

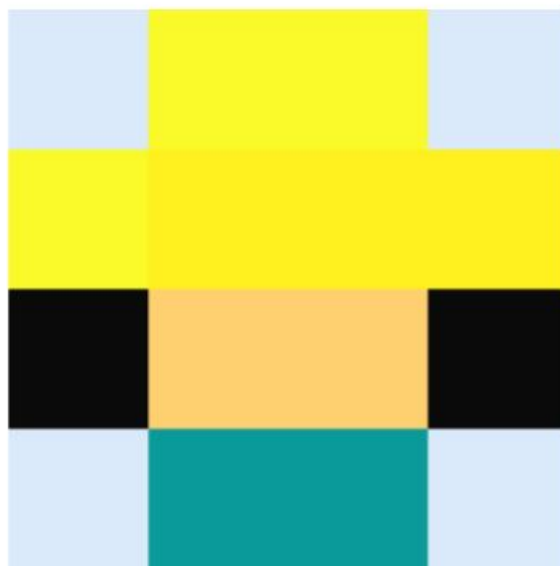
Steganography

Hey reader! Hello 😊

My name is Naazleen.

I will take First Image as example and explain

Image#1:



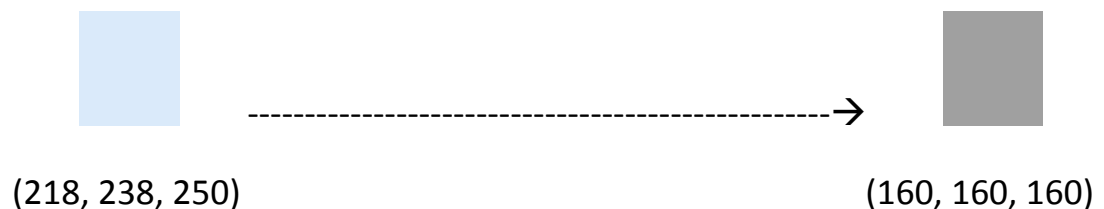
218	250	250	218
234	250	250	234
250	42	42	250
250	255	255	255
250	240	240	240
42	32	32	32
10	255	255	10
10	208	208	10
10	112	112	10
218	10	10	218
234	154	154	234
250	154	154	250

ROUND – 1:

Using Binary conversion:

Pixel 1:

Colours	Decimal	Binary	Decoded Binary	Decoded Decimal
R	218	1101 1010	1010 0000	160
G	234	1110 1010	1010 0000	160
B	250	1111 1010	1010 0000	160



Explanation:

- First, we should convert the R, G, B values to binary
- By performing division by 2, and storing the remainder and then reverse the remainders (bottom to top)

Division	Remainder
$218 \div 2 = 109$	0 ^
$109 \div 2 = 54$	1
$54 \div 2 = 27$	0
$27 \div 2 = 13$	1
$13 \div 2 = 6$	1
$6 \div 2 = 3$	0
$3 \div 2 = 1$	1
$1 \div 2 = 0$	1

So, we get 1101 1010

- Then we take low precedence values, i. e, 1010 ad concatenate 0000

- We get the binary value 1010 0000
- Come on, Now let's convert it again to decimal

128	64	32	16	8	4	2	1
1	0	1	0	0	0	0	0

Add all the one's with place holder values, we get

$$218 + 32 = 160$$

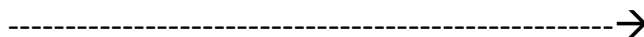
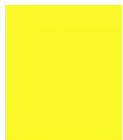
- Similarly, if we do for G, B we get 160 and 160
- So, decoded pixel value is R – 160, G – 160, B – 160

ROUND – 3:

Using Hexadecimal conversion:

Pixel 2:

Colours	Decimal	Hexadecimal	Decoded Hexadecimal	Decoded Decimal
R	250	FA	A0	160
G	250	FA	A0	160
B	42	2A	A0	160



(250, 250, 42)

(160, 160, 160)

Explanation:

- First, we should convert the R, G, B values to hexadecimal
- By performing division by power of 16 which less than the value, and storing the quotient
- Then subtract power of 16 X quotient and subtract from original value and repeat it until we get 0.

Divide	Subtract	Quotient
$250 \div 16 = 15$	$250 - 16 \times 15 = 10$	15 -> F
$10 \div 1 = 10$	$10 - 1 \times 10 = 0$	10 -> A

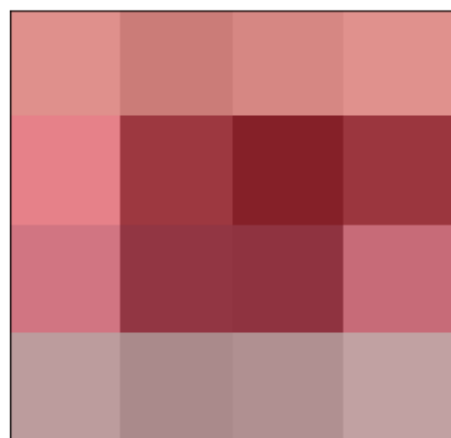
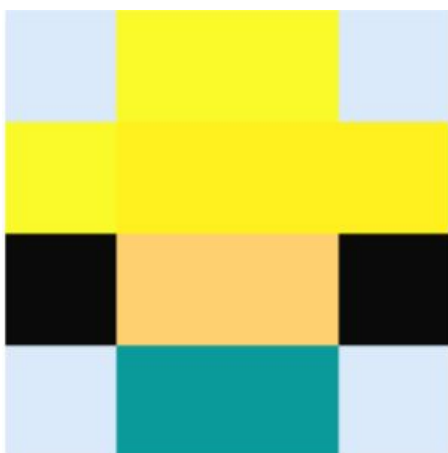
So, take from top to bottom, we get FA

- Take the least significant digit is A, take A and concatenate with 0 we get A0
- Value of A0 is

16	1
A -> 10	0

- $10 \times 16 + 1 \times 0 = 160$
- Similarly, If we convert G, B we get 160, 160.

If we continue this process and repeat for every pixel, we get decoded image



ORIGINAL

HIDDEN

- Woohoo! We decoded the image, the letter is G

ROUND – 3:

- As we already know the hidden RGB values of the colour codes in ROUND 1 and 2, we don't need to do further binary conversions for the same RGB values Binary values are obtained by finding the remainders of the number by division of 2.
- If we continue and repeat this process to each and every image then we get

What is the secret message?



The answer to this would be



decoded1



decoded2



decoded3



decoded4



decoded5



decoded6



decoded7



decoded8



decoded9



decoded10



decoded11

GRACEHOPPER! Shh ... SECRET