

NAME: _____

**UNIVERSITY OF NEW HAMPSHIRE
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**

ECE401 – Perspectives in Electrical and Computer Engineering

FALL 2020

The following are two questions will exercise your individual thought process. Using your brain alone answer the questions. You are not to use the internet or any other sources. This includes your friends!

- All work must be “word-processed” on standard white 8.5” x 11” paper. Ariel font, 12pt double spaced
- You must include this sheet as your cover sheet with your name clearly typed or printed.
- You may use your own computer or the ECE Cluster located in Kingsbury Hall Room N234 for doing this assignment.
- You must upload this assignment to canvas by the due date for full credit

Questions to Answer

1. A friend of yours somehow manages to fall out of a 56-story building onto a cement street below. To your amazement you have learned that your friend has survived the fall. Offer an explanation as to how this could be true (be specific in your response!)
2. There are four people; let us call them Nancy, Becky, John, and Richard. Now assume that they are standing in a linear line starting from left to right in this order: Richard, Nancy, John, and then Becky. A brick wall is between Richard and Nancy. All of them are facing the brick wall. They cannot see through or around the brick wall and they cannot turn around to see behind them. They are all wearing hats with Richard and John wearing black hats and Nancy and Becky are wearing white hats. No one knows what color hat they have on but they all know that everyone is wearing a hat and that there are two white hats and two black hats.

Now to make things worse each person is standing on a glass block with a copper plate on the top of the block that is attached to one end of a 120volt outlet. Ocean water has started to rise in the room which will eventually get over the glass block and make a connection with the 120volt outlet and ground thus completing the circuit which will electrocute them all. In order to stop the rising water one of them must call out correctly which color hat they are wearing. If they are incorrect nothing in this world will save them. They are not allowed to talk to one another and with the rising water have only minutes to figure it out. Fortunately for them they do avoid execution. Which one of them calls out and how does that person figure out which color hat they are wearing?

1. My friend fell off a second-floor balcony.
2. John calls out that Nancy has a white hat. Becky calls out that John has a black hat. Becky then takes her hat off and puts it over John's hat. This allows Becky to know that her hat is white. Because the group knows that both Nancy and Becky are wearing white hats, the group can assume that Richard has a black hat. The group then escapes to safety.