Module 1

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(1) Which one of the following color systems is subtractive? (10 pts)

1. HSV
2. CMYK
3. RGB
4. None of the above

Answer: 2

(2) OpenCv stores RGB color images in an array with how many dimensions? (10 pts)

1. Three dimensional
2. One dimensional
3. Two dimensional
4. None of the above

Three Dimensional

Answer: 2

(3) Image data is imported by OpenCv in what data type? (10 pts)

1. Signed 16 bit integer
2. 64 bit floating point number
3. Unsigned 8 bit integer
4. None of the above

Answer: 3.

(4) The following pixel grid is stored in a 3D array, what is the array position of the number 60? (10 pts)

	0	1	2
0	55,100,200	74,124,100	89;210,10
1	124,74,191	174,43,34	201,142,60
2	191,50,10	215,111,84	245,139,81

1. [2][2][2]
2. [1][2][3]
3. [1][2][2]
4. [2][2][1]
5. None of the above

Answer: 3

(5) HSV encodes color information by separating out the brightness (value or intensity) value from? (10 pts)

1. The two values for encoding chromaticity (color).
2. The Red, Green, and Blue color channels.
3. The additive color system.
4. None of the above

Answer: 1

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(6) A black and white image histogram is a plot of? (10 pts)

1. The angle of the Hue value.
2. The array position of the pixel values.
3. The brightness (intensity) distribution of the pixel data along it's value range.
4. The largest saturation value in the image.

Number 3: Brightness Intensity

Answer: 2

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(7)) Which is not a Raster file type and does not store pixel data in an array? (10 pts)

1. TIFF
2. JPEG
3. PostScript (PDF)
4. PNG

Answer: 3

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(8) **True or False:** A Python list does support mathematical operations, so the following code will output [2,4,6]. (10 pts)

```
list = [1,2,3]
list = list * 2
print(list)
```

False, Numpy arrays support math operations. Python list will just repeat the array

Answer: True. Lists can use math, but not Arrays!

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(9) Write the Pseudo Code for the image pipeline we built in class for skin tracking. (20 pts)

You can write the comments for each step or a plain english explanation. Just be as clear as possible.

Your first line should be: **Import image.**
Your last line should be: **Draw masked image.**

1. Import Image
2. Analyze image (convert to color)
3. plot out the top left and bottom right points on the image to get a square around the face
4. Use those points to make a mask
5. Make a histogram using the mask
6. Use the histogram to get skin tone ranges; use to make new mask
7. Apply mask and draw masked image!