# PRACTICAL 8

**AIM**: Implement Diffi-Hellmen Key exchange Method.

**Code**:

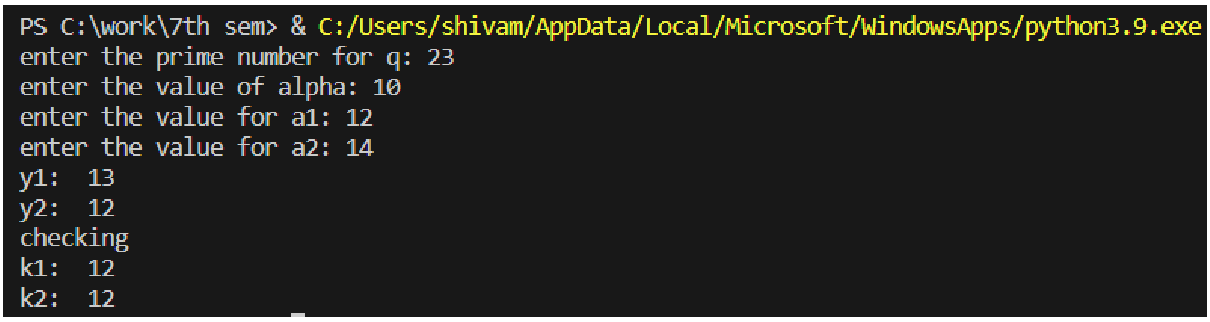
```
q = int(input("enter the prime number for q: "))
alpha = int(input("enter the value of alpha: "))

a1 = int(input("enter the value for a1: "))
a2 = int(input("enter the value for a2: "))

y1 = alpha ** a1 % q
y2 = alpha ** a2 % q

print("y1: ", y1)
print("y2: ", y2)
#checking
k1 = y2 ** a1 % q
k2 = y1 ** a2 % q
print("checking")
print("k1: ", k1)
print("k2: ", k2)
```

output:



```
PS C:\work\7th sem> & C:/Users/shivam/AppData/Local/Microsoft/WindowsApps/python3.9.exe
enter the prime number for q: 23
enter the value of alpha: 10
enter the value for a1: 12
enter the value for a2: 14
y1:  13
y2:  12
checking
k1:  12
k2:  12
```

# PRACTICAL 9

**AIM**: Implement RSA encryption & decryption algorithm.

Code:

```
import math
def gcd(a, h):
    temp = 0
    while(1):
        temp = a % h
        if (temp == 0):
            return h
        a = h
        h = temp

p = int(input("enter the value of p: "))
q = int(input("enter the value of q: "))
n = p*q
e = int(input("enter the value of e: "))
phi = (p-1)*(q-1)

while (e < phi):

    if(gcd(e, phi) == 1):
        break
    else:
        e = e+1

k = int(input("enter the value of k: "))
d = (1 + (k*phi))/e
```

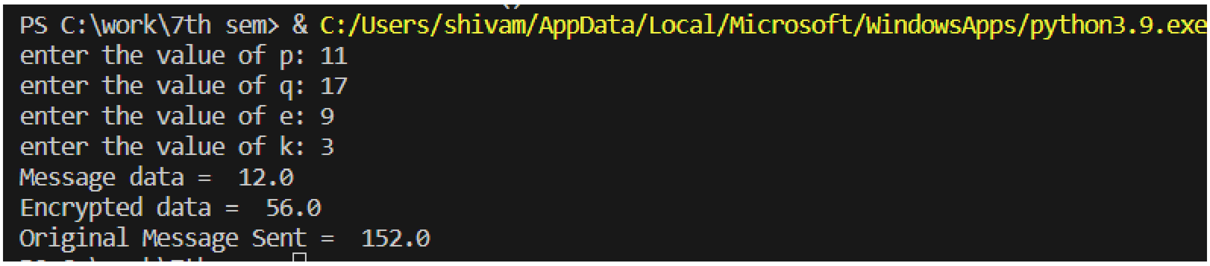
```
msg = 12.0

print("Message data = ", msg)

c = pow(msg, e)
c = math.fmod(c, n)
print("Encrypted data = ", c)

m = pow(c, d)
m = math.fmod(m, n)
print("Original Message Sent = ", m)
```

output:



```
PS C:\work\7th sem> & C:/Users/shivam/AppData/Local/Microsoft/WindowsApps/python3.9.exe
enter the value of p: 11
enter the value of q: 17
enter the value of e: 9
enter the value of k: 3
Message data =  12.0
Encrypted data =  56.0
Original Message Sent =  152.0
```