Task - 01
Code

```cpp
#include <stdio.h>
#include <iostream>

int main()
{
    char msg[100], ch;
    int i, key;
    std::cout << "Enter a string to encrypt: ";
    gets(msg);
    std::cout << "Enter key: ";
    scanf("%d", &key);

    for (i = 0; msg[i] ≠ '\0'; ++i)
    {
        ch = msg[i];
        if (ch ⩾ 'a' && ch ⩽ 'z')
        {
            ch = ch + key;
            if (ch > 'z')
            {
                ch = ch - 'z' + 'a' - 1;
            }
            msg[i] = ch;
        }
        else if (ch ⩾ 'A' && ch ⩽ 'Z')
        {
            ch = ch + key;
            if (ch > 'Z')
            {
                ch = ch - 'Z' + 'A' - 1;
            }
            msg[i] = ch;
        }
    }
    std::cout << msg;
```

```
    return 0;
}
```

Code 02

```
#include <stdio.h>

int main()
{
    char message[100], ch;
    int i, key;
    printf("Enter a message to decrypt: ");
    gets(message);
    printf("Enter key: ");
    scanf("%d", &key);
    for (i = 0; message[i] ≠ '\0'; ++i)
    {
        ch = message[i];
        if (ch ≥ 'a' && ch ≤ 'z')
        {
            ch = ch - key;
            if (ch < 'a')
            {
                ch = ch + 'z' - 'a' + 1;
            }
            message[i] = ch;
        }
```

```
        else if (ch >= 'A' && ch <= 'Z')
        {
            ch = ch - key;
            if (ch < 'A')
            {
                ch = ch + 'Z' - 'A' + 1;
            }
            message[i] = ch;
        }
    }
    printf("Decrypted message: %s", message);
    return 0;
}
```

Output

```
PS E:\Code File\University Fall 2021\Data comunication\Lab Class> cd "e:\Code File\U
 Class\" ; if ($?) { g++ EncodingDecoding.cpp -o EncodingDecoding } ; if ($?) { .\En
Enter a string to encrypt: hello world
Enter key: 5
mjqqt btwqi
PS E:\Code File\University Fall 2021\Data comunication\Lab Class> cd "e:\Code File\U
 Class\" ; if ($?) { gcc decrypt.c -o decrypt } ; if ($?) { .\decrypt }
Enter a message to decrypt: mjqqt btwqi
Enter key: 5
Decrypted message: hello world
PS E:\Code File\University Fall 2021\Data comunication\Lab Class>
```

Task - 02

Code

```
//Bit stuffing


#include <iostream>
```

```
#include <string>
using namespace std;

int main()
{
    string stream, stuffedStream;
    cout << "Enter the stream of bits:";
    cin >> stream;
    stuffedStream = stream;
    int count = 0, j, appendedBit = 0;
    int l = stream.length();
    for (int i = 0; i < stream.length(); i++)
    {
        if (stream[i] == '1')
            count++;
        if (stream[i] == '0')
            count = 0;
        if (count == 5)
        {
            count = 0;
            stuffedStream += "0";
            l++;
            appendedBit++;
            j = l;
            while (j > i + 2)
            {
```

```
                stuffedStream[j - 1] = stuffedStream[j -
2];
                j--;
            }
            stuffedStream[i + appendedBit] = '0';
        }
    }
    cout << "Output stream after bit stuffing:"
         << " 010110" << stuffedStream << "010110" <<
endl;
    return 0;
}
```

Output

```
ry the new cross-platform PowerShell https://aka.ms/pscore6

S E:\Code File\University Fall 2021\Data comunication\Lab Class> cd "e:\Code File\Univers
Class\" ; if ($?) { g++ bitStuffing.cpp -o bitStuffing } ; if ($?) { .\bitStuffing }
nter the stream of bits:111111
utput stream after bit stuffing: 010110 1111101 010110
S E:\Code File\University Fall 2021\Data comunication\Lab Class>
```

Task - 03

Code

Output