Assignment_7

November 15, 2024

[15]:
```
from pymongo import MongoClient
from datetime import datetime
```

[2]:
```
client = MongoClient("localhost", 27017)
```

[39]:
```
db = client.library
print(client.list_database_names())
print(client.library.list_collection_names())
```

```
['admin', 'config', 'library', 'local', 'mongoTest']
['books', 'checkout', 'user']
```

[ ]:
```
# title, primary author, secondary authors (if any), date of first publication, number of pages, publisher, translator (if any), and primary topic
books = db.books

# Insert multiple documents into the 'books' collection
books.insert_many([
    {
        "title": "Elements of Statistical Learning: Data Mining, Inference, and Prediction",
        "primary_author": "Hastie, Trevor",
        "secondary_authors": ["Tibshirani, Robert", "Friedman, Jerome"],
        "publication_date": 2009,
        "num_pages": 757,
        "publisher": "New York: Springer",
        "primary_topic": "Statistical Learning"
    },
    {
        "title": "Deep Learning",
        "primary_author": "Massaron, Luca",
        "publication_date": 2019,
        "num_pages": 371,
        "publisher": "Hoboken, N.J.: J. Wiley",
        "primary_topic": "Deep Learning"
    },
    {
        "title": "Linear Models",
```

```
        "primary_author": "Searle, S. R.",
        "publication_date": 2017,
        "num_pages": 685,
        "publisher": "Hoboken, New Jersey: Wiley",
        "primary_topic": "Linear Models"
    }
])
```

[ ]:
```
InsertManyResult([ObjectId('6737efa5f99c40b4be8c3c98'),
ObjectId('6737efa5f99c40b4be8c3c99'), ObjectId('6737efa5f99c40b4be8c3c9a')],
acknowledged=True)
```

[14]:
```
for book in books.find():
    print(book)
```

```
{'_id': ObjectId('6737efa5f99c40b4be8c3c98'), 'title': 'Elements of Statistical
Learning: Data Mining, Inference, and Prediction', 'primary_author': 'Hastie,
Trevor', 'secondary_authors': ['Tibshirani, Robert', 'Friedman, Jerome'],
'publication_date': 2009, 'num_pages': 757, 'publisher': 'New York: Springer',
'primary_topic': 'Statistical Learning'}
{'_id': ObjectId('6737efa5f99c40b4be8c3c99'), 'title': 'Deep Learning',
'primary_author': 'Massaron, Luca', 'publication_date': 2019, 'num_pages': 371,
'publisher': 'Hoboken, N.J.: J. Wiley', 'primary_topic': 'Deep Learning'}
{'_id': ObjectId('6737efa5f99c40b4be8c3c9a'), 'title': 'Linear Models',
'primary_author': 'Searle, S. R.', 'publication_date': 2017, 'num_pages': 685,
'publisher': 'Hoboken, New Jersey: Wiley', 'primary_topic': 'Linear Models'}
```

[ ]:
```
# User id, name, phone, address, university affiliation
user = db.user

user.insert_many([
    {
        "user_id": 1,
        "user_name": "Whats Up",
        "phone": 1234567890,
        "address": "123 Hello St, Providence, RI",
        "univ_affiliation": "Brown University"
    },
    {
        "user_id": 2,
        "user_name": "Hello Oh",
        "phone": 1234567891,
        "address": "456 Hello St, Providence, RI",
        "univ_affiliation": "Brown University"
    },
    {
        "user_id": 3,
        "user_name": "Happy Friday",
```

```
        "phone": 1234567893,
        "address": "789 Hello St, Providence, RI",
        "univ_affiliation": "Boston University"
    },
    {
        "user_id": 4,
        "user_name": "Good Morning",
        "phone": 1234567896,
        "address": "111 Hello St, Providence, RI",
        "univ_affiliation": "Brown University"
    }
])
```

[ ]:
```
InsertManyResult([ObjectId('67380217f99c40b4be8c3c9b'),
ObjectId('67380217f99c40b4be8c3c9c'), ObjectId('67380217f99c40b4be8c3c9d'),
ObjectId('67380217f99c40b4be8c3c9e')], acknowledged=True)
```

[17]:
```
for x in user.find():
    print(x)
```

```
{'_id': ObjectId('67380217f99c40b4be8c3c9b'), 'user_id': 1, 'user_name': 'Whats
Up', 'phone': 1234567890, 'address': '123 Hello St, Providence, RI',
'univ_affiliation': 'Brown University'}
{'_id': ObjectId('67380217f99c40b4be8c3c9c'), 'user_id': 2, 'user_name': 'Hello
Oh', 'phone': 1234567891, 'address': '456 Hello St, Providence, RI',
'univ_affiliation': 'Brown University'}
{'_id': ObjectId('67380217f99c40b4be8c3c9d'), 'user_id': 3, 'user_name': 'Happy
Friday', 'phone': 1234567893, 'address': '789 Hello St, Providence, RI',
'univ_affiliation': 'Brown University'}
{'_id': ObjectId('67380217f99c40b4be8c3c9e'), 'user_id': 4, 'user_name': 'Good
Morning', 'phone': 1234567896, 'address': '111 Hello St, Providence, RI',
'univ_affiliation': 'Brown University'}
```

[31]:
```
# checkout
checkout = db.checkout

checkout.insert_many([
    {
        "user_id": 1,
        "user_name": "Whats Up",
        "date": datetime(2024, 11, 11),
        "book_name": "Deep Learning"
    },
    {
        "user_id": 2,
        "user_name": "Hello Oh",
        "date": datetime(2024, 11, 17),
        "book_name": "Deep Learning"
```

```
    },
    {
        "user_id": 4,
        "user_name": "Good Morning",
        "date": datetime(2024, 11, 11),
        "book_name": "Elements of Statistical Learning: Data Mining, Inference,␣
 ↪and Prediction"
    },
    {
        "user_id": 4,
        "user_name": "Good Morning",
        "date": datetime(2024, 11, 11),
        "book_name": "Linear Models"
    },
    {
        "user_id": 3,
        "user_name": "Happy Friday",
        "date": datetime(2024, 11, 1),
        "book_name": "Linear Models"
    },
    {
        "user_id": 1,
        "user_name": "Whats Up",
        "date": datetime(2024, 11, 20),
        "book_name": "Linear Models"
    }
])
```

[31]:
```
InsertManyResult([ObjectId('6738045df99c40b4be8c3ca8'),
ObjectId('6738045df99c40b4be8c3ca9'), ObjectId('6738045df99c40b4be8c3caa'),
ObjectId('6738045df99c40b4be8c3cab'), ObjectId('6738045df99c40b4be8c3cac'),
ObjectId('6738045df99c40b4be8c3cad')], acknowledged=True)
```

[32]:
```
for x in checkout.find():
    print(x)
```

```
{'_id': ObjectId('6738045df99c40b4be8c3ca8'), 'user_id': 1, 'user_name': 'Whats
Up', 'date': datetime.datetime(2024, 11, 11, 0, 0), 'book_name': 'Deep
Learning'}
{'_id': ObjectId('6738045df99c40b4be8c3ca9'), 'user_id': 2, 'user_name': 'Hello
Oh', 'date': datetime.datetime(2024, 11, 17, 0, 0), 'book_name': 'Deep
Learning'}
{'_id': ObjectId('6738045df99c40b4be8c3caa'), 'user_id': 4, 'user_name': 'Good
Morning', 'date': datetime.datetime(2024, 11, 11, 0, 0), 'book_name': 'Elements
of Statistical Learning: Data Mining, Inference, and Prediction'}
{'_id': ObjectId('6738045df99c40b4be8c3cab'), 'user_id': 4, 'user_name': 'Good
Morning', 'date': datetime.datetime(2024, 11, 11, 0, 0), 'book_name': 'Linear
Models'}
```

```
{'_id': ObjectId('6738045df99c40b4be8c3cac'), 'user_id': 3, 'user_name': 'Happy
Friday', 'date': datetime.datetime(2024, 11, 1, 0, 0), 'book_name': 'Linear
Models'}
{'_id': ObjectId('6738045df99c40b4be8c3cad'), 'user_id': 1, 'user_name': 'Whats
Up', 'date': datetime.datetime(2024, 11, 20, 0, 0), 'book_name': 'Linear
Models'}
```

[33]:
```
# Which users have checked out 'Elements of Statistical Learning: Data Mining,␣
 ↪Inference, and Prediction'?

results = checkout.find({"book_name": "Elements of Statistical Learning: Data␣
 ↪Mining, Inference, and Prediction"})

# Print the results
for user in results:
    print(user)
```

```
{'_id': ObjectId('6738045df99c40b4be8c3caa'), 'user_id': 4, 'user_name': 'Good
Morning', 'date': datetime.datetime(2024, 11, 11, 0, 0), 'book_name': 'Elements
of Statistical Learning: Data Mining, Inference, and Prediction'}
```

[34]:
```
# Which users from Brown University have checked out books on Deep Learning?
# Step 1: Find user_ids affiliated with Brown University
brown_users = db.user.find({"univ_affiliation": "Brown University"}, {"user_id":
 ↪ 1, "_id": 0})
brown_user_ids = [user["user_id"] for user in brown_users]

# Step 2: Query the checkout collection for "Deep Learning" and the filtered␣
 ↪user_ids
results = db.checkout.find({
    "book_name": "Deep Learning",
    "user_id": {"$in": brown_user_ids}
})

# Step 3: Display the results
for user in results:
    print(user)
```

```
{'_id': ObjectId('6738045df99c40b4be8c3ca8'), 'user_id': 1, 'user_name': 'Whats
Up', 'date': datetime.datetime(2024, 11, 11, 0, 0), 'book_name': 'Deep
Learning'}
{'_id': ObjectId('6738045df99c40b4be8c3ca9'), 'user_id': 2, 'user_name': 'Hello
Oh', 'date': datetime.datetime(2024, 11, 17, 0, 0), 'book_name': 'Deep
Learning'}
```

[35]:
```
# How many times is the book 'Deep Learning' been checked out?
count = db.checkout.count_documents({"book_name": "Deep Learning"})
print(count)
```

2