Experiment – 8

Date : 8/10/2025

IMAGE STEGANOGRAPHY

Aim:

To hide a secret message within a cover-media in such a way that others cannot discern the presence of the hidden message.

Algorithm:

1. Step 1: Start
2. Step 2: Input: Cover_Image, Secret_Message, Secret_Key;
3. Step 3: Transfer Secret_Message into Text_File;
4. Step 4: Zip Text_File;
5. Step 5: Convert Zip_Text_File to Binary_Codes;
6. Step 6: Convert Secret_Key into Binary_Codes;
7. Step 7: Set Bits Per Unit to Zero;
8. Step 8: Encode Message to Binary_Codes;
9. Step 9: Add by 2 unit for bits Per Unit;
10. Step 10: Output: Stego_Image;
11. Step 11: End

Code:

```
import cv2
import string
import os

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

x = cv2.imread(r"C:\Users\TCS\Desktop\img.jpg")
i = x.shape[0]
j = x.shape[1]
print(i, j)

key = input("Enter key to edit(Security Key): ")
text = input("Enter text to hide: ")

kl = 0
```

```
tln = len(text)
z = 0
n = 0
m = 0
l = len(text)

for i in range(l):
    x[n, m, z] = d[text[i]] ^ d[key[kl]]
    n = n + 1
    m = m + 1
    m = (m + 1) % 3
    kl = (kl + 1) % len(key)

cv2.imwrite("encrypted_img.jpg", x)
os.startfile("encrypted_img.jpg")
print("Data Hiding in Image completed successfully.")

kl = 0
tln = len(text)
z = 0
n = 0
m = 0

ch = int(input("\nEnter 1 to extract data from Image: "))
if ch == 1:
    key1 = input("\n\nRe-enter key to extract text: ")
    decrypt = ""

    if key == key1:
        for i in range(l):
            decrypt += c[x[n, m, z] ^ d[key[kl]]]
            n = n + 1
            m = m + 1
            m = (m + 1) % 3
            kl = (kl + 1) % len(key)
        print("Encrypted text was: ", decrypt)
    else:
        print("Key doesn't match.")
else:
    print("Thank you. EXITING.")
```

Output:

Image size: 321 x 409

Enter key to edit (Security Key): k

Enter text to hide: hello

✅ Data hiding in image completed successfully.

Enter 1 to extract data from Image: 1

Re-enter key to extract text: k

Decrypted text was: hello

(Encrypted image will be generated as 'encrypted_img.jpg'. When the correct key is re-entered, the hidden text will be successfully extracted.)

Result:

Thus, the process of hiding and retrieving secret data within an image using Image Steganography was implemented successfully.