```python
In [72]: import pandas as pd
         import numpy as np
         from tinydb import TinyDB
```

```python
In [73]: post_db, comment_db = TinyDB('post.json'), TinyDB('comment.json')
```

```python
In [74]: post_list, comment_list = post_db.all(), comment_db.all()
```

```python
In [75]: post_list[:5]
```

```
Out[75]:  [{'id': '12glkw4',
           'author': 'TheBodyPolitic1',
           'author_id': 'von3w6y2',
           'total_comments': 319,
           'upvote': 591,
           'post_type': 'top week',
           'title': "Why didn't Python become popular until long after its creati
         on?",
           'body': "Python was invented in 1994, two years before Java.\n\nGiven
         it's age, why didn't Python become popular or even widely known about, u
         ntil much later?",
           'downvote': 37.72340425531918,
           'url': 'https://www.reddit.com/r/Python/comments/12glkw4/why_didnt_pyt
         hon_become_popular_until_long_after/',
           'created_on': 1681051909.0,
           'subreddit': 'python',
           'subreddit_id': 't5_2qh0y'},
          {'id': '12hj9oc',
           'author': 'MetonymyQT',
           'author_id': 'shnqm',
           'total_comments': 80,
           'upvote': 527,
           'post_type': 'top week',
           'title': 'Free course: Build a modern API with FastAPI and Python',
           'body': "Hello everyone! \n\nI've posted this course 4 months ago on t
         his sub Reddit and it was well received. I want to do another giveawa
         y,\n\nAll 3 coupons expire in 4 days and allow for a maximum 1k per coup
         on redeems.\n\n[https://www.udemy.com/course/build-a-movie-tracking-api-
         with-fastapi-and-python/?couponCode=90707F6B0050F6D60303](https://www.ud
         emy.com/course/build-a-movie-tracking-api-with-fastapi-and-python/?coupo
         nCode=90707F6B0050F6D60303)\n\n[https://www.udemy.com/course/build-a-mov
         ie-tracking-api-with-fastapi-and-python/?couponCode=F0744D2CC6E3E1C6E62
         2](https://www.udemy.com/course/build-a-movie-tracking-api-with-fastapi-
         and-python/?couponCode=F0744D2CC6E3E1C6E622)\n\n[https://www.udemy.com/c
         ourse/build-a-movie-tracking-api-with-fastapi-and-python/?couponCode=A62
         0331B2F48333F76D7](https://www.udemy.com/course/build-a-movie-tracking-a
         pi-with-fastapi-and-python/?couponCode=A620331B2F48333F76D7)\n\nI know t
         he course is not top notch and can be improved a lot but honestly I hope
         you like it as it is. I've set the lowest price I could set for it on Ud
         emy and I'm just grateful that it helped cover my blog hosting fees over
         the last 3 years.\n\nThank you!",
           'downvote': 21.958333333333353,
           'url': 'https://www.reddit.com/r/Python/comments/12hj9oc/free_course_b
         uild_a_modern_api_with_fastapi_and/',
           'created_on': 1681134311.0,
           'subreddit': 'python',
           'subreddit_id': 't5_2qh0y'},
          {'id': '12egsoz',
           'author': '2broke2code',
           'author_id': 'rs4dqilj',
           'total_comments': 105,
           'upvote': 467,
           'post_type': 'top week',
           'title': "I trained a RoastBot on >120,000 faces and >0.5 million comm
         ents and it's a menace 😈.",
           'body': "It uses facial recognition to fetch roasts for users from the
         r/RoastMe subreddit.\n\nTry it out [here](https://subroast.me)\n\n**App:
         ** [https://subroast.me](https://subroast.me)\n\n**Code:**  [nizarhaide
         r/RoastMe (github.com)](https://github.com/nizarhaider/RoastMe)\n\n# Tec
         h Stack\n\n**Front End:** Bootstrap5 + Vanilla JS\n\n**Back End:** Flask
```

chipped away at PHP, but clearly that never overtook it.\n\nPython was k
ind of "just around." Plone was its only killer app, but it kept it ali
ve. CMS was a big enterprise need that didn\'t have an elegant solutio
n, and so people were trying everything. Google was using it for a lot
of scientific research and from there, it crept into the research world,
because the syntax is easy, where it got a stranglehold. (Just five yea
rs ago, I was working at a bioresearch lab, and I can\'t tell you how mu
ch bad Python 2.7 was still around.). Being in research, it serendipitou
sly positioned itself into the math and AI boom that we\'re in today, an
d it\'s everywhere.\n\nSo basically, Plone and Google kept it alive long
enough for dumb luck to take over and show people how good it was. Othe
rwise, I think it\'d just be another niche academic language.',
  'created_on': 1681079618.0,
  'upvotes': 3,
  'author_id': '380he',
  'author_name': 'snapetom'}]

```python
In [77]: post_df = pd.DataFrame(post_list).set_index("id")
         post_df['downvote'] = post_df['downvote'].astype('int')
         comment_df = pd.DataFrame(comment_list).set_index('comment_id')
```

```python
In [78]: post_df.head(5)
```

Out[78]:

id	author	author_id	total_comments	upvote	post_type	ti
12glkw4	TheBodyPolitic1	von3w6y2	319	591	top week	Why did Python becon popular ui long a
12hj9oc	MetonymyQT	shnqm	80	527	top week	Free cours Build a mode API w FastAPI a
12egsoz	2broke2code	rs4dqilj	105	467	top week	I trained RoastBot >120,000 fac and >0
12ffsif	midnitte	3gad9	64	378	top week	EP 684: A Pc Interpreter G Accept
12fzdu2	aeluro1	88efmodhn	12	370	top week	Comprehensi Reddit Sav Pos Downloade

```python
In [79]: comment_df.head()
```

Out[79]:

comment_id	post_id	parent_id	body	created_on	upvotes	author_id	autho
jfkvwx0	12glkw4	t3_12glkw4	Hardware wasn't ready for Python in that time	1.681054e+09	5	22vat21u	[
jfnha98	12glkw4	t3_12glkw4	Because Python was developed with the conceit ...	1.681095e+09	2	4wtjvsh6	FredV
jflnf2e	12glkw4	t3_12glkw4	Perl was *the* scripting language in the early...	1.681065e+09	2	4i9hp	t
jflbch7	12glkw4	t3_12glkw4	I was a web developer between 2000 and 2010, a...	1.681060e+09	2	8hi6986p	Dre
jfmk972	12glkw4	t1_jflbch7	Adding on to this from my POV, early web in th...	1.681080e+09	3	380he	sr

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In [80]:
```python
from datetime import datetime

post_df['created_on'] = post_df['created_on'].apply(
    lambda unix_time: datetime.utcfromtimestamp(unix_time).strftime('%Y-%
)


comment_df['created_on'] = comment_df['created_on'].apply(
    lambda unix_time: datetime.utcfromtimestamp(unix_time).strftime('%Y-%
)
```

In [81]:
```python
post_df['created_on'], comment_df['created_on']
```

Out[81]: (id
        12glkw4   2023-04-09 14:51:49
        12hj9oc   2023-04-10 13:45:11
        12egsoz   2023-04-07 10:36:18
        12ffsif   2023-04-08 08:26:37
        12fzdu2   2023-04-08 21:43:41
        12f3glm   2023-04-07 23:24:08
        12ha6mc   2023-04-10 06:58:33
        12dfdq1   2023-04-06 10:11:05
        12cgplg   2023-04-05 11:10:38
        12bl2uj   2023-04-04 14:37:50
        Name: created_on, dtype: object,
        comment_id
        jfkvwx0   2023-04-09 15:27:18
        jfnha98   2023-04-10 02:55:16
        jflnf2e   2023-04-09 18:37:04
        jflbch7   2023-04-09 17:13:45
        jfmk972   2023-04-09 22:33:38
                            ...
        jeyxtqh   2023-04-04 21:19:50
        jez63w8   2023-04-04 22:17:42
        jeywttj   2023-04-04 21:13:04
        jf0v8f8   2023-04-05 07:15:14
        jf00txb   2023-04-05 02:06:08
        Name: created_on, Length: 325, dtype: object)

In [82]:
```python
post_df.to_csv('post.csv')
comment_df.to_csv('comment.csv')
```