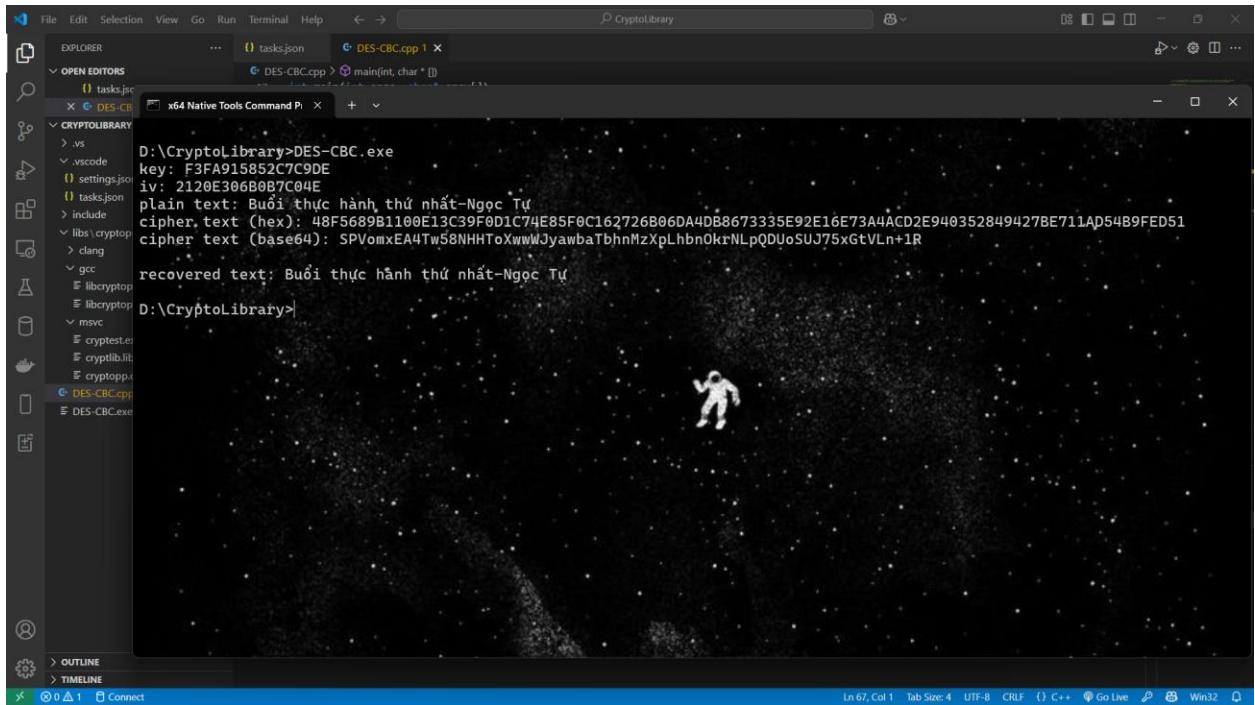


I. Windows

1. Gcc

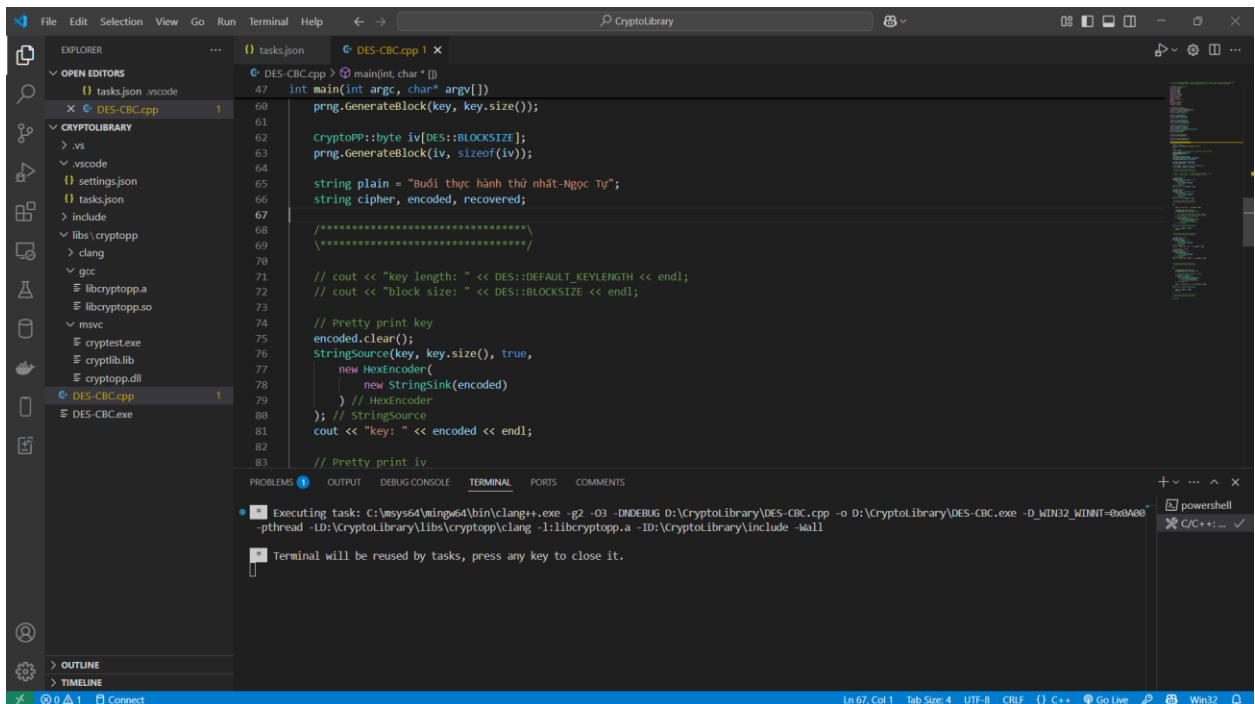




```
D:\CryptoLibrary>DES-CBC.exe
key: F3FA915852C7C9DE
iv: 2120E306B087C04E
plain text: Buổi thực hành thứ nhất-Ngọc Tú
cipher text (hex): 48F5689B1100E13C39F0D1C74E85F0C162726B06DA4DB8673335E92E16E73A4ACD2E940352849427BE711AD54B9FED51
cipher text (base64): SPVomxEA4Tw58NHHToXwwwJyawbaTbhnMzXpLhbn0krNLPQDUJoSUJ75xGtVLn+1R

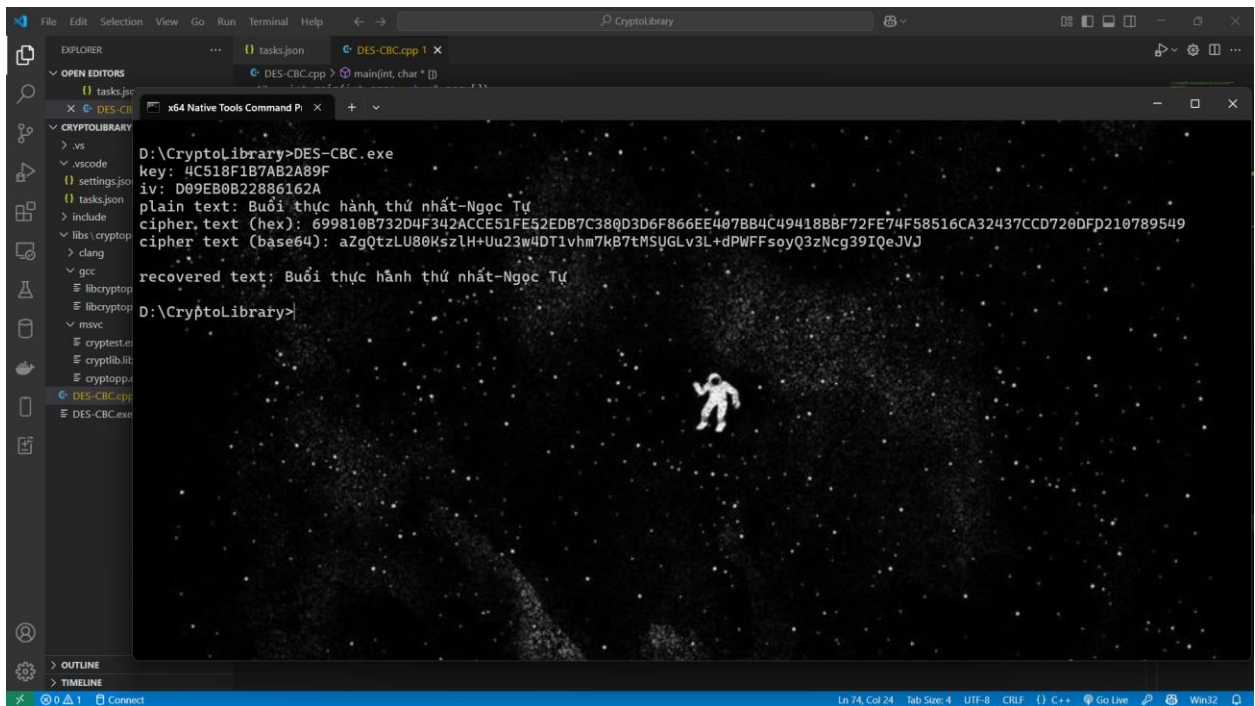
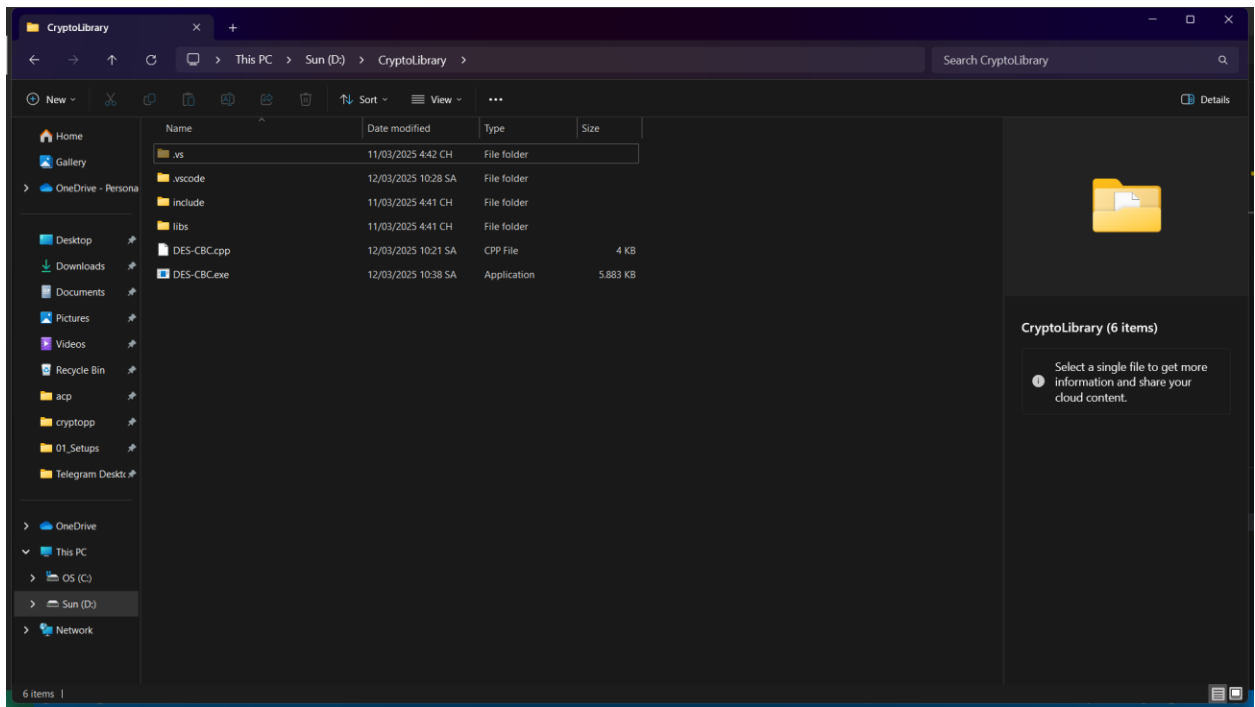
recovered text: Buổi thực hành thứ nhất-Ngọc Tú
D:\CryptoLibrary>
```

2. Clang

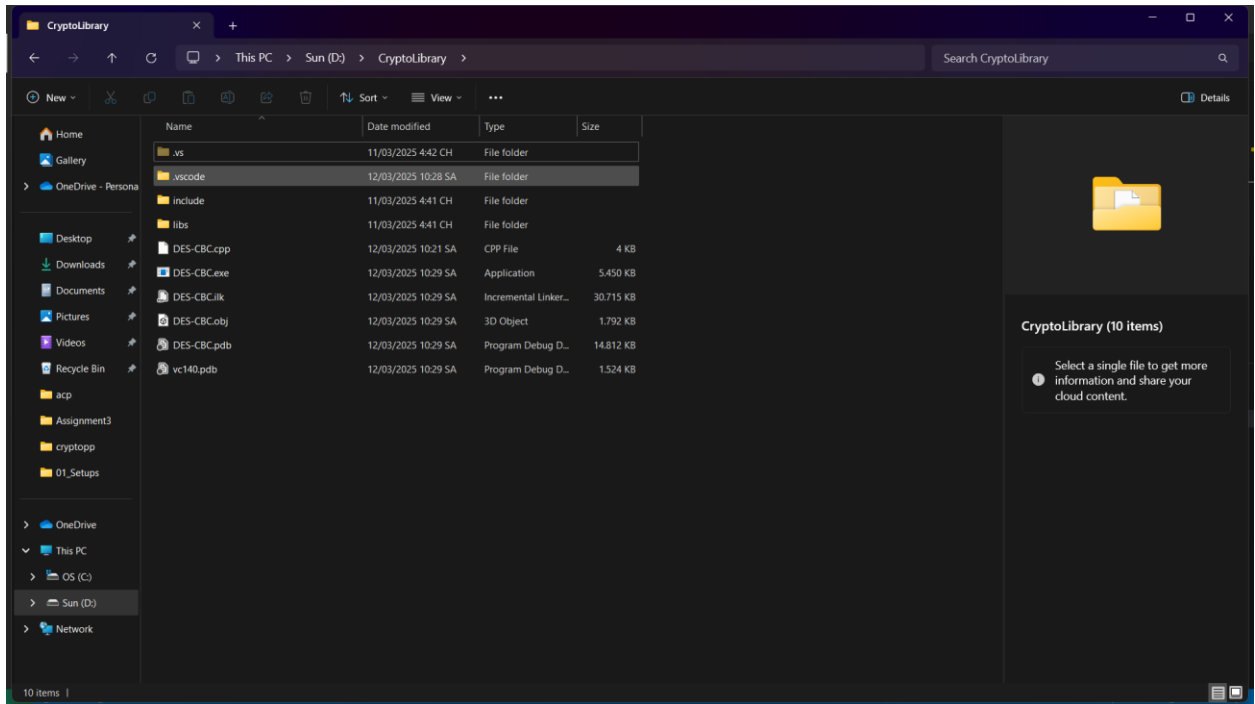
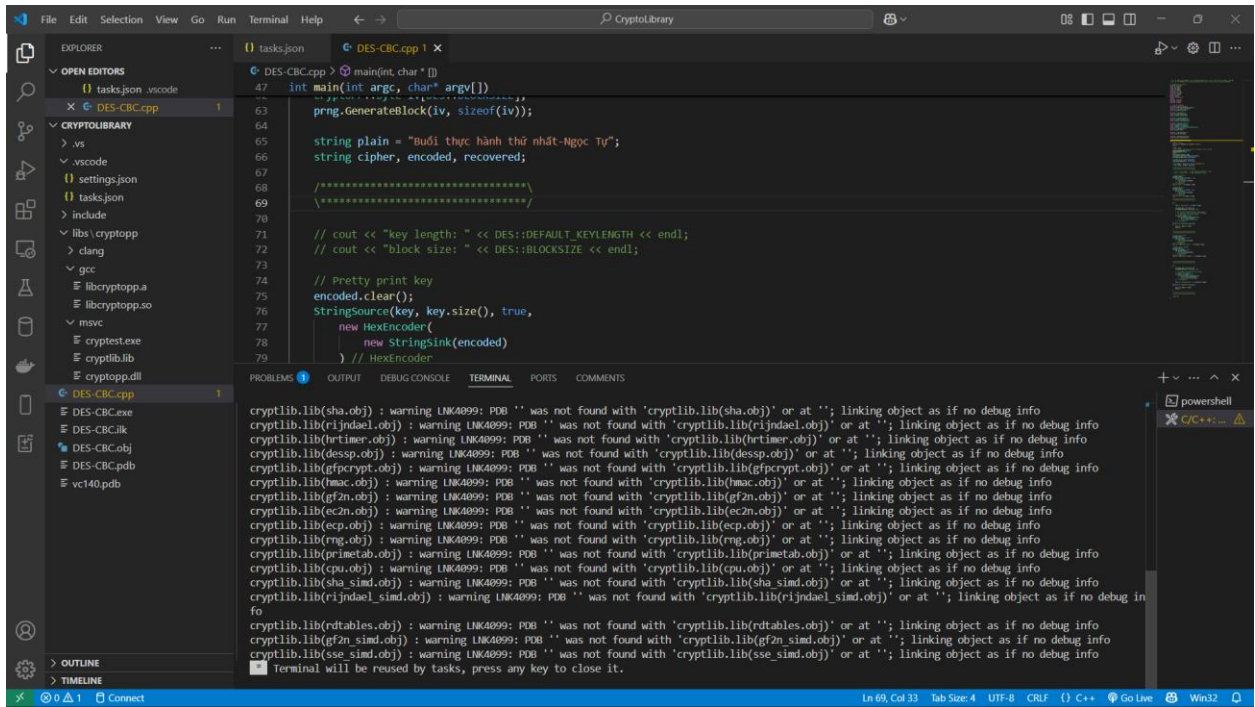


```
60 prng.GenerateBlock(key, key.size());
61
62 CryptoPP::byte iv[DES::BLOCKSIZE];
63 prng.GenerateBlock(iv, sizeof(iv));
64
65 string plain = "Buổi thực hành thứ nhất-Ngọc Tú";
66 string cipher, encoded, recovered;
67
68 /*****
69 \*****/
70
71 // cout << "key length: " << DES::DEFAULT_KEYLENGTH << endl;
72 // cout << "block size: " << DES::BLOCKSIZE << endl;
73
74 // Pretty print key
75 encoded.clear();
76 StringSource(key, key.size(), true,
77             new HexEncoder(
78                 new StringSink(encoded)
79             ), // HexEncoder
80             ); // StringSource
81 cout << "key: " << encoded << endl;
82
83 // Pretty print iv
```

```
Executing task: C:\msys64\mingw64\bin\clang++.exe -g2 -O3 -DDEBUG D:\CryptoLibrary\DES-CBC.cpp -o D:\CryptoLibrary\DES-CBC.exe -D_MINGW32 -DWIN32 -pthread -LD:\CryptoLibrary\libs\cryptopp\clang -l:libcryptopp.a -ID:\CryptoLibrary\include -Wall
Terminal will be reused by tasks, press any key to close it.
```



3. Msvc



```
D:\CryptoLibrary>ls libs/
cryptopp

D:\CryptoLibrary>ls libs/cryptopp
clang gcc msvc

D:\CryptoLibrary>ls libs/cryptopp/msvc
cryptest.exe cryptlib.lib cryptopp.dll

D:\CryptoLibrary>ls libs/cryptopp/msvc
cryptest.exe cryptlib.lib cryptopp.dll

D:\CryptoLibrary>ls libs/cryptopp/msvc
cryptest.exe cryptlib.lib cryptopp.dll

D:\CryptoLibrary>code
D:\CryptoLibrary>ls
DES-CBC.cpp DES-CBC.exe DES-CBC.ilk DES-CBC.obj DES-CBC.pdb include libs vc140.pdb

D:\CryptoLibrary>DES-CBC.exe
key: EF976D24B6F13B48
iv: 0565DD0B1E294052
plain text: Buổi thực hành thứ nhất-Ngọc Tú
cipher text (hex): C00001746F40942E573761BE42654335A121C3550EC125F05A85FD64A565131543EA5BB22266F1DFFD446E94F6F3C1D9
cipher text.(base64): wAA8dG9AlC5XN2G+QmVDNaEhw1U0wSXWwX9ZKVLExVD6luyImbx3/1EbpT288HZ

recovered text: Buổi thực hành thứ nhất-Ngọc Tú

D:\CryptoLibrary>
```

II. Linux

1. Gcc

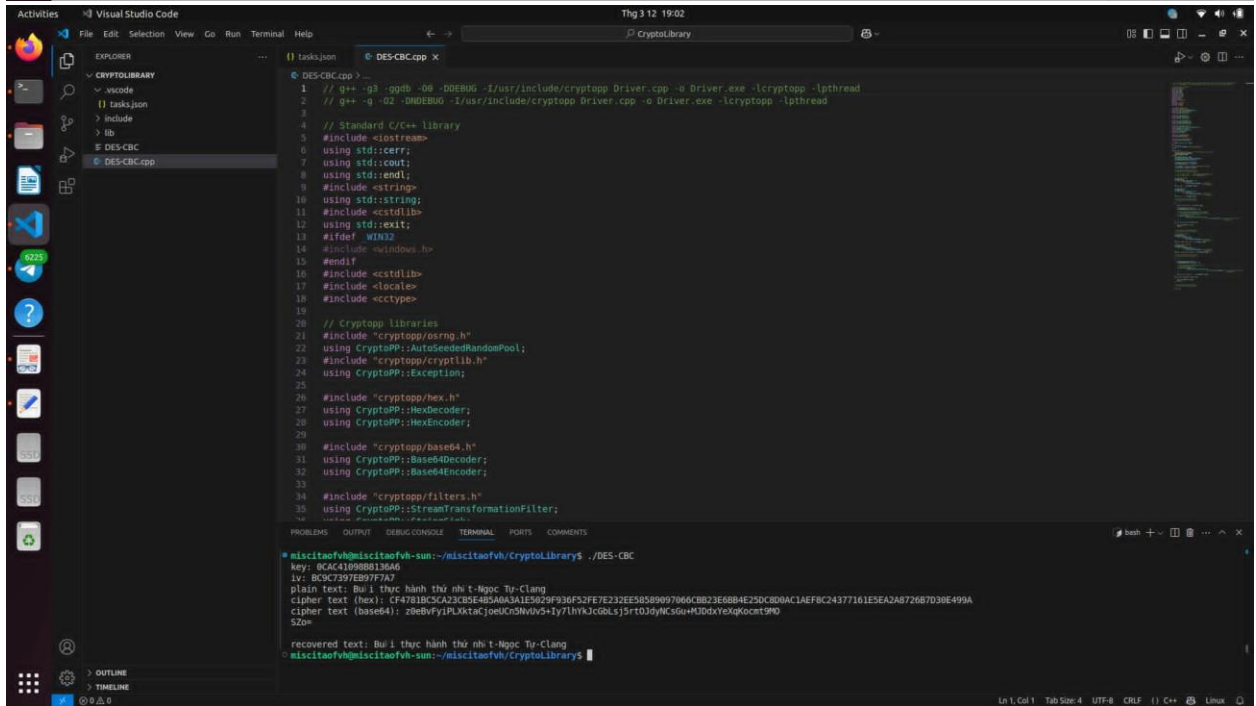
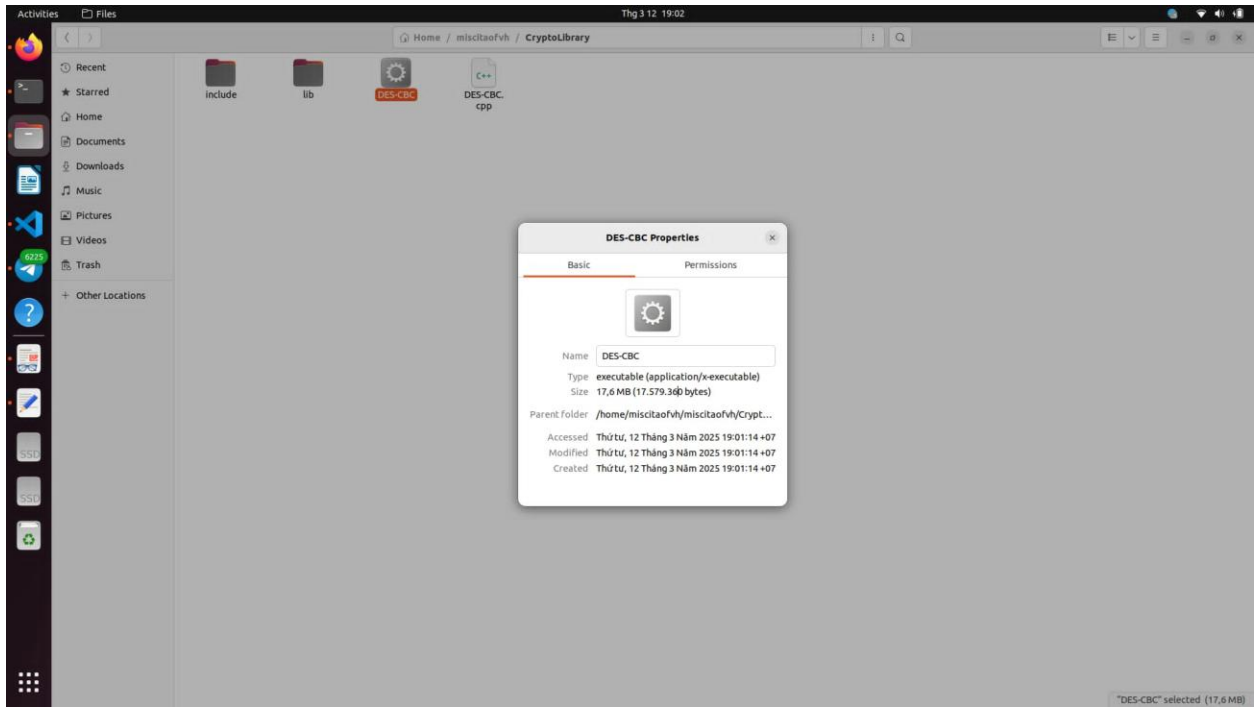
```
1 // g++ -g3 -gdb -O0 -DDEBUG -I/usr/include/cryptopp Driver.cpp -o Driver.exe -lcryptopp -lpthread
2 // g++ -g -O2 -DDEBUG -I/usr/include/cryptopp Driver.cpp -o Driver.exe -lcryptopp -lpthread
3
4 // Standard C/C++ Library
5 #include <iostream>
6 using std::cerr;
7 using std::cout;
8 using std::endl;
9 #include <string>
10 using std::string;
11 #include <cstdlib>
12 using std::exit;
13 #ifdef WIN32
14 #include <windows.h>
15 #endif
16 #include <cstdlib>
17 #include <locale>
18 #include <cctype>
19
20 // Cryptop Library
21 #include "cryptopp/osrng.h"
22 using CryptoPP::AutoSeededRandomPool;
23 #include "cryptopp/cryptlib.h"
24 using CryptoPP::Exception;
25
26 #include "cryptopp/hex.h"
27 using CryptoPP::HexDecoder;
28 using CryptoPP::HexEncoder;
29
30 #include "cryptopp/base64.h"
31 using CryptoPP::Base64Decoder;
32 using CryptoPP::Base64Encoder;
33
34 #include "cryptopp/filters.h"
35 using CryptoPP::StreamTransformationFilter;
36
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```

```
Executing task: /usr/bin/g++ -g2 -O3 -DDEBUG /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC.cpp -o /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC.exe -D_WIN32_WINNT=0x0A00 -lpthread -L/home/miscitaofvh/CryptoLibrary/lib -l:libcryptopp.a -I/home/miscitaofvh/CryptoLibrary/include -Wall

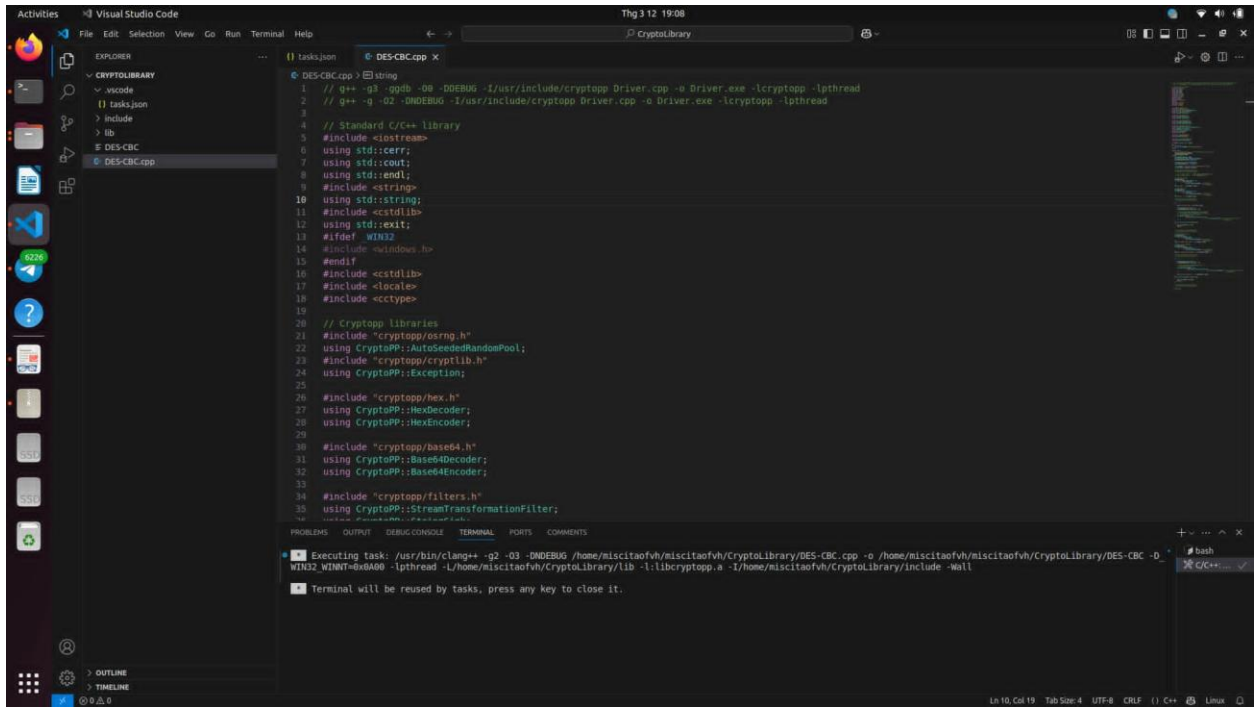
The terminal process failed to launch: Starting directory (cwd) "/home/miscitaofvh/miscitaofvh/CryptoLibrary/$(workspaceFolder)" does not exist.

Executing task: /usr/bin/g++ -g2 -O3 -DDEBUG /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC.cpp -o /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC.exe -D_WIN32_WINNT=0x0A00 -lpthread -L/home/miscitaofvh/CryptoLibrary/lib -l:libcryptopp.a -I/home/miscitaofvh/CryptoLibrary/include -Wall

Terminal will be reused by tasks, press any key to close it.
```

2. clang



The screenshot shows the Visual Studio Code editor with a C++ file named `DES-CBC.cpp` open. The file contains the following code:

```
1 // g++ -g3 -gdb -DDEBUG -I/usr/include/cryptopp Driver.cpp -o Driver.exe -lcryptopp -lpthread
2 // g++ -g -DDEBUG -I/usr/include/cryptopp Driver.cpp -o Driver.exe -lcryptopp -lpthread
3
4 // Standard C/C++ library
5 #include <iostream>
6 using std::cerr;
7 using std::cout;
8 using std::endl;
9 #include <string>
10 using std::string;
11 #include <cstdlib>
12 using std::exit;
13 #ifdef WIN32
14 #include <windows.h>
15 #endif
16 #include <cstdlib>
17 #include <locale>
18 #include <cctype>
19
20 // Cryptopp libraries
21 #include "cryptopp/osrng.h"
22 using CryptoPP::AutoSeededRandomPool;
23 #include "cryptopp/cryptlib.h"
24 using CryptoPP::Exception;
25
26 #include "cryptopp/hex.h"
27 using CryptoPP::HexDecoder;
28 using CryptoPP::HexEncoder;
29
30 #include "cryptopp/base64.h"
31 using CryptoPP::Base64Decoder;
32 using CryptoPP::Base64Encoder;
33
34 #include "cryptopp/filters.h"
35 using CryptoPP::StreamTransformationFilter;
```

The terminal window at the bottom shows the execution of the task:

```
Executing task: /usr/bin/clang++ -g2 -O3 -DDEBUG /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC.cpp -o /home/miscitaofvh/miscitaofvh/CryptoLibrary/DES-CBC -D-WIN32 -WNOU0000 -lpthread -L/home/miscitaofvh/CryptoLibrary/lib -l:libcryptopp.a -I/home/miscitaofvh/CryptoLibrary/include -Wall
```

The terminal window is titled `# bash` and shows the command `g++` being executed.

