

Project 3: The Mongo Mash  
CECS323-02 Database Fundamentals  
Brian Stevenson  
Steven Yacoub  
05/09/2023

Github

<https://github.com/brian-chilin/cecs323-proj3-mongomash>

cookie\_validated\_documents.json

adult\_validated\_documents.json

troop\_validated\_documents.json

Python available in pycharm\_project/main.py

## Cookie Type Documents:

```
[
  {
    "_id": {
      "$oid": "645817ba444192604c4e58c5"
    },
    "name": "Thin Mints",
    "price": {
      "$numberDecimal": "6"
    },
    "ingredients": [
      "sugar",
      "cocoa",
      "mint oil"
    ]
  },
  {
    "_id": {
      "$oid": "645817ba444192604c4e58c6"
    },
    "name": "Samoas",
    "price": {
      "$numberDecimal": "6"
    },
    "ingredients": [
      "cocoa",
      "coconut extract",
      "sugar",
      "butter"
    ]
  },
  {
    "_id": {
      "$oid": "645817ba444192604c4e58c7"
    },
    "name": "Tagalongs",
    "price": {
      "$numberDecimal": "6"
    }
  },
]
```

```
"ingredients": [
  "cocoa",
  "sugar",
  "peanut oil",
  "peanut butter"
],
{
  "_id": {
    "$oid": "645817ba444192604c4e58c8"
  },
  "name": "Trefoils",
  "price": {
    "$numberDecimal": "6"
  },
  "ingredients": []
},
{
  "_id": {
    "$oid": "645817ba444192604c4e58c9"
  },
  "name": "Toffeetastic",
  "price": {
    "$numberDecimal": "6"
  },
  "ingredients": []
}
]
```

## Troop Documents:

```
{
  "_id": 1234,
  "founding_date": {
    "$date": "2022-09-01T00:00:00.000Z"
  },
  "community": "Long Beach",
  "scouts": [
    {
      "_id": {
        "$oid": "645817ba444192604c4e58c2"
      },
      "firstname": "Naomi",
      "lastname": "Nagata",
      "birthday": {
        "$date": "2017-03-03T00:00:00.000Z"
      },
      "gradelevel": "K",
      "adults": [
        {
          "adultid": {
            "$oid": "64582635d9ea5ff654c5a4f0"
          },
          "firstname": "James",
          "lastname": "Holden"
        }
      ],
      "allotments": [
        {
          "deliverydate": {
            "$date": "2023-01-19T00:00:00.000Z"
          },
          "cookies": [
            {
              "cookieid": {
                "$oid": "645817ba444192604c4e58c5"
              },
              "cookietype": "Thin Mints",
              "boxes": 36
            },

```

```
{
  "cookieid": {
    "$oid": "645817ba444192604c4e58c6"
  },
  "cookietype": "Samoas",
  "boxes": 36
},
{
  "cookieid": {
    "$oid": "645817ba444192604c4e58c7"
  },
  "cookietype": "Tagalongs",
  "boxes": 24
}
]
},
"payments": [
  {
    "paymentdate": {
      "$date": "2023-03-01T00:00:00.000Z"
    },
    "amount": {
      "$numberDecimal": "540"
    }
  },
  {
    "paymentdate": {
      "$date": "2023-03-15T00:00:00.000Z"
    },
    "amount": {
      "$numberDecimal": "24"
    }
  }
]
},
{
  "_id": {
    "$oid": "645817ba444192604c4e58c1"
  },
}
```

```
"firstname": "Grace",
"lastname": "Hopper",
"birthday": {
  "$date": "2017-01-30T00:00:00.000Z"
},
"gradelevel": "K",
"adults": [
  {
    "adultid": {
      "$oid": "64582635d9ea5ff654c5a4f1"
    },
    "firstname": "Ada",
    "lastname": "Lovelace"
  }
],
"allotments": [
  {
    "deliverydate": {
      "$date": "2023-01-19T00:00:00.000Z"
    },
    "cookies": [
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c5"
        },
        "cookietype": "Thin Mints",
        "boxes": 30
      },
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c6"
        },
        "cookietype": "Samoas",
        "boxes": 20
      },
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c7"
        },
        "cookietype": "Tagalongs",
```

```
        "boxes": 10
      }
    ]
  },
  "payments": [
    {
      "paymentdate": {
        "$date": "2023-02-01T00:00:00.000Z"
      },
      "amount": {
        "$numberDecimal": "360"
      }
    }
  ]
},
"volunteers": [
  {
    "adultid": {
      "$oid": "64582635d9ea5ff654c5a4f0"
    },
    "firstname": "James",
    "lastname": "Holden",
    "position": "Co-leader"
  },
  {
    "adultid": {
      "$oid": "64582635d9ea5ff654c5a4f1"
    },
    "firstname": "Ada",
    "lastname": "Lovelace",
    "position": "Cookie Chair"
  },
  {
    "adultid": {
      "$oid": "64582635d9ea5ff654c5a4f1"
    },
    "firstname": "Ada",
    "lastname": "Lovelace",
```



```
    "position": "Treasurer"
  }
],
"allotments": [
  {
    "deliverydate": {
      "$date": "2023-01-18T00:00:00.000Z"
    },
    "cookies": [
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c5"
        },
        "cookietype": "Thin Mints",
        "cases": 10
      },
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c6"
        },
        "cookietype": "Samoas",
        "cases": 10
      },
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c7"
        },
        "cookietype": "Tagalongs",
        "cases": 10
      }
    ]
  }
]
},{
  "_id": 6789,
  "founding_date": {
    "$date": "2023-01-01T00:00:00.000Z"
  },
  "community": "Cerritos",
  "scouts": [
```

```
{
  "_id": {
    "$oid": "6458313489e7ddd9b17a764f"
  },
  "firstname": "Barbara",
  "lastname": "Liskov",
  "birthday": {
    "$date": "2014-07-01T00:00:00.000Z"
  },
  "gradelevel": "3",
  "adults": [
    {
      "adultid": {
        "$oid": "64582635d9ea5ff654c5a4f1"
      },
      "firstname": "Ada",
      "lastname": "Lovelace"
    },
    {
      "adultid": {
        "$oid": "64582635d9ea5ff654c5a4f3"
      },
      "firstname": "Lord",
      "lastname": "Byron"
    }
  ],
  "allotments": [
    {
      "deliverydate": {
        "$date": "2023-01-20T00:00:00.000Z"
      },
      "cookies": [
        {
          "cookieid": {
            "$oid": "645817ba444192604c4e58c5"
          },
          "cookietype": "Thin Mints",
          "boxes": 120
        },
        {
```

```
"cookieid": {
  "$oid": "645817ba444192604c4e58c6"
},
"cookietype": "Samoas",
"boxes": 36
},
{
  "cookieid": {
    "$oid": "645817ba444192604c4e58c7"
  },
  "cookietype": "Tagalongs",
  "boxes": 60
}
]
},
{
  "deliverydate": {
    "$date": "2023-02-17T00:00:00.000Z"
  },
  "cookies": [
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c8"
      },
      "cookietype": "Trefoils",
      "boxes": 36
    },
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c9"
      },
      "cookietype": "Toffeetastic",
      "boxes": 7
    }
  ]
}
],
"payments": [
  {
    "paymentdate": {
```

```
    "$date": "2023-01-31T00:00:00.000Z"
  },
  "amount": {
    "$numberDecimal": "1296"
  }
},
{
  "paymentdate": {
    "$date": "2023-02-21T00:00:00.000Z"
  },
  "amount": {
    "$numberDecimal": "198"
  }
}
]
},
{
  "_id": {
    "$oid": "64583141f7aab77ccc5f0daa"
  },
  "firstname": "Mary",
  "lastname": "Sparck Jones",
  "birthday": {
    "$date": "2013-12-30T00:00:00.000Z"
  },
  "gradelevel": "3",
  "adults": [
    {
      "adultid": {
        "$oid": "64582635d9ea5ff654c5a4f4"
      },
      "firstname": "Mary",
      "lastname": "Jackson"
    }
  ],
  "allotments": [
    {
      "deliverydate": {
        "$date": "2023-01-20T00:00:00.000Z"
      },
    },
  ],
}
```

```
"cookies": [  
  {  
    "cookieid": {  
      "$oid": "645817ba444192604c4e58c5"  
    },  
    "cookietype": "Thin Mints",  
    "boxes": 120  
  },  
  {  
    "cookieid": {  
      "$oid": "645817ba444192604c4e58c6"  
    },  
    "cookietype": "Samoas",  
    "boxes": 24  
  },  
  {  
    "cookieid": {  
      "$oid": "645817ba444192604c4e58c7"  
    },  
    "cookietype": "Tagalongs",  
    "boxes": 60  
  }  
]  
,  
{  
  "deliverydate": {  
    "$date": "2023-02-18T00:00:00.000Z"  
  },  
  "cookies": [  
    {  
      "cookieid": {  
        "$oid": "645817ba444192604c4e58c5"  
      },  
      "cookietype": "Thin Mints",  
      "boxes": 60  
    },  
    {  
      "cookieid": {  
        "$oid": "645817ba444192604c4e58c9"  
      },  
      "cookietype": "Thin Mints",  
      "boxes": 60  
    }  
  ]  
}
```

```
        "cookietype": "Toffeetastic",
        "boxes": 5
      }
    ]
  },
  ],
  "payments": [
    {
      "paymentdate": {
        "$date": "2023-03-15T00:00:00.000Z"
      },
      "amount": {
        "$numberDecimal": "1614"
      }
    }
  ]
},
],
"volunteers": [
  {
    "adultid": {
      "$oid": "64582635d9ea5ff654c5a4f1"
    },
    "firstname": "Ada",
    "lastname": "Lovelace",
    "position": "Co-leader"
  }
],
"allotments": [
  {
    "deliverydate": {
      "$date": "2023-01-18T00:00:00.000Z"
    },
    "cookies": [
      {
        "cookieid": {
          "$oid": "645817ba444192604c4e58c5"
        },
        "cookietype": "Thin Mints",
        "cases": 20
      }
    ]
  }
]
```

```
    },
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c6"
      },
      "cookietype": "Samoas",
      "cases": 5
    },
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c7"
      },
      "cookietype": "Tagalongs",
      "cases": 10
    }
  ]
},
{
  "deliverydate": {
    "$date": "2023-01-18T00:00:00.000Z"
  },
  "cookies": [
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c5"
      },
      "cookietype": "Thin Mints",
      "cases": 5
    },
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c8"
      },
      "cookietype": "Trefoils",
      "cases": 3
    },
    {
      "cookieid": {
        "$oid": "645817ba444192604c4e58c9"
      },
    },
  ]
}
```

```
    "cookietype": "Toffeetastic",  
    "cases": 1  
  }  
]  
}  
]  
}]
```



## Adult Documents:

```
{
  "_id": {
    "$oid": "64582635d9ea5ff654c5a4f0"
  },
  "firstname": "James",
  "lastname": "Holden",
  "birthday": {
    "$date": "1992-06-04T00:00:00.000Z"
  },
  "roles": [
    {
      "troopnumber": 1234,
      "position": "Co-leader"
    }
  ],
  "scouts": [
    {
      "scoutid": {
        "$oid": "645817ba444192604c4e58c2"
      },
      "firstname": "Naomi",
      "lastname": "Nagata",
      "troopnumber": 1234
    }
  ]
}, {
  "_id": {
    "$oid": "64582635d9ea5ff654c5a4f1"
  },
  "firstname": "Ada",
  "lastname": "Lovelace",
  "birthday": {
    "$date": "1990-10-10T00:00:00.000Z"
  },
  "roles": [
    {
      "troopnumber": 1234,
      "position": "Treasurer"
    }
  ],
}
```

```
{
  "troopnumber": 1234,
  "position": "Cookie Chair"
},
{
  "troopnumber": 6789,
  "position": "Co-leader"
}
],
"scouts": [
  {
    "scoutid": {
      "$oid": "645817ba444192604c4e58c1"
    },
    "firstname": "Grace",
    "lastname": "Hopper",
    "troopnumber": 1234
  },
  {
    "scoutid": {
      "$oid": "6458313489e7ddd9b17a764f"
    },
    "firstname": "Barbara",
    "lastname": "Liskov",
    "troopnumber": 6789
  }
]
},{
  "_id": {
    "$oid": "64582635d9ea5ff654c5a4f3"
  },
  "firstname": "Lord",
  "lastname": "Byron",
  "birthday": {
    "date": {
      "$numberLong": "-146361600000"
    }
  },
  "roles": [],
  "scouts": [
```

```
{
  "scoutid": {
    "$oid": "6458313489e7ddd9b17a764f"
  },
  "firstname": "Barbara",
  "lastname": "Liskov",
  "troopnumber": 1234
}
]
},{
  "_id": {
    "$oid": "64582635d9ea5ff654c5a4f4"
  },
  "firstname": "Mary",
  "lastname": "Jackson",
  "birthday": {
    "$date": {
      "$numberLong": "-536457600000"
    }
  },
  "roles": [],
  "scouts": [
    {
      "scoutid": {
        "$oid": "64583141f7aab77ccc5f0daa"
      },
      "firstname": "Mary",
      "lastname": "Sparck Jones",
      "troopnumber": 1234
    }
  ]
}]
```

## Python Code:

```
# used pycharm to install pymongo
from pymongo import MongoClient
from pprint import pprint

def connect():
    CONNECTION_STRING = "mongodb://localhost:27017"
    client = MongoClient(CONNECTION_STRING)
    return client['project3']

def troopLookup(db: MongoClient):
    troopInput = input("Input Troop's number to retrieve a summary of: ")

    if not troopInput.isnumeric():
        print("Troop number should only contain digits")
        return
    troopInput = int(troopInput)

    troopQuery = [
        {
            "$match": {
                "_id": troopInput
            }
        },
        {
            "$project": {
                "_id": 1,
                "founding_date": 1,
                "community": 1,
                "scouts": 1,
                "volunteers": 1
            }
        }
    ]
    result = list(db["troops"].aggregate(troopQuery))
    if not result:
        print("Troop #" + str(troopInput) + " not found")
        return
    result = result[0]
    pprint(result)
```

```

print("Overview for Troop #" + str(result['_id']) + ":")
print("Founded: " + str(result['founding_date'].date()))
print("Community: " + result['community'])
print("Scouts: ", end="")
for i, scout in enumerate(result['scouts']):
    if i != 0:
        print(', ', end="")
    print(scout['firstname'] + ' ' + scout['lastname'], end="")
print()
print("Volunteers: ", end="")
for i, volunteer in enumerate(result['volunteers']):
    if i != 0:
        print(', ', end="")
    print(volunteer['firstname'] + ' ' + volunteer['lastname'], end="")
print() # since for loop ended without a newline

```

```

def scoutLookup(db: MongoClient):
    # firstname & lastname
    fnInput = input("First name (caps matter): ")
    lnInput = input("Last name (caps matter): ")

    scoutQuery = [
        {
            '$unwind': {
                'path': '$scouts',
                'includeArrayIndex': 'string',
                'preserveNullAndEmptyArrays': False
            }
        }, {
            '$match': {
                'scouts.firstname': fnInput,
                'scouts.lastname': lnInput
            }
        }, {
            '$project': {
                'founding_date': 0,
                'community': 0,
                'volunteers': 0
            }
        }
    ]

```

```
]
```

```
result = list(db["troops"].aggregate(scoutQuery))
```

```
if not result:
```

```
    print(fnInput + " " + lnInput + " not found")
```

```
    return
```

```
result = result[0]['scouts']
```

```
print(result)
```

```
print("Detailed view for " + result['firstname'] + ' ' + result['lastname'] + ':')
```

```
print("Birthday: " + str(result['birthday'].date()))
```

```
print("Grade level: " + result['gradelevel'])
```

```
print("Adults: ")
```

```
for adult in result['adults']:
```

```
    print("  -" + adult['firstname'] + ' ' + adult['lastname'])
```

```
if not result['adults']:
```

```
    print(" (no adults found)")
```

```
print("Allotments: ")
```

```
for allotment in result['allotments']:
```

```
    print("  -" + str(allotment['deliverydate'].date()))
```

```
    for cookies in allotment['cookies']:
```

```
        print("      •" + str(cookies['boxes']) + " boxes of " + cookies['cookietype'])
```

```
if not result['allotments']:
```

```
    print(" (no allotments found)")
```

```
def salesReport(db: MongoClient):
```

```
    troopInput = input("Input the number of a troop to retrieve a sales report: ")
```

```
    if not troopInput.isnumeric():
```

```
        print("Troop number should only contain digits")
```

```
        return
```

```
    troopInput = int(troopInput)
```

```
srQuery = [
```

```
    {
```

```
        '$match': {
```

```
            '_id': troopInput
```

```
        }
```

```

}, {
  '$unwind': {
    'path': '$scouts',
    'includeArrayIndex': 'string',
    'preserveNullAndEmptyArrays': False
  }
}, {
  '$unwind': {
    'path': '$scouts.allotments',
    'includeArrayIndex': 'string',
    'preserveNullAndEmptyArrays': False
  }
}, {
  '$unwind': {
    'path': '$scouts.allotments.cookies',
    'includeArrayIndex': 'string',
    'preserveNullAndEmptyArrays': False
  }
}, {
  '$lookup': {
    'from': 'cookietypes',
    'localField': 'scouts.allotments.cookies.cookieid',
    'foreignField': '_id',
    'as': 'cookie'
  }
}, {
  '$unwind': {
    'path': '$cookie',
    'includeArrayIndex': 'string',
    'preserveNullAndEmptyArrays': False
  }
}, {
  '$project': {
    'scouts': 1,
    'cookie': 1,
    'totalvalue': {
      '$multiply': [
        '$scouts.allotments.cookies.bboxes', '$cookie.price'
      ]
    }
  }
}

```

```

    }
  }, {
    '$group': {
      '_id': '$scouts._id',
      'firstname': {
        '$min': '$scouts.firstname'
      },
      'lastname': {
        '$min': '$scouts.lastname'
      },
      'totalvalue': {
        '$sum': '$totalvalue'
      }
    }
  }
}, {
  '$project': {
    'firstname': 1,
    'lastname': 1,
    'totalvalue': 1
  }
}
]

```

```

result = list(db["troops"].aggregate(srQuery))
for scout in result:
    print(scout['firstname'] + ' ' + scout['lastname'] + '\n  Total Value: ' +
str(scout['totalvalue']))
if not result:
    print("(no scouts to show)")

```

```

if __name__ == "__main__":

```

```

    db = connect()

```

```

    """ example:

```

```

    cookieTypes = [
        {
            "$project": {
                "_id": 1,

```



```

        "name": 1,
        "price": 1,
        "ingredients": 1
    }
}
]
results = db["cookietypes"].aggregate(cookieTypes)
pprint(list(results))
"""

```

```

while True:
    # main menu loop. menu ->
    choice = input("1) Troop Lookup\n2) Scout Lookup\n3) Sales Report\nQ)
quit\nEnter 1, 2, 3, or q: ").lower()
    if choice == '1':
        troopLookup(db)
        print()
    elif choice == '2':
        scoutLookup(db)
        print()
    elif choice == '3':
        salesReport(db)
        print()
    elif choice == 'q':
        break;

```