Problem X. Fill in the following code to complete the function (25 points)

The following function takes in a text file containing some number of lines of text. However, hidden within these lines of text is a secret message. The secret message is revealed by reading all the capital letters in the lines. The output file created by this function should contain one sentence, made up of the capital letters per line, followed by a space, in the original text file. The name of the output file should be 'catsRuleX' with the number of capital letters in the message appended to it. See an example of an input file and its corresponding output text file below.

Input file:

```
cats will rUle the world. meow meow meow.
who let the doGgO ouT? woof woof.
who leT tHe snake out? hIss hiSs hiss.
```

Output file:

`catsRuleX8.txt`:

```
U GOT THIS!
```

```
function catsRuleDogsDrool(file)
```

Answer the following questions below:

a. Open the text file specified in the function header (1 point).

```
fh1 = fopen(file);
```

+ 1 for opening a new file to read

b. Iterate through each line of the file and store the any capital letters (these words will create the secret message). Add a space between lines from the input file. Add an exclamation point to the end of the message. Keep a counter of the number of capital letters in the output message. By the end of this step, you should have the secret message that will go in the output file and the number of capital letters in the message. (20 points).

```
line = fgetl(fh);
save = [];
counter = 0;
while ischar(line)
   capsMask = line >= 'A' && line <= 'Z';
      caps = line(capsMask);
      counter = counter + length(caps);
      save = [save, caps, ' '];
   line = fgetl(fh);
 end
save(end) = '!'
```

+ 6 for correct while loop through the file
+ 4 for getting every line in the file
+ 2 for while loop condition
+ 2 for initializing a counter and empty string
+ 5 for masking out the capital letters
+ 2 for keeping the capital letters in a string
+ 2 for updating the counter with the length of the capital letters
+ 2 for adding a space between lines of the file
+ 1 for adding an exclamation point at the end

c. Write the message to a new file titled `'catsRuleX<#_ capletters >.txt'`, with `<#_of_capletters>` being the number of capital letters in the message (3 points).

```
newfn = ['catsRuleX' counter '.txt'];
fh2 = fopen(newfn, 'w');
fprintf(fh2,save);
```

+ 1 for creating correct new file name
+ 1 for opening a new file with writing privileges
+ 1 for printing the string to the output file

d. Close all of the files (1 point).

```
fclose(fh1);
fclose(fh2);
```

+ 1 for closing both files (NO PARTIAL CREDIT)