Step 1: Start

Step 2: Input Key Matrix:

2.1:Prompt "Enter a 9 letter key" and store it as key.

2.2:Convert each character in key to uppercase, then to integer values from 0 to 25.

2.3Populate the keys matrix (3x3) with these integer values.

```
print("Enter a 9 letter key: ")
key = user input
k = 0
for i = 0 to 2:
   for j = 0 to 2:
      keys[i][j] = toupper(key[k]) - 'A'
      k = k + 1
```

Step 3: Input Plaintext Vector:

3.1:Prompt "Enter a message of 3 letters" and store it as message.

3.2:Convert each character in message to uppercase, then to integer values from 0 to 25.

3.3:Store the resulting values in pvector.

```
print("Enter a message of 3 letters: ")
message = user input
for i = 0 to 2:
   pvector[i] = toupper(message[i]) - 'A'
```

Step 4: Calculate Cipher Vector:

4.1:Initialize cvector as a 3-element array.

4.2:For each element in cvector, perform matrix multiplication of keys and pvector:

4.2.1:Sum the products of each keys[i][j] and pvector[j].

4.2.2:Take modulo 26 of the sum.

```
for i = 0 to 2:
   cvector[i] = 0
   for j = 0 to 2:
      cvector[i] += keys[i][j] * pvector[j]
```

cvector[i] %= 26

Step 5: Display Ciphertext:

5.1:Convert each integer in cvector to a character from 'A' to 'Z'.

5.2:Print the resulting characters as the ciphertext.

```
print("The cipher text is: ")
for i = 0 to 2:
   print (char)(cvector[i] + 'A')
```

Step 6 : Stop