Logic (chapters 1-3 plus vocab from Ch 4: soundness, completeness, plus the term "decidable"), Semantics, Abstraction (macro to micro), Audience and Need, Basic Stats and Survey Design (H, H0, bias, randomization), Polymorphism, Copyright Law, Basic Software/Hardware components and processes (input, output, processing), accessible and smart tech, Turing tests/ goals and limitations of AI, how Google works (spiders and indexing, syntax of an advanced search), Deep Web searching, and some current events.

Senior Citizens are often taken advantage of, by people who can benefit by getting money from them. As older people, they lack the ability to judge character. You decide to design a tool that could sense when Granny is being preyed upon by overhearing her phone calls, seeing who is calling on her phone (a name and number are listed), and watching for activity on her bank account (a name is listed when she pays with her check or card). This would give Granny a tool to judge when another person is taking advantage of her (since she can no longer do this for herself).

1. This would be a (circle one)   smart tool               assistive tool               digital tool

You know that there is an online database called Predator Fundraisers that either don't have nonprofit status, have very low ratings as nonprofits, or engage in devious tactics in order to get money.

2. Write a strong need statement that is no longer than 15 words.

3. The macro elements here are (there are 5):

4. The micro elements here are:

5. You get input of the words of the phone call as it occurs. It gets stored in memory that is (circle two)

     volatile          involatile               RAM               ROM

6. When overhearing Granny's phone calls, you hear sentences about money or funds. You can sort the relationships or verbs to determine if the call is about fundraising. Fill in each box below to indicate three unique relationships or verbs for each semantic group. Avoid "no" or "not."

| About fundraising | Not about fundraising |
|---|---|
|  |  |

**7.** If "money" or "fund" occurs in a sentence, then m is true.  If a verb or relationship in the same sentence is "about fundraising," then f is true.  If the name/number of the phone caller is in the Predatory Fundraisers list, then p is true.  Let c be true if the example is predatory fundraising.  Fill in the truth table based on this.  Please complete the bottom three examples with what could be said in a sentence.  **Be sure the relationships/verbs in your answers above are not the same as those used here – Mrs. Frazier wants to make sure you can come up with your own.  You can add to your lists in your previous answer if they match.**

| Example | m | f | p | c | m => c | (m $\Lambda$ (f V p))=>c |
|---|---|---|---|---|---|---|
| BadGuyz.org: You gave us money, and we want to give it back. | 1 | 0 | 1 | 0 | | |
| UnitedWay.org: | 1 | 0 | 1 | | | |
| MVHS Athletic Boosters: | 1 | 1 | 1 | | | |
| NeedCash.com: | 1 | 1 | 0 | | | |
| Library: | 0 | 1 | 0 | | | |

8.  Your friend suggests that the formalism to try would be (m $\Lambda$ (f V p)) |- c.
    a)  Tell what this would be translated to (you can leave m, f, p, and c in your sentence); Mrs. F wants to see if you know what $\Lambda$ V  and |- mean.
    b)  Complete the table below for each attribute.  In each box, write true or false.

| | (m $\Lambda$ (f V p))=>c | (m $\Lambda$ (f V p)) |- c |
|---|---|---|
| Satisfiable | | |
| Falsifiable | | |
| Valid | | |

c) Are the two statements in the immediately previous table equivalent? (circle one)  yes    no

9. You design your tool to embrace the concept of polymorphism.  This means (circle all that apply)
    a) Using the already existing caller ID functionality to record who is calling (so you can decide if that is a predatory caller or not)
    b) Using the ability of the phone to record conversations, so you can easily transmit the sound to the computer, which will decide if the words spoken are about fundraising or not.
    c) Responding to all sorts of transactions in the bank account – credit card or check, for instance.
    d) Making your tool work on all types of phone calls – not just from the bad guys.

10. After your design your tool, you decide to test it in real contexts.
    a) You turn on your tool and it detects input and begins doing work, but ultimately just keeps working and working, never settling on a conclusion.   This means it is un_____.

11. You fix your error, then design a study.  You want to collect data for 30 randomly selected Grannys.  Cupertino's Senior Center has 100 Grannys.  How do you randomly select them?

12. You decide that in 10 sentences using money or fund, that it's OK to have a false positive 1 time (that's 10%).  That means that 1 of 10 times, it's OK to think that a caller is being predatory when (s)he isn't being so.  With that in mind, you write hypotheses.  What would be a good null hypothesis and regular hypothesis about the effectiveness of your tool?

13. Some fundraisers call Granny using automation.  A robot calls her and tries to get money from her.  You teach Granny that she can design a Turing Test that the robot may not pass.  This might (circle all that apply) require the robot to do something a normal human could do like…
    a) tell you what some garbled text is(like how CAPTCHA works)
    b) provide an appropriate emotional response
    c)  solve a simple math problem like 1 + 3
    d) tell you the date and time

14. Still, lessons from Burden's Wheel can explain why many businesses, ethical or not, turn to robots to auto-dial customers and leave messages, rather than have real humans have this role.  Explain why, based on patterns seen with Burden's Wheel, the electrical age, and the information age.

15. Explain how having an "unlisted" phone number might benefit Granny. Draw an analogy to how Google uses indexed information and spiders. Explain what would happen if there was a Deep Web analog for phone records.

16. Granny was once an artist. She made the artwork at left, showing it at a state fair. Fred took her artwork and changed it, as shown at right, then posted it on his blog.
    a. Who has a copyright? (circle one or more)    Granny       Fred       Neither
    b. Is Fred in copyright violation of Granny? Explain.