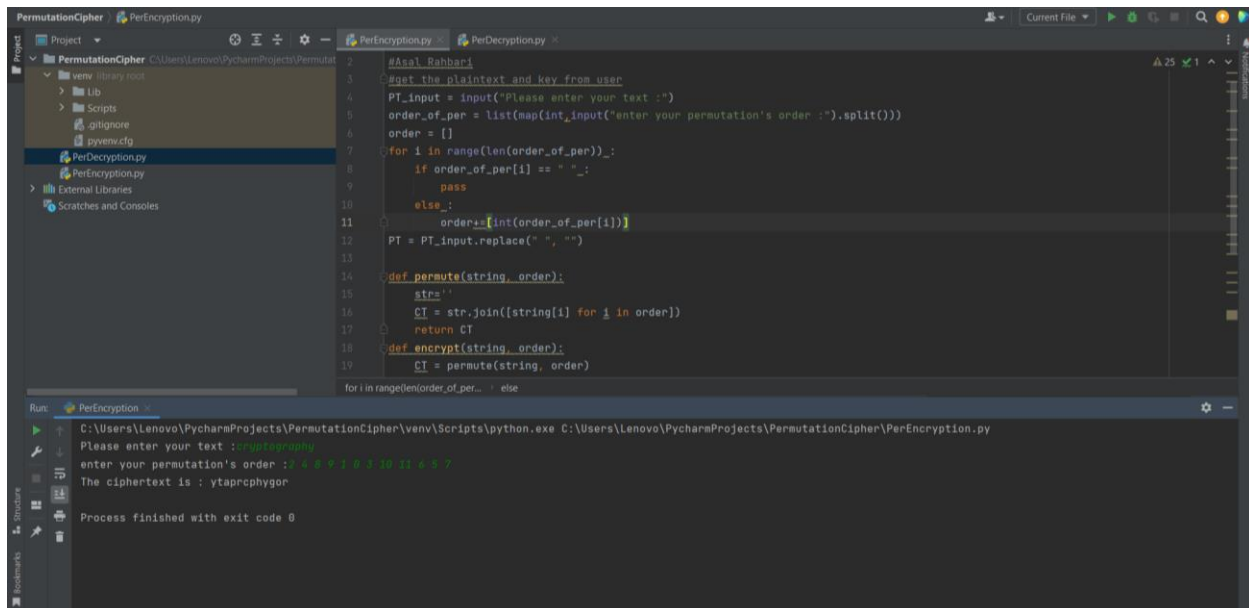


Permutation Cipher – Asal Rahbari

Encryption :

Plain text : cryptography

Key : { 2 , 4 , 8 , 9 , 1 , 0 , 3 , 10 , 11 , 6 , 5 , 7 }

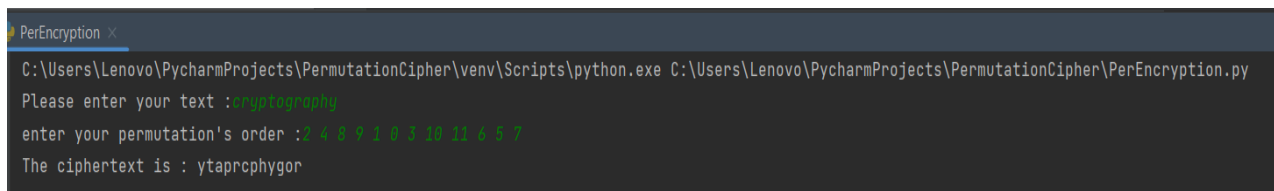


The screenshot shows the PyCharm IDE with a project named 'PermutationCipher'. The file 'PerEncryption.py' is open, showing the following code:

```
1 #Asal Rahbari
2 #get the plaintext and key from user
3 PT_input = input("Please enter your text :")
4 order_of_per = list(map(int,input("enter your permutation's order :").split()))
5 order = []
6
7 for i in range(len(order_of_per)):
8     if order_of_per[i] == " ":
9         pass
10    else:
11        order.append(int(order_of_per[i]))
12    PT = PT_input.replace(" ", "")
13
14 def permute(string, order):
15     str=''
16     CT = str.join([string[i] for i in order])
17     return CT
18
19 def encrypt(string, order):
20     CT = permute(string, order)
21     for i in range(len(order_of_per)):
22         if order_of_per[i] == " ":
23             pass
24         else:
25             CT = CT.replace(string[order_of_per[i]], string[i])
```

The Run console shows the execution of the script:

```
Run: PerEncryption
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerEncryption.py
Please enter your text :cryptography
enter your permutation's order :2 4 8 9 1 0 3 10 11 6 5 7
The ciphertext is : ytaprcphygor
Process finished with exit code 0
```



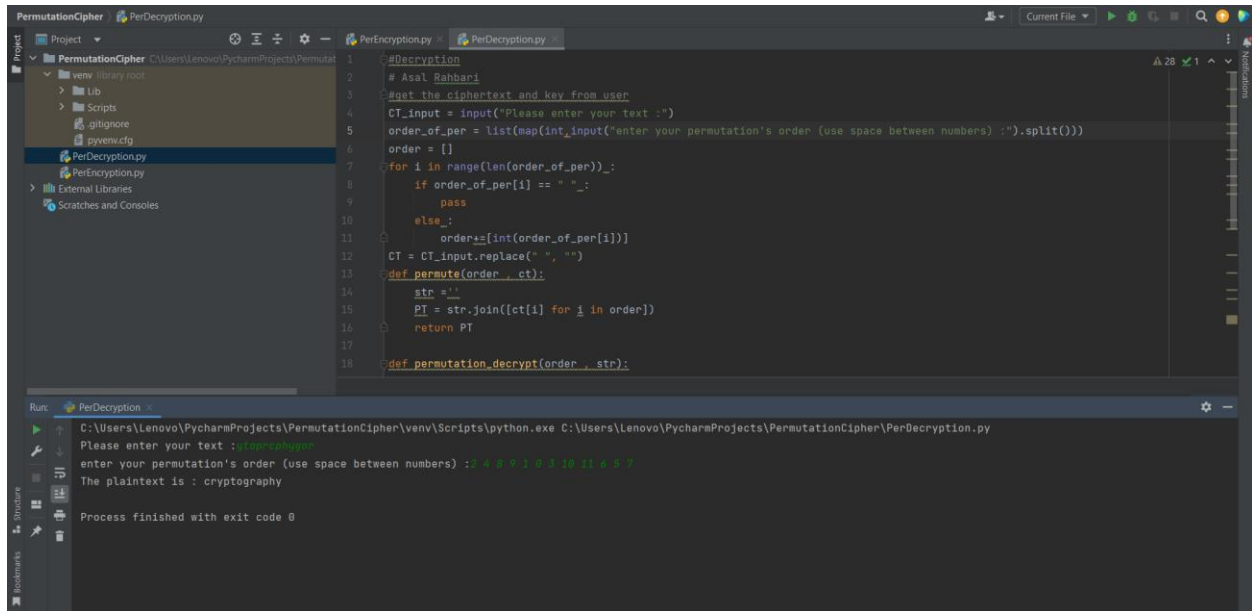
The terminal window shows the execution of the script:

```
PerEncryption x
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerEncryption.py
Please enter your text :cryptography
enter your permutation's order :2 4 8 9 1 0 3 10 11 6 5 7
The ciphertext is : ytaprcphygor
```

Decryption :

Cipher text : ytaprcphygor

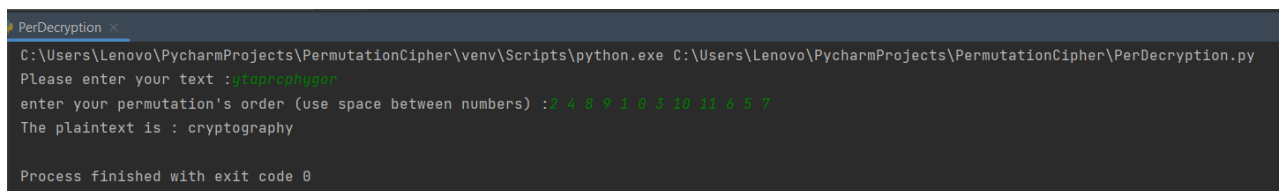
Key : { 2 , 4 , 8 , 9 , 1 , 0 , 3 , 10 , 11 , 6 , 5 , 7 }



The screenshot shows the PyCharm IDE with the 'PerDecryption.py' file open. The code defines a decryption function that takes a permutation order and a ciphertext string as input. It processes the ciphertext by reversing the permutation to retrieve the original plaintext. The 'Run' console at the bottom shows the execution of the script, where the user enters the ciphertext 'ytaprcphygor' and the permutation order '2 4 8 9 1 0 3 10 11 6 5 7', resulting in the plaintext 'cryptography'.

```
1 #Decryption
2 # Asal Bahbani
3 #get the ciphertext and key from user
4 CT_input = input("Please enter your text :")
5 order_of_per = list(map(int,input("enter your permutation's order (use space between numbers) :").split()))
6 order = []
7 for i in range(len(order_of_per)):
8     if order_of_per[i] == "_":
9         pass
10    else:
11        order.append(int(order_of_per[i]))
12    CT = CT_input.replace(" ", "")
13    def permute(order , ct):
14        str = ''
15        PT = str.join([ct[i] for i in order])
16        return PT
17
18    def permutation_decrypt(order , str):
```

Run: PerDecryption.py
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerDecryption.py
Please enter your text :ytaprcphygor
enter your permutation's order (use space between numbers) :2 4 8 9 1 0 3 10 11 6 5 7
The plaintext is : cryptography
Process finished with exit code 0



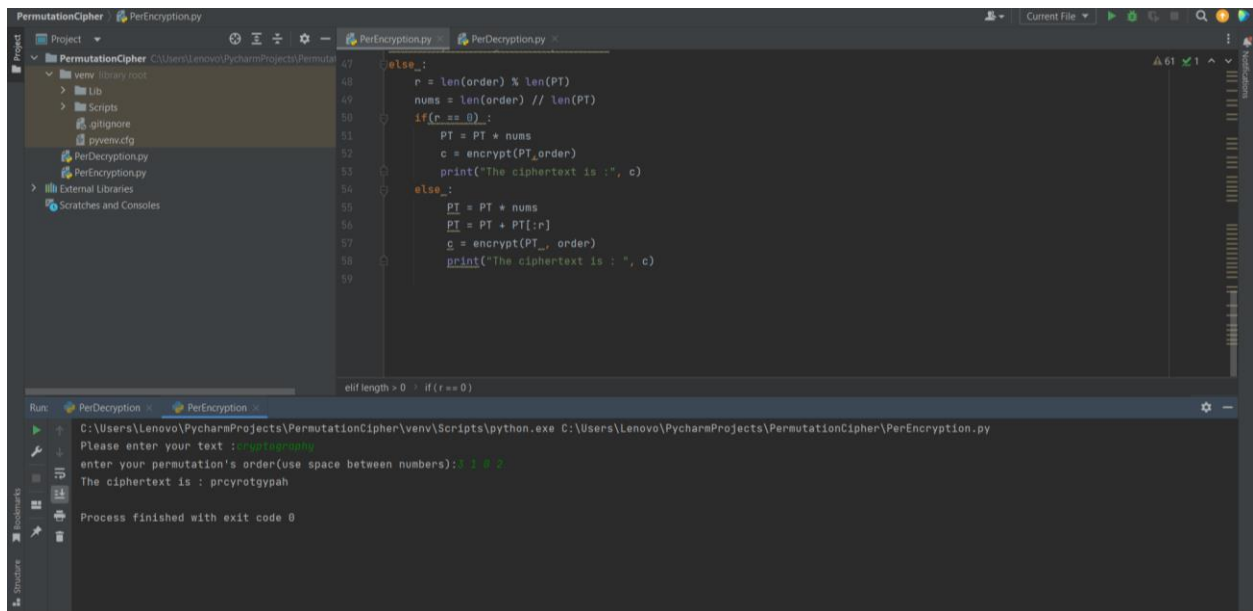
This screenshot shows a terminal window with the same execution output as the PyCharm IDE. It displays the command to run the script, the user input for the ciphertext and permutation key, and the resulting plaintext.

```
PerDecryption x
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerDecryption.py
Please enter your text :ytaprcphygor
enter your permutation's order (use space between numbers) :2 4 8 9 1 0 3 10 11 6 5 7
The plaintext is : cryptography
Process finished with exit code 0
```

Encryption(unequal key plaintext length) :

Plaintext : cryptography

Key : 3 1 0 2

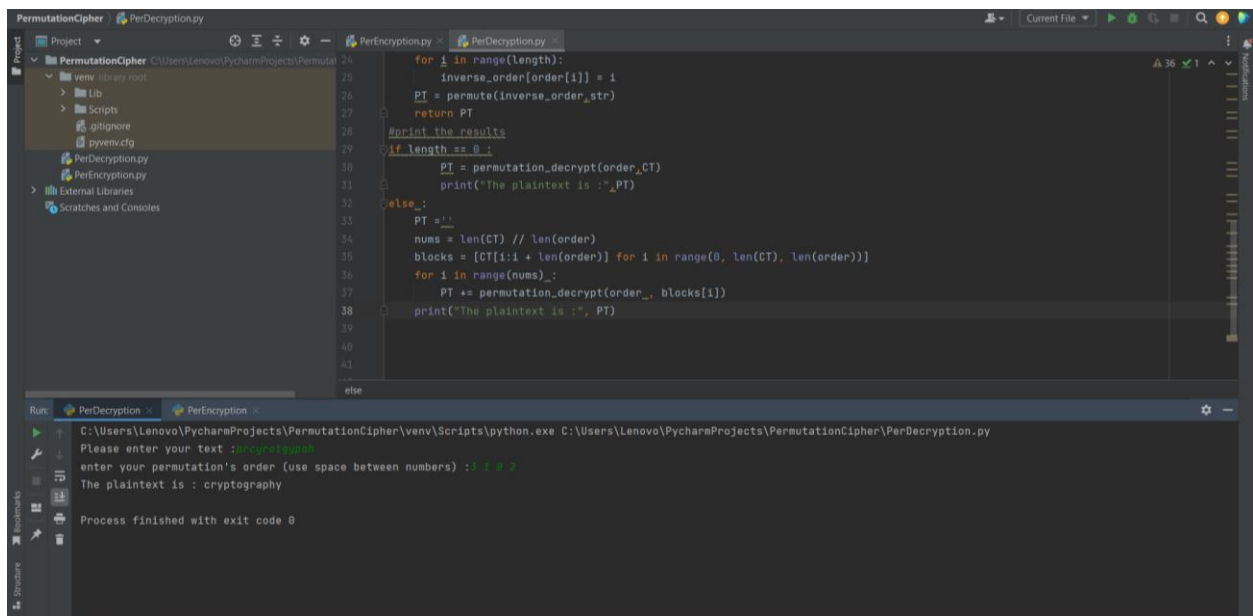


```
PerDecryption x PerEncryption x
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerEncryption.py
Please enter your text : cryptograph
enter your permutation's order(use space between numbers): 3 1 0 2
The ciphertext is : prcynrotgypah
```

Decryption :

Ciphertetxt : prcryrotgypah

Key : 3 1 0 2



```
24     for i in range(length):
25         inverse_order[order[i]] = i
26     PT = permute(inverse_order_str)
27     return PT
28     #print the results
29     if length == 0 :
30         PT = permutation_decrypt(order,CT)
31         print("The plaintext is :",PT)
32     else :
33         PT = ''
34         nums = len(CT) // len(order)
35         blocks = [CT[i:i + len(order)] for i in range(0, len(CT), len(order))]
36         for i in range(nums):
37             PT += permutation_decrypt(order_, blocks[i])
38     print("The plaintext is :", PT)
39
40
41
42 else
```

Run: PerDecryption x PerEncryption x

C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerDecryption.py

Please enter your text :prcryrotgypah

enter your permutation's order (use space between numbers) :3 1 0 2

The plaintext is : cryptography

Process finished with exit code 0

```
PerDecryption x PerEncryption x
C:\Users\Lenovo\PycharmProjects\PermutationCipher\venv\Scripts\python.exe C:\Users\Lenovo\PycharmProjects\PermutationCipher\PerDecryption.py
Please enter your text :prcryrotgypah
enter your permutation's order (use space between numbers) :3 1 0 2
The plaintext is : cryptography
```