Project 1: Data Ingestion and analysis

- **Process:** From the previous project, I understood how to create a function to pull API data using the requests package, and how to parse JSON data into text. From there, I was able to look up how to create a MongoDB database and collection through pymongo, and insert the collected data into the collection. From there, I used the schedule documentation to schedule the function I created to run every minute at XX:00:00 for one hour. Creating the while loop to stop the schedule running after one hour was the trickiest part--annoyingly, I had the right method down to not use time.sleep in the beginning, but a small error prevented it from working and caused me to try other incorrect methods that caused drifting and take up more time. In the end, I was able to tweak my original however and figure it out.
- **Analysis:** For the factor, for every minute that the time is on it cubes that number. So for 12:10, the factor is 1000 (10^3). For the pi, the value starts at 4 on the hour and converges towards the true value of pi as the hour passes. For time, it is in GMT.
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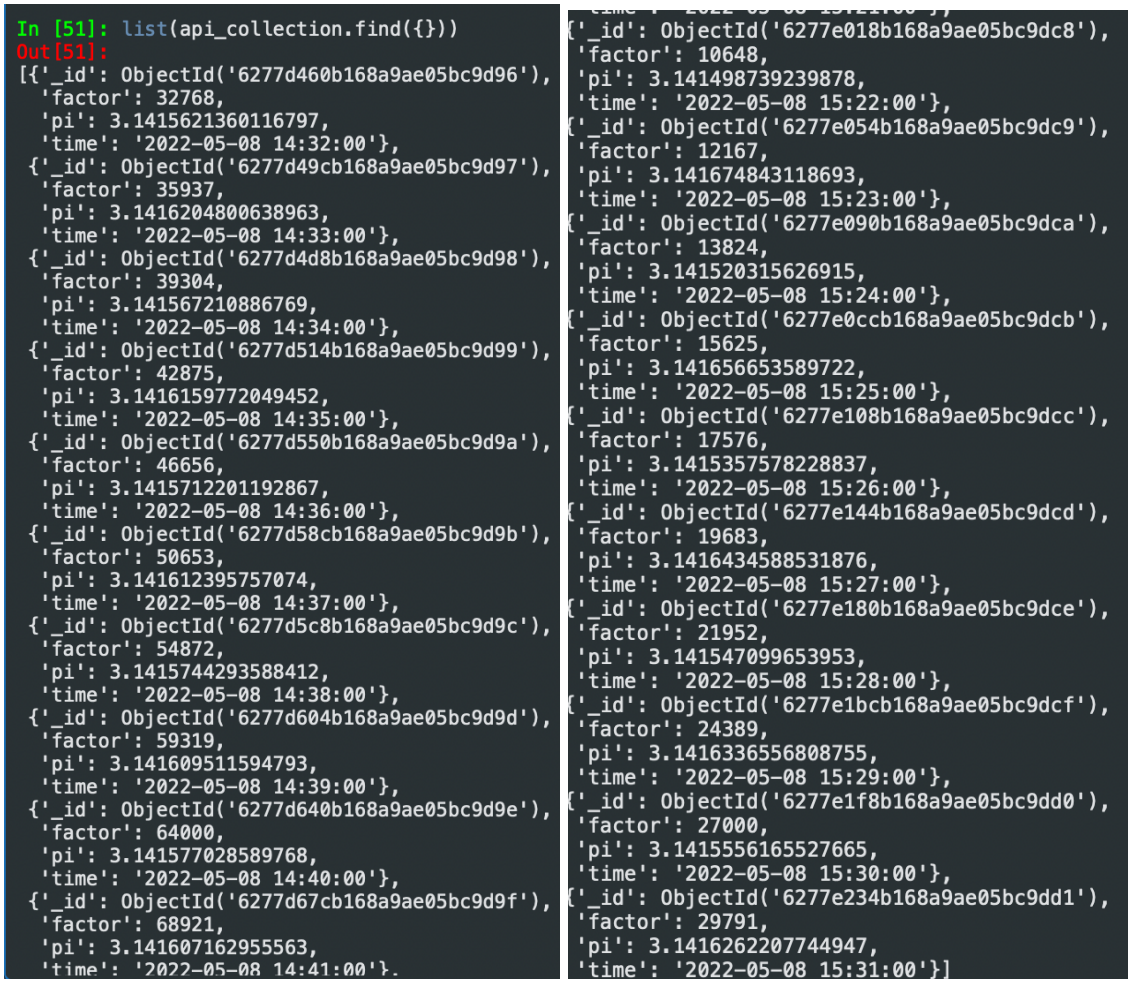

```
In [51]: list(api_collection.find({}))
Out[51]:
[{'_id': ObjectId('6277d460b168a9ae05bc9d96'),
  'factor': 32768,
  'pi': 3.1415621360116797,
  'time': '2022-05-08 14:32:00'},
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  'factor': 35937,
  'pi': 3.1416204800638963,
  'time': '2022-05-08 14:33:00'},
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  'time': '2022-05-08 14:34:00'},
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  'pi': 3.1416159772049452,
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  'time': '2022-05-08 14:36:00'},
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  'factor': 50653,
  'pi': 3.141612395757074,
  'time': '2022-05-08 14:37:00'},
 {'_id': ObjectId('6277d5c8b168a9ae05bc9d9c'),
  'factor': 54872,
  'pi': 3.1415744293588412,
  'time': '2022-05-08 14:38:00'},
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  'pi': 3.141609511594793,
  'time': '2022-05-08 14:39:00'},
 {'_id': ObjectId('6277d640b168a9ae05bc9d9e'),
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  'pi': 3.141577028589768,
  'time': '2022-05-08 14:40:00'},
 {'_id': ObjectId('6277d67cb168a9ae05bc9d9f'),
  'factor': 68921,
  'pi': 3.141607162955563,
  'time': '2022-05-08 14:41:00'},
{'_id': ObjectId('6277e018b168a9ae05bc9dc8'),
 'factor': 10648,
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 'time': '2022-05-08 15:22:00'},
{'_id': ObjectId('6277e054b168a9ae05bc9dc9'),
 'factor': 12167,
 'pi': 3.141674843118693,
 'time': '2022-05-08 15:23:00'},
{'_id': ObjectId('6277e090b168a9ae05bc9dca'),
 'factor': 13824,
 'pi': 3.141520315626915,
 'time': '2022-05-08 15:24:00'},
{'_id': ObjectId('6277e0ccb168a9ae05bc9dcb'),
 'factor': 15625,
 'pi': 3.141656653589722,
 'time': '2022-05-08 15:25:00'},
{'_id': ObjectId('6277e108b168a9ae05bc9dcc'),
 'factor': 17576,
 'pi': 3.1415357578228837,
 'time': '2022-05-08 15:26:00'},
{'_id': ObjectId('6277e144b168a9ae05bc9dcd'),
 'factor': 19683,
 'pi': 3.1416434588531876,
 'time': '2022-05-08 15:27:00'},
{'_id': ObjectId('6277e180b168a9ae05bc9dce'),
 'factor': 21952,
 'pi': 3.141547099653953,
 'time': '2022-05-08 15:28:00'},
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 'pi': 3.1416336556808755,
 'time': '2022-05-08 15:29:00'},
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 'pi': 3.1415556165527665,
 'time': '2022-05-08 15:30:00'},
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 'factor': 29791,
 'pi': 3.1416262207744947,
 'time': '2022-05-08 15:31:00'}]
```

Project 2: Discord Bot

- Replit link: https://replit.com/join/qifvxnulfy-spt2nvh
- Discord server invite link: https://discord.gg/PstF8Kde