Ignite Solutions MLE Test - 1

We are looking for great developers who enjoy technology. This programming exercise is a way that we evaluate candidates' statistical and programming skills. We ask all our candidates (freshers and senior) to go through some form of this. We hope you have fun doing these programs.

Instructions

- Please complete these exercises and email back your answers.
- You can attach any additional files (such as program code files). We encourage you to compile and run your code and make sure that it works.
- We prefer answers in Python. If you don't know Python, use any other language you are comfortable with (but we expect you to be able to learn Python)
- Your code should use good programming practices and conventions including consistent indentation, consistent use of variable/function/class/method naming conventions.
- Note - personal integrity is highly valued. It is fine to research using the internet but be sure to answer the questions on your own.

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Question 1.

Write a program to populate and then sort a randomly distributed list of ten million integers, each integer having a value >=1 and <=100 without using any built-in/ external library/function for sorting.

Your program should carefully consider the input and come up with the most efficient sorting solution you can think of.

Provide the space and time complexity of your algorithm

Question 2.

A/B Testing is a very common technique to evaluate effectiveness of changes in a user interface. You show some users interface A (an existing design), and to others you show interface B (a newer design), and then check if people search more with the new design or still prefer the older design.

The attached dataset "searches.json" contains data from one such A/B testing experiment. Each line in this file represents data of one user's interactions. The following data is collected for each user:

- **uid**: unique user id - *users with an odd-numbered uid were shown the new design (B)*
- **is_instructor**: Instructors are testers or presenters who demonstrate search functionality to prospective clients.
- **login_count**: number of times the user logged in
- **search_count**: number of times the user used the search feature

Write a program that answers the questions:

- Did more users use the search feature in the new design (B)?
- Did users search more often in the new design (B)?