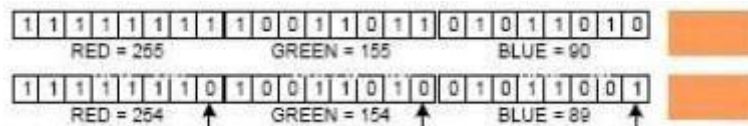


## Lab 5: Staganography

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### Hiding files in images

Steganography is the mechanism of hiding relatively small amounts of data files in other files that are significantly larger. An example of this is the storage of files in a bit-mapped image. Here, each pixel (or picture element) is defined by three bytes representing Red, Green, and Blue colors (the typical RGB scheme). Each byte is made up of eight bits and represents a shade of red, green, or blue. Random changes to the least priority bit (LSB) produces slight changes of shade, typically indistinguishable by the normal eye. The figure below illustrates this:



The arrows show the changed least significant bits and the resulting color is shown on the side. Therefore if a file is 1 kilobyte, the number of bits that may be changed is given by the number of least significant bits available divided by the number of bits per byte (8 bits). Hence, 1 Kb = 1024 Bytes so that  $1024/8 = 128$  Bytes.

### 2.1 Objective

This section aims to demonstrate the typical use of Steganography. In this part you will use a Steganography tool to hide, store, and retrieve data from a jpeg file.

### 2.2. Tools/Equipment

- ✓ Steganography tools (JPHide, JPSeek, JPHSWin)

### 2.3. Pre-Evaluation:

- How much text can be hidden in a picture that is 1.3MB?  
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- What is the maximum size of a picture file that can be used to store 215 bytes of data?  
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- (iii) What other type of file can be used to hide data aside from the tool prescribed?  
Name two:

## **2.4. Procedures**

1. Login to your Windows machine.
2. Install the “Steganography” software under the CFR Lab folder on isNotes.
3. Click on Open Jpeg on the menu bar and open a file in the My Pictures folder in My Documents.
4. Create any text file and call it “hello.txt” with some text in the My Pictures folder.
5. Click on Hide on the menu bar and give a password and re-enter as required. Point to the file “hello.txt” that you intend to hide. Lastly, save the image as “hidden.jpg” in the My Pictures folder.
6. Close all open files. The message text in “hello.txt” has been hidden in the jpeg image file “hidden.jpg”.
7. To retrieve the hidden message, open the file “hidden.jpg” and provide the password as necessary.
8. Click the Seek option on the menu bar.
9. Save the file as hidden “retrieved.txt” into the My Pictures folder; replace if necessary.
10. Is the message the same in the “hello.txt” and “retrieved.txt”? Yes/ No  
Explain why or why not.
11. What are the possible beneficial uses of Steganography?

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12. What are the possible harmful uses of Steganography?

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