



Code test - IoT enthusiast

January 2021

Task 1 - Coding

A. Put this in a file named places.csv:

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Name,Latitude,Longitude
Alta,69.96887,23.27165
Anchorage,61.21806,-149.90028
Jakarta,-6.21462,106.84513
London,51.50853,-0.12574
Longyearbyen,78.22334,15.64689
North pole,90,0
Oslo,59.91273,10.74609
South pole,-90,0
Troll research station,-72.00194,2.53389
Vardø,70.37048,31.11066
```

- B. Write a command line program that takes one optional integer argument n. Use C#, JavaScript or Python.
- C. If no argument is given, use places.csv as input.
- D. If n is given, use n randomly generated places as input.
- E. Find the air distance (great circle distance) between all pairs of places. Discard pairs having the same pair of places as another pair.
- F. Write out all place pairs and distances by ascending distance, lines column aligned and formatted like this:

Someplace	Otherplace	152.6 km
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- G. On the last line, write out the average distance and the place pair and corresponding distance having the distance closest to the average value, like this:

Average distance: 321.8 km. Closest pair: Thisplace – Thatplace 312.5 km.

Expected output from task 1

Code that can be run, including a readme, with instructions on setup and use. Try to keep the code both concise, idiomatic and readable. Feel free to deliver as repo on github



Task 2 - IoT design

You are to design an IoT solution for a new air quality device. The device will be placed outside and for simplicity we assume it only consists of a set of environmental sensors, a communication unit and an MCU. (MCU and coms can be the same chip). We are still in the R&D phase, and will need to be able to update the device firmware in the field.

Questions:

- A. What technology would you use for communication / MCU and why?
- B. How would you update the firmware?
- C. What would be the core challenge(s) with rolling out thousands of devices?
- D. What platform/solution(s) would you use for fleet management and why?

We'd like to offer data from the devices to other platforms, be it IFTTT or integrated with smart home solutions.

Questions:

- E. How would you expose data to other platforms?
- F. What are the key challenges with integrating with other platforms?

Expected output from task 2:

Answer to questions A-F, in words and/or sketches. Optionally: links to github repos, or other works demonstrating past experiences in the field