Python/Software related questions

Please note that a no to any or all of the questions below is not disqualifying. We want to know your expertise to see which areas of our software you can work on. We are also confident that the right person can learn any of the following in a short amount of time. A lot of these are advanced level topics and we do not expect for you to know all or any of them.

Question 1 - Have you ever worked on any networking related program (whether in python or any other language). Networking means working with TCP/UDP.

Question 2 - Do you have any knowledge or experience with SIP (session initiation protocol). Again this experience does not necessarily need to be in python.

Question 3 - Do you have knowledge of databases (either NoSQL or SQL). Which ones?

Question 4 - Have you ever worked with an ORM like sqlalchemy/mongoengine in python.

Question 5 - Have you ever worked with any microservices/web based frameworks in python (like Flask/Sanic/Django).

Question 6 - Have you ever used any concurrency framework like asyncio/gevents/twisted in python? If yes, which ones.

Python Exercises

Please select one of the two exercises below. You will need to create the code in your github account and share it with us for evaluation. Please email us the github repo link as well as the answer to the questions above when you are done. You can email us at dpandey@supportgenie.io . Please email us your response by June 25.

Guidelines

1. If possible create a reusable function/module
2. Bonus for creating test cases for the code. You can use any python unit testing framework.
3. If you want to use a python framework for any of the exercises below please feel free to use it.
4. You will need to generate any data needed yourself.

Exercise 1

Predict agent availability

You have the following data for issues.

Issue

- start_time
- abandoned/resolved
- answer_time (time an agent started working on the issue)

- resolved_time (the time an issue was resolved)
- abandoned_time (if a customer left before the issue was assigned to an agent)

Now when a new issue comes in we need to predict the time the issue will be assigned to an agent. Use your best judgement to solve the above problem. You may/may not want to use all fields.

Exercise 2

Agent selector

You are given the following data for agents

agent

- is_available
- available_since (the time since the agent is available)
- roles (a list of roles the user has, e.g. spanish speaker, sales, support etc.)

When an issue comes in we need to present the issue to 1 or many agents based on an agent selection mode. An agent selection mode can be all available, least busy or random. In “all available mode” the issue is presented to all agents so they pick the issue if they want. In least busy the issue is presented to the agent that has been available for the longest. In random mode we randomly pick an agent. An issue also has one or many roles (sales/support e.g.). Issues are presented to agents only with matching roles.

Please write a function that takes an input the list of agents with their data, agent selection mode and returns a list of agents the issue should be presented to.

Note - We have had many people asking questions if the function needs one more argument. In the simple case no, but in a real implementation yes it will need an issues list or an existing issues queue. Please do add a queue of issues to the function if you want to implement the advanced case.

Also note that is_available is a boolean value.