STEGANOGRAPHY FOR DIFFERENT PATTERN

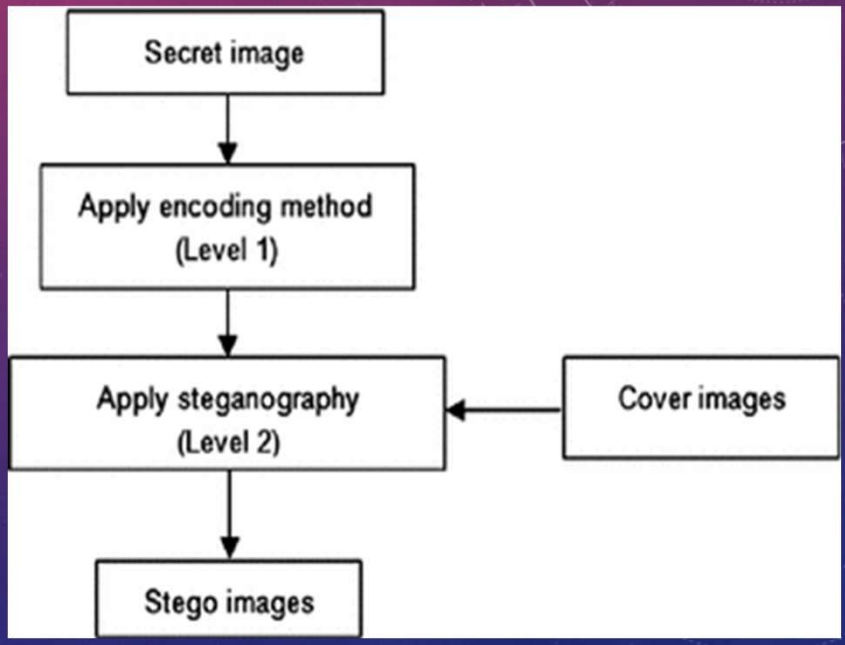
STEGANOGRAPHY - *DEFINITION*

Steganography is the method of hiding any secret data/information in any image or audio or video.

Main motive : To hide the intended information within any digital image that doesn't appear to be secret just by looking at.

ENCODING DATA

- Images are composed of digital data(pixels) and every pixel contains 3 values: [Red, Green, Blue]
- Every byte of data is converted to its 8-bit binary code using ASCII values.
- Pixels are read from left to right in a group of 3 containing a total of 9 values.
- The first 8-values are used to store the binary data.(The value is made odd, if 1 occurs and even, if 0 occurs.)



HOW TO ENCODE A MESSAGE :

Suppose the message to be hidden is: “Hello”

- ➔ Here, the first letter “**H**” is converted to its corresponding ASCII value - **72** (binary equivalent of 72: **01001000**)
- ➔ The first 3 pixels(9 values in groups of 3) are chosen to encode the letter “H” by changing the pixel to odd for 1 and even for 0 and so on.
- ➔ The 9th bit of the pixel value is made even if data is to be encoded further, and made odd if there is no more data left.

ENCODING LETTER “H” INTO PIXEL DATA (01001000)

```
[(27,64,164),(248,244,194),(174,246,250),
(149,95,232),(188,156,169),(71,167,127),
(132,173,97),(113,69,206),(255,29,213),
(53,153,220),(246,225,229),(142,82,175)]
```

```
[(26,63,164),(248,243,194),(174,246,250),
(149,95,232),(188,156,169),(71,167,127),
(132,173,97),(113,69,206),(255,29,213),
(53,153,220),(246,225,229),(142,82,175)]
```

DECODING DATA

- To decode, **3 pixels are read at a time**, till the **last value is odd**, which means the message is over.
- Every 3-pixels contain a binary data, which can be extracted by the **same encoding logic**.
- If the value is odd the binary bit is 1 else 0.

IMPLEMENTATION

In this project, the use of Python programming to encode, decode, and check hidden messages, in the form of images, using the PIL(Python Imaging Library), OpenCV API, and Tkinter GUI(Graphic User Interface) have been implemented.