3) To write a python program to implement the hill cipher substitution techniques.

PROGRAM:-

```
def main():
    a = [[6, 24, 1], [13, 16, 10], [20, 17, 15]]
    b = [[8, 5, 10], [21, 8, 21], [21, 12, 8]]
    c = [0] * 20
    d = [0] * 20
    print("Enter plain text")
    msg = input().strip().upper()
    for i in range(len(msg)):
        c[i] = ord(msg[i]) - 65
        print(c[i], end=" ")
    for i in range(3):
        t = 0
        for j in range(3):
            t += a[i][j] * c[j]
        d[i] = t % 26
    print("\nEncrypted Cipher Text:", end=" ")
    for i in range(3):
        print(chr(d[i] + 65), end=" ")
    for i in range(3):
        t = 0
        for j in range(3):
            t += b[i][j] * d[j]
        c[i] = t % 26
    print("\nDecrypted Cipher Text:", end=" ")
    for i in range(3):
        print(chr(c[i] + 65), end=" ")
if __name__ == "__main__":
    main()
```

OUTPUT:-

```
Enter plain text
act
0 2 19
Encrypted Cipher Text: P O H
Decrypted Cipher Text: A C T
=== Code Execution Successful ===
```