Lab 2 Extra

CST 205

Background

Hexadecimal values are often used to represent colors in HTML, CSS, etc. Hexadecimal is a **base 16** number system, where 0 - 9 are the same as in our familiar base 10 (decimal) system and with

`A` – `F` representing `10` – 15 from our **base 10** system. (Note: I will add subscripts 10 and 16 to clarify between decimal and hexadecimal where there might be ambiguity.)

In base 10, the number 74 has the decimal value:
$7 * 10^1 + 4 * 10^0 = 70 + 4 = 74_{10}$
In base 16, the number 74 has the decimal value:
$7 * 16^1 + 4 * 16^0 = 112 + 4 = 120_{10}$
As another example, in base 16, the number `FF` has the decimal value:
$15 * 16^1 + 15 * 16^0 = 240 + 15 = 255_{10}$

(Hmmm, where have we seen the number 255 before?)

When colors are represented in hexadecimal, they begin with an octothorpe, "#" and then use two hexadecimal numbers per color channel in the order R, G, B. So, for example, for the color *vermilion*, the hexadecimal representation is calculated as follows:

Red channel: $227_{10} = 14_{10} * 16^1 + 3 * 16^0 = \mathrm{E3}_{16}$
Note: $14_{10} = \mathrm{E}_{16}$
Green channel: $66_{10} = 4 * 16^1 + 2 * 16^0 = 42_{16}$
Blue channel: $52_{10} = 3 * 16^1 + 4 * 16^0 = 34_{16}$
Combining these, we get `#E34234`

Extra Task 1

Write Python code that takes a hexadecimal color value as a string and converts it to a Python RGB tuple. (Once you have done this manually, feel free to explore some of

Python's built-in conversion tools.)

A few hexadecimal colors (as strings) to try out:

- `"#7FFF00"`
- `"#9932CC"`
- `"#FF86C2"`

Extra Task 2

Write Python code that takes an RGB tuple and converts it to a hexidecimal color value. (Again, please first do this manually.)

A few RGB colors to try out:

- (250, 250, 70)
- (245, 50, 245)
- (100, 231, 231)

Extra Task 3

Combine Tasks 1 and 2 from the original Lab 2.

A few colors to try out:

- (70, 240, 150)
- (167, 167, 42)
- (223, 67, 223)
- (70, 67, 243)

Deliverable

- Briefly summarize how far you got on the lab and any challenges you may have faced.
  - Use complete sentences for your summary.
  - If you did not complete the lab, please provide a longer, more detailed summary.
- For each task you completed, provide the colors you tried and your results.
- Use iLearn to submit your work.

If you finish early, please help others in your group.