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ASTRO 101 - Creative Work Statement

I'm majoring in Computing Science, currently in my 2nd Year. To be completely honest, I've never been the best at arts, or anything creative. So when this project came up, I was really confused but had something at the back of my mind.

I came up with the idea to make a website that helps someone like me, who isn't very good at imagining something, visualize the sizes and scale of interstellar objects.

The main features (or creative choices) of my website are the ease of using it and how it explains the sizes, colors, the black holes, layers, and the background I chose for the explanation.

- **Ease of Using -** To use the website, the user just has to scroll, my code takes care of the rest of it. As the user scrolls down, they can see the sizes of objects changing, relative to the next object coming up. We start with the Earth and the Sun, and as we scroll down, the size of the Sun, becomes smaller, relative to the Stellar-mass black hole, which is the next object, and the object to which the Sun is being compared.

- **Sizes -** All of the mass, and the sizes are mentioned on the website. All of the elements in the website are roughly the sizes taught to us throughout this course. For example, the Sun on the website is about 100x of the Earth, in the real world, the Sun's radius is about 109 times the radius of the Earth. So although, not exact, the sizes have been scaled down to the best rough estimate for the website to project and let the user understand the content with.

- **Colors -**
    1. Earth
       Color - Blue
       Reason - The choice of blue stems from Earth's distinct appearance when viewed from space.

    2. Sun
       Color - Orange
       Reason - The color orange represents the Sun to human observers. It seemed to be the most fit and best choice for the color of the Sun. This choice aligns with the visual perception and symbolism linked to the Sun's appearance.

    3. Stellar-Mass Black Hole
       Color - The event horizon is colored Red.
       Reason - Red hues symbolize the immense heat generated as matter falls into the black hole, approaching the limits set by general relativity.

    4. Intermediate Mass Black Hole
       Color - The event horizon is colored Cyan
       Reason - Intermediate Mass Black Holes have masses ranging from 100 to 10000 times that of our Sun. Blue and Green hues, like the color Cyan, can represent the transition between stellar mass and supermassive black holes. Blue hues can indicate a high-energy state, and green can symbolize the middle ground between the small and big black holes.

5. Supermassive Black Hole
   Color - The event horizon is colored Purple.
   Reason - These extremely massive interstellar objects that have masses more than 100000 times of our Sun, In my opinion, the purple color symbolizes their vastness and extreme nature. The darkness of purple also represents the significant influence they have on their surrounding environments, including the distortion of space-time.

- **Objects in our Solar System -** I chose the Earth, and the Sun to represent our Solar System. The Earth represents our home and even though it's a tiny dot in the vastness of space, it still has its place up there because it's the only planet in the solar system that has life. The Sun, on the other hand, is the largest object in our solar system and the only one that can be represented by something larger than 5 pixels on the website when compared to the massive black holes.

- **Black Holes -** I chose the three black holes that were taught to us in the course - stellar mass, intermediate mass, and supermassive black holes. They seem to be the best choice to represent the black holes as we can easily understand their sizes and scale because we focused on them throughout the course.

- **Layers -** If the user clicks on the button titled 'Layers of the Black Hole', they will be taken to a page where a beautiful photograph explains all of the layers of a black hole.

- **Background -** The background is black, with small randomly generated white dots all over that represent the stars in space. It took me extremely long to implement these in the website, but they look beautiful and represent the distances and the vastness of space. The website would have looked extremely bland and plain without these. And every time the user refreshes a page, a new set of randomly generated stars appear.

PROBLEMS THE USER MIGHT FACE WHEN USING THE WEBSITE -

The website is best viewed on a 13-15" laptop with a resolution of at least 1080p (eg. Macbook Air, or Macbook Pro) or a 24" monitor with a resolution of at least 1080p.

Although I've tested the website and its code several times. No tech is ever without bugs. There are so many different kinds of screens, that it's hard to optimize the code for all of them. My website works best for the computers recommended above, you might have a different experience if not using the right computer. However, it should not cause any major problems, aside from a little bit of misalignment.

I will be attaching a video of how the website works on my laptop with the creative work submission just for reference if the website doesn't perform expectedly. Please reach out to me if you have any more questions or doubts, or if you face any problems accessing the website.

Bibliography

1. (n.d.). *What are the parts of a black hole?* Quora.com. https://www.quora.com/What-are-the-parts-of-a-black-hole

2. Morsink, S., & Sivakoff, G. (n.d.). *ASTRO 101 Notes, Knowledge Checks*. University of Alberta. https://eclass.srv.ualberta.ca/course/view.php?id=88382