

Introduction

Freshdesk, a helpdesk system, allows the export of activity information of all tickets. The export takes the following form:

```
{  
  "metadata": {  
    "start_at": "20-04-2017 10:00:00 +0000",  
    "end_at": "21-04-2017 09:59:59 +0000",  
    "activities_count": 2  
  },  
  "activities_data": [  
    {  
      "performed_at": "21-04-2017 09:33:38 +0000",  
      "ticket_id": 600,  
      "performer_type": "user",  
      "performer_id": 149018,  
      "activity": {  
        "note": {  
          "id": 4025864,  
          "type": 4  
        }  
      }  
    },  
    {  
      "performed_at": "21-04-2017 09:38:24 +0000",  
      "ticket_id": 704,
```

```
"performer_type": "user",
"performer_id": 149018,
"activity": {
"shipping_address": "N/A",
"shipment_date": "21 Apr, 2017",
"category": "Phone",
"contacted_customer": true,
"issue_type": "Incident",
"source": 3,
"status": "Open",
"priority": 4,
"group": "refund",
"agent_id": 149018,
"requester": 145423,
"product": "mobile"
}
}
]
}
```

The status column can be any of the following values:

- "Open"
- "Closed"
- "Resolved"
- "Waiting for Customer"
- "Waiting for Third Party"
- "Pending"

Steps

1. Write a Python program which will randomly generate realistic ticket data based on the above JSON format and store the data in a JSON file on disk. It should generate a random activity distribution for a configurable number of tickets. The program will be checked for realism of data, and for the ability to handle large amounts of records. Example: `ticket_gen -n 1000 -o activities.json` to generate 1000 tickets with random activities into the `activities.json` file.
2. Write a program (in a language of your choice) to read the above generated JSON file and store the data into a SQLite database in a relational format. The program will be checked for relational modelling.
3. Write a SQL script that can be run on the database to generate the following attributes for each ticket:
 - Time spent Open
 - Time spent Waiting on Customer
 - Time spent waiting for response (Pending Status)
 - Time till resolution
 - Time to first response
4. Example:

ticket_id	time_spent_open	time_spent_waiting_on_customer	time_spent_waiting_for_response	time_till_resolution	time_to_first_response
704	12	90	1200	1300	10
5. Ensure all the above programs can be run in sequence using a bash script, Makefile, or equivalent.