

Appendix C. Postlab Questions

Postlab Questions (10 points each)

1. Which side of the prosthetic fingerprint needed to be facing the home button?
Answer: The inside of the prosthetic should face the home button because it contains the print.
2. Give at least two reasons why the other side of the print did not work to unlock the iPhone/iPad? (You may want to look back at the background information from the beginning of the lab packet to see what is needed for a capacitive sensor and what we know about fingerprint patterns.)
Answer: The pattern would be reversed from the actual fingerprint pattern and the reverse side doesn't contain the imprint which the capacitive touch needs to measure electricity in the ridges.
3. Why did some trials work while others did not?
Answer: Could be bad print or impartial print.
4. Based on this lab activity, if you could list only two things that are necessary for touch ID to work for any fingerprint with a capacitive sensor, what would those two things be?
Answer: a stored print to check against and an active print to verify.
5. How does this lab make you feel about the security of your mobile device? Would it be harder to crack a passcode or to “fool” it with a prosthetic fingerprint?
Answer: Students reactions may range from indifference to surprise/discomfort that it actually can work.

Read the following article from *Science Live*, and answer the questions below:

<https://www.livescience.com/62393-dead-fingerprint-unlock-phone.html>

6. Do you need to be alive for your fingertips to unlock your phone? _____
Answer: Usually. Most scanners use electricity. Cadavers don't generate electricity.
7. Are *ridges* or *valleys* the part of the pattern responsible for the electric conduction on a scanner?
Answer: Yes, this is the primary way the capacitance touch sensors work—it measures the differences in electrical charge between ridges and valleys.
8. What type of scanner is an older alternative to capacitive scanner?
Answer: Older scanners used optical technology (light).

9. How could that scanner be “fooled”?

Answer: A photograph of the fingerprint would work just as easily as a real fingerprint.

10. Besides a dead body not having an electric current, what else interacts with the ability for a dead person’s fingertip to unlock touch ID on a device?

Answer: As the body decays with no blood flow, the fingertips begin to shrivel up which will further distort the data being read by the scanner.