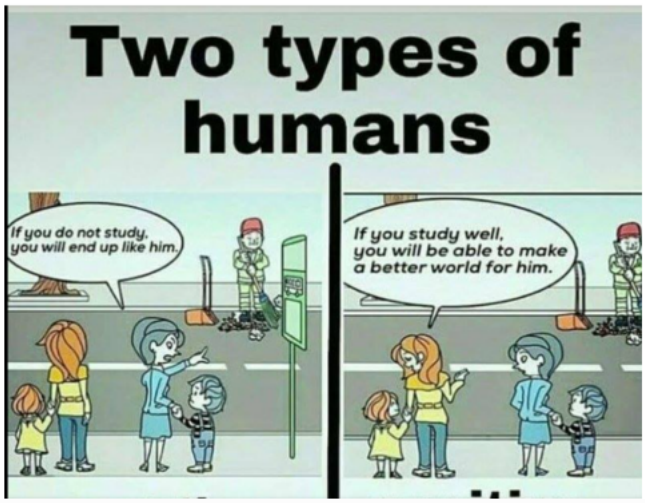
```
import cv2
import numpy as np
import os
import matplotlib.pyplot as plt
import string
```

```
d= {chr(i):i for i in range(255)}
c= {i:chr(i) for i in range(255)}
```

```
#Load the image(change path to your image)
image_path=r"/content/2021-11-12.png"
```

```
x = cv2.imread(image_path)
x_rgb = cv2.cvtColor(x,cv2.COLOR_BGR2RGB)
plt.imshow(x_rgb)
plt.axis('off')
plt.show()
```




```
#Display image shape
print("Image shape(Height, Width, Channels):",x.shape)
```

```
Image shape(Height, Width, Channels): (717, 926, 3)
```

```
key="216416624" #Example key
text = "seetha" #Message to hide
```

```
print("Key:",key)
print( "Text:",text)
```

```
Key: 216416624
Text: seetha
```

```
#show Ascii values of text and key
text_ascii=[d[ch]for ch in text] #list of ascii values of text characters
key_ascii=[d[ch] for ch in key] #list of ascii value of key
print(text_ascii)
print(key_ascii)
```

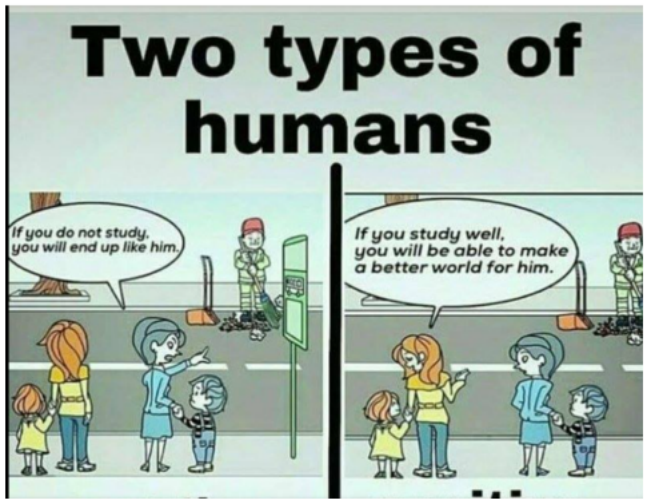
```
[115, 101, 101, 116, 104, 97]
[50, 49, 54, 52, 49, 54, 54, 50, 52]
```

```
#encrypt using pixel modelfication
x_enc=x.copy()
n=0 #number of rows
m=0 #number of coloumns
z=0 #color panel
kl=0
l=len(text)

# Encrypt and modify pixel values
for i in range(l):
  orig_val=x_enc[n,m,z]
```

```
  new_val=d[text[i]]^d[key[kl]]
  x_enc[n,m,z]=new_val
  print(f"Embedding '{text[i]}' (ASCII {d[text[i]]}) XOR '{key[1]} XOR '{key[kl]}' (ASCII {d[key[kl]]}) ={new_val} at pixel({n},{m},{z})
  n=n+1
  m=m+1
  m=(m+1)%3
  z=(z+1)%3
  kl=(kl+1)%len(key)
```

```
Embedding 's' (ASCII 115) XOR '1 XOR '2' (ASCII 50) =65 at pixel(0,0,0) [original=255]
Embedding 'e' (ASCII 101) XOR '1 XOR '1' (ASCII 49) =84 at pixel(1,2,1) [original=254]
Embedding 'e' (ASCII 101) XOR '1 XOR '6' (ASCII 54) =83 at pixel(2,1,2) [original=4]
Embedding 't' (ASCII 116) XOR '1 XOR '4' (ASCII 52) =64 at pixel(3,0,0) [original=0]
Embedding 'h' (ASCII 104) XOR '1 XOR '1' (ASCII 49) =89 at pixel(4,2,1) [original=0]
Embedding 'a' (ASCII 97) XOR '1 XOR '6' (ASCII 54) =87 at pixel(5,1,2) [original=0]
```

```
#save encrypted image
cv2.imwrite("encrypted.jpg",x_enc)

#show encrypted image
plt.imshow(cv2.cvtColor(x,cv2.COLOR_BGR2RGB))
plt.axis("off")
plt.show()
```




```
#DEcrypt
n,m,z =0,0,0
kl=0
decrypt= ""

for i in range(l):
  val=x_enc[n,m,z]
  orig_char=c[val ^ d[key[kl]]] #new encrypted XOR ascii(key)
  decrypt += orig_char
  print(f"Decrypting pi xel ({n},{m},{z}): {val} XOR {d[key[kl]]}={val^d[key[kl]]}->'{orig_char}'")
  n+=1
  m+=1
  m=(m+1)%3
  z=(z+1)%3
  kl=(kl+1)%len(key)
  print("Decrypted text:", decrypt)
```

```
Decrypting pi xel (0,0,0): 65 XOR 50=115->'s'
Decrypted text: s
Decrypting pi xel (1,2,1): 84 XOR 49=101->'e'
Decrypted text: se
Decrypting pi xel (2,1,2): 83 XOR 54=101->'e'
Decrypted text: see
Decrypting pi xel (3,0,0): 64 XOR 52=116->'t'
Decrypted text: seet
Decrypting pi xel (4,2,1): 89 XOR 49=104->'h'
Decrypted text: seeth
Decrypting pi xel (5,1,2): 87 XOR 54=97->'a'
Decrypted text: seetha
```