```
#caesar

def caesar(x, key):
  out = []
  for i in x:
    out.append(chr(ord(i)+key))
  return "".join(out)

print(caesar("anuvind", 2))
```

```
cpwxkpf
```

```
def caesdecrypt(x,key):
  out = []
  for i in x:
    out.append(chr(ord(i)-key))
  return "".join(out)

print(caesar("Anuvinz", 2))
```

```
Cpwxkp|
```

```
key = {"H": "X", "E": "U", "L": "B", "O": "E", "W": "M", "R": "H", "D": "T"}
def mono(x, key):
  out = []
  for i in x:
    out.append(key[i])
  return "".join(out)

mono("HELLOWORLD", key)
```

```
'XUBBEMEHBT'
```

```
def monod(x,key):
  k = {v:k for k,v in key.items()}
  return "".join([k[i] for i in x])

monod("XUBBEMEHBT", key)
```

```
'HELLOWORLD'
```

```
def RSA(p,q,e,PT):
  n = p*q
  print(f"n : {n}")

  out = []
  for i in PT:
    out.append(chr(pow(ord(i),e)%n))
  return "".join(out)

RSA(13,17,5, "AMRITA")
```

```
n : 221
'¶\x19rcC¶'
```

```
def Drsa(p,q,e,PT):
  phi = (p-1)*(q-1)

  n = p*q
  i = 0

  while True:
    c = (i*phi + 1)/e
    if c.is_integer():
      c = int(c)
      break
    i+=1

  out = []

  print(c)
  for i in PT:
    out.append(pow(ord(i),c,n))
  print(out)


Drsa(13,17,5, "AMRITA")
```

```
77
[39, 25, 192, 190, 67, 39]
```

```
def DH(p,alp,a,b):
  p_a = pow(alp,a,p)
  p_b = pow(alp,b,p)

  s_a = pow(p_b, a,p)
  s_b = pow(p_a, b, p)

  print(s_a, s_b)

DH(69,69,69,69)
```

```
0 0
```

```
import string
```

```
asbbcadhbbb
```

```
def play_key(key):
  x = list(string.ascii_lowercase)
  x.remove("j")
  k = list(key)
  for i in x:
    if i not in k:
      k.append(i)
  key = [[0 for i in range(5)] for i in range(5)]
  ind = 0
  for i in range(5):
    for j in range(5):
      key[i][j] = k[ind]
      ind+=1
  return key
```

```
def pair_gen(pt):
  pt = pt.replace(" ","").lower()
  pairs,i = [],0
  while i<len(pt):
    a = pt[i]
    if i+1 == len(pt):
      b = "x"
      i+=1
    elif pt[i] == pt[i+1]:
      b = "x"
      i+=1
    else:
      b = pt[i+1]
      i+=2
    pairs.append([a, b])

  return pairs
```

```
key = play_key("security")
key
```

```
[['s', 'e', 'c', 'u', 'r'],
 ['i', 't', 'y', 'a', 'b'],
 ['d', 'f', 'g', 'h', 'k'],
 ['l', 'm', 'n', 'o', 'p'],
 ['q', 'v', 'w', 'x', 'z']]
```

```
pair = pair_gen("MEET ME AT THE PARK")
pair
```

```
[['m', 'e'],
 ['e', 't'],
 ['m', 'e'],
 ['a', 't'],
 ['t', 'h'],
 ['e', 'p'],
 ['a', 'r'],
 ['k', 'x']]
```

```
def find(key,v):
  for i in range(5):
    for j in range(5):
      if key[i][j] == v:
        return i,j


def play(key,text):
  k = play_key(key)
  pair = pair_gen(text)

  out = ""

  for a,b in pair:
    r1,c1 = find(k,a)
    r2,c2 = find(k,b)

    if r1==r2:
      out+= k[r1][(c1+1)%5]
      out+= k[r2][(c2+1)%5]
    elif c1==c2:
      out+=k[(r1+1)%5][c1]
      out+=k[(r2+1)%5][c2]
    else:
      out+=k[r1][c2]
      out+=k[r2][c1]
  return out

play("security", "meet me at the park")
```

```
'vttfvtbyafrmbuhz'
```