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REFLECTION PROMPT:

Reflecting back on the last four weeks with your group, what strengths or processes do you think really helped your group in class?

Our group was able to find solutions to our in class problems by defining a clear process to break down the written problems and determine the variables we needed to identify and the formulas that would be applicable to solving the problems. Since the start of the class our group progressed to create a well defined workflow that we could follow to try to break down problems and introduced different ways of getting all members of the group involved in the problem solving process. In order to get different members involved, we allowed members with the least amount of programming experience to drive our programming process on days where we were working to build computer programs. We also let different team members be the primary writers of equations to make sure that there was equal involvement from all members

As we transition into new groups this week, what strategies would you like to take with you from your old group?

The clear and systematic approach to problem-solving was a key strength of our previous group. I intend to introduce and advocate for a structured problem-solving process, beginning with the four-quadrants, to the new group. This involves breaking down complex problems into manageable steps, identifying key variables, and determining the most applicable formulas. This strategy ensures that everyone is on the same page and contributes to a more efficient problem-solving workflow. I will emphasize the importance of diverse involvement during our first meetings. By sharing instances where each team member, regardless of their experience level, played a crucial role in our previous group's success, I aim to create an environment where everyone feels empowered to contribute. I would like to continue the practice of allowing different members to take the lead in different tasks to enhance everyone's involvement in the process.

What dynamics/processes would you want to change or establish with your new group? How do you plan on doing that? Be specific and include supporting examples from class. Write the strategy or method(s) you will try next week.

The first group project really helped our group take our organization to the next level. Depending on the feedback I receive from that, I'd be looking to implement an even more defined process moving forward. We were able to set up a Google Doc prior to starting our solving process with the general outline we'd like to follow, and we could all edit the document simultaneously. We also looked back at previous white boards to see if things we had gone over in the past, such as our assumptions in previous labs, could be useful for us in the current lab. We had a clear outline for our four quadrants, a clear process we wanted to follow, and a way to express our evaluations of our solving process all in one and I think some of these practices could be useful to utilize in my future group.

PASTE IMAGES OF YOUR TUESDAY WHITEBOARDS HERE:

Fact

Element	Bond length	Stiffness
Aluminium	2.3×10^{-10}	4.7×10^{-2}
Uranium	3.5×10^{-10}	3.8×10^{-2}
Vibranium	4.3×10^{-10}	1.2×10^{-2}

- Cable diameter = 2cm
 - 4.9s to hear apple hit bottom
 - 343 m/s - speed of sound

Assumption

- 60kg human weight
- sound not heard instantaneously
- gravity same as on earth
- speed of sound same as on earth
- inner-atomic stiffness is uniform
- inner atomic spring stiffness is constant between bonds

Locking

- Korath's mass
- force on spring
- distance from cliff to platform
- how much the wire stretches

Representation

$\frac{F}{A} = \frac{K_s \cdot \Delta L}{L}$

$F = K_s \Delta L$

$m g = K_s \Delta L$

$\frac{m g}{K} = \Delta L$

$\Delta L = 0.97m$

So rope should be 0.97m long to account for the stretch.

$d = \frac{1}{2} (9.81) (4.64187)^2$

$d = 105.688m \sim 105m$

$\sigma = \frac{F}{A}$

$\sigma_{\text{on rope}} = \frac{60 \text{ kg} \cdot 9.81 \text{ m/s}^2}{\pi (0.02m)^2}$

$\sigma_{\text{on rope}} = 1,873,571.99 \text{ Pa}$

$\epsilon_{\text{on rope}} = \frac{\Delta L}{L_0}$

$E = \frac{\sigma}{\epsilon}$

$K_{s,i} = E \cdot d$

Need to relate stiffness of single atomic springs to interatomic stiffness

assume bonds are square cross-section

$\frac{\text{total len}}{\text{bond len}} = \frac{105}{2.3 \times 10^{-10}} = 4.6 \times 10^{10}$ bonds in one atomic chain