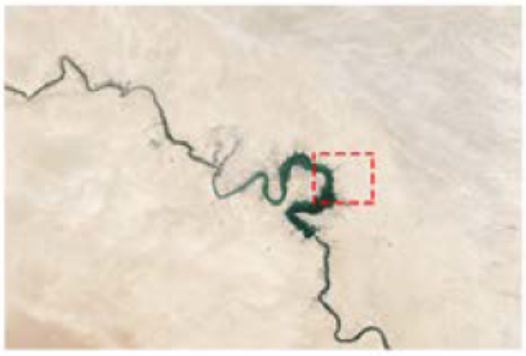
Question 1:

You work for a surveying company and your manager wishes to find the length of a river (see picture).

As you examine the river, you notice that a particular oddity manifests. From a very general view, the river looks like a curve. However, as you zoom in and take a closer and closer look, you see that the river has ridges and nooks. As you magnify further you see that the ridges and nooks have smaller ridges and nooks of their own (see picture).



A competing surveying company has already estimated the length by using the river's center-line, but your manager wants you to find a more accurate method to attract clients. Describe an idea or method that would find the closest approximation of the length of the river.

Question 2:

You work for a shipping company and your manager receives orders from various customers (some existing, some new) every day. Your manager wishes to establish a process to automate tracking the orders.

The data arrives exactly in this format:

day_i = ["Bob: 1200", "Alice: 2500", "Celia: 110", etc...]

Write a script that, when given the daily data, will keep track of the total order amount purchased by each customer. Your output should ideally look like:

Customer	Total Purchase
Alice	100
Bob	120
Celia	110

Question 3:

You work for a psychic. Unfortunately, the psychic is not very good at reading people's minds. The psychic has hired you to write a script to find a number that her client is thinking of. The script should take an arbitrary range of numbers provided by the client. Your script should use the minimum number of guesses to find the number that the client is thinking of. The correct number will always be within the range of numbers provided by the client.

The only input the user can give is the range of numbers and they can answer "yes" or "no" to any question asked. Write the script to perform this task.