Quiz 4 - statistics

of participants: 84 / 100
average: 7.01 / 10

32 students ≈ 40%

Assignment Project Exam Help

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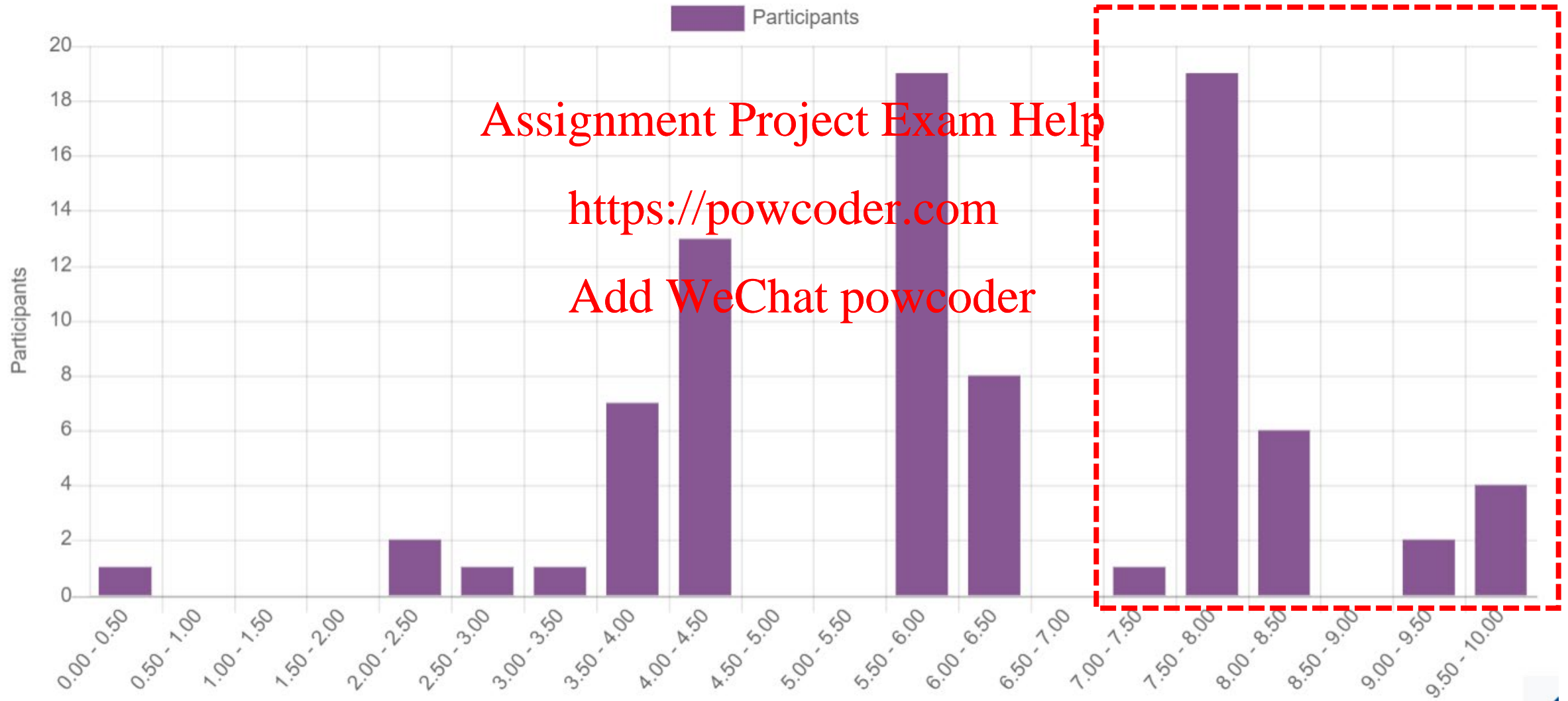
In class, we have discussed **plaintext steganography based on the use of selected characters in the cover media**. Recall, this type of steganography requires the use of a key to facilitate the extraction of secret-message characters from the words of the stego object. In particular, each digit of the key marks the exact position of the secret character in the respective word of the stego object.

Assuming this type of steganography, what is the secret message hidden in the below stego object?
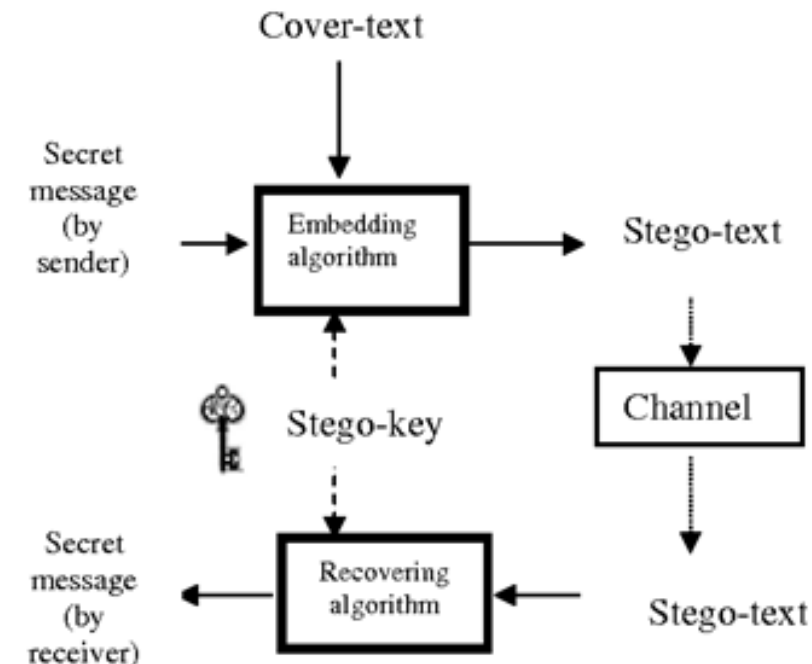
stego object: Be kind and bring joy.
stego key: 1 2 2 5 2

bingo

Cover-text

Secret message (by sender) → Embedding algorithm → Stego-text

Stego-key

Channel

Secret message (by receiver) ← Recovering algorithm ← Stego-text

Consider an RGB image of size 100x100 pixels. What is the size of this image?

1) 30 kbits

2) 80 kbits
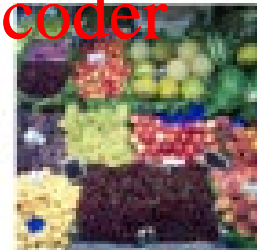
3) 30 kbytes

4) 80 kbytes

# of pixels: 10,000 [pix]

# of bytes: 10,000 [pix] x 3 [byte/pix] =

      = 30,000 [byte]

      = 30 [kbyte]
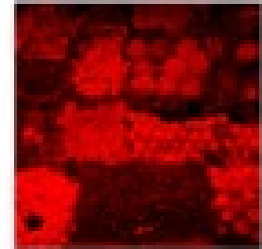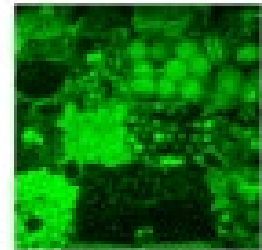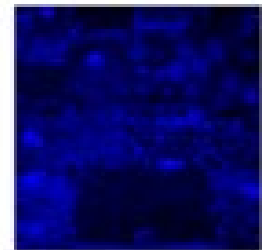
RGB

R   1 byte

G   1 byte

B   1 byte

Consider a grayscale image of size 100x100 pixels. Assume we want to hide the letters of a secret plain-text message in this image by **'taking away' (i.e., deploying) the last 2 LSB of its every 5th pixel**. The secret-message letters are 8-bit ASCII characters.

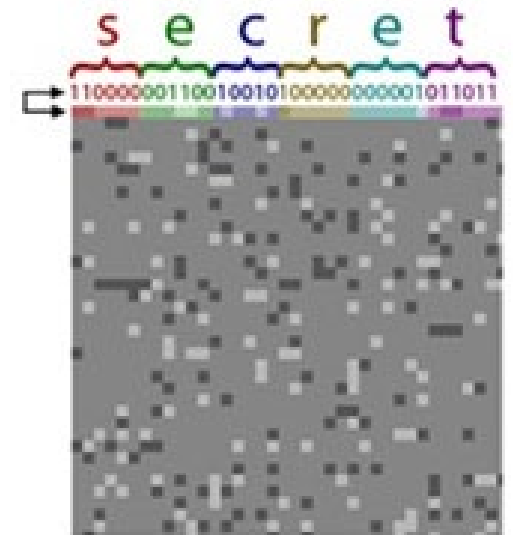How many letters, at most, can we hide in the given image?

1) **500**

2) 1,000

3) 2,000

4) 4,000

Total # of pixels: 10,000 [pix]

# of pixels for hiding secret letters: 10,000 / 5 = 2,000 [pix]

# of pixels to hide one letter: 8 [bit/letter] / 2 [bit/pix] = 4 [pix/letter]

# of letters o hide: 2,000 [pix] / 4 [pix/letter] = 500 [letters]

You are about to deploy a stego-tool called StegoWizard in order to hide a grayscale secret-image inside a grayscale cover-image. The two images are of the same size.

As explained in class, StegoWizard operates by taking N most-significant-bits (MSBs) of every secret-image pixel and hiding/placing them over N least-significant-bits (LSBs) of the respective cover-image pixel.

StegoWizard allows you to pick/specify the value of N.

If your objective is to create a stego image that is <u>minimally suspicious to the adversary</u>, while still serving its purpose of hiding the secret-image inside the cover-image, which of the following values would you choose for N:

1) 0   No hiding takes place.

2) 2

3) 7   Cover-image becomes very 'blurred' / low quality / suspicious.

4) 8   Cover-image becomes secret-image. Secret not hidden any longer.

Stego Image   Recovered Image

Consider the image shown below. If the image is to be used as a steganographic 'cover image', which areas of this image (and its respective pixels) are better suited for hiding of 'secret bits'.

1) upper half

2) lower half

3) both halves are equally suited