

AMONG US ASSIGNMENT

EDUCATIONAL COURSEWARE TEMPLATE





Question 1.1 - Read in the data using the mongoimport command.

Command -

C:\Program Files\MongoDB\Server\7.0\bin>mongoimport --db AmongUS_Assignment --collection Game --file "C:\data\db\Among_Us_data.json" --jsonArray

Output Screenshot -

```
Microsoft Windows [Version 10.0.22631.2338]
(c) Microsoft Corporation. All rights reserved.

C:\Users\User>cd C:\Program Files\MongoDB\Server\7.0\bin>

C:\Program Files\MongoDB\Server\7.0\bin>mongoimport --db AmongUS_Assignment --collection amongus --file "C:/data/db/Among_Us_data.json" --jsonArray
2023-09-17T12:34:06.061+0530 connected to: mongodb://localhost/
2023-09-17T12:34:06.198+0530 499 document(s) imported successfully. 0 document(s) failed to import.

C:\Program Files\MongoDB\Server\7.0\bin>
```

Question 1.2 - Display data for the match with "game" = "3"

Command -

AmongUS_Assignment> db. amgus. find({"game":"3"}).pretty()

```
mongosh mongodb://localho X
                                                                                                                                                           o
AmongUS_Assigmnent> db.amgus.find({"game":"3"}).pretty()
    _id: ObjectId("6506b6fa51464c1d00059b30"),
   game: '3'
   Game_Feed: [
        Event: 1,
       Map: 'Polus',
       Outcome: '',
        Action: 'kills',
       Player: 'BK',
       Role: '(Crew).',
        'Game Feed': 'Keaton (Impostor) kills BK (Crew).',
        Day: 1,
        'Crew Alive': 8,
        'Impostors Alive': 2,
        Score: '8-2'
       Event: 2,
        Map: 'Polus',
       Outcome: '',
        'Player/Team': 'Keaton',
       Action: 'finds body of',
       Player: 'BK',
       Role: '(Crew).',
        'Game Feed': 'Keaton (Impostor) finds body of BK (Crew).',
       Day: 1,
        'Votes Off Code': 0,
        Score: '7-2'
```

Question 2 - Explore Data - create a new collection with only the document relating to game 3.

Command -

AmongUS_Assignment> db.amgus.aggregate([{ \$match: { "game":"3" } }, { \$out: "NewGame" }])
AmongUS_Assignment> show collections
Game

Game3

```
mongosh mongodb://localho ×
                                                                                                                                                         AmongUS_Assigmnent> db.amgus.aggregate([{$match:{"game":"3"}},{$out:"NewGame"}])
AmongUS_Assigmnent> db.getCollectionNames()
AmongUS_Assigmnent> db.NewGame.find()
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    game: '3'
    Game_Feed: [
       Event: 1,
        Map: 'Polus',
       Outcome: '',
        Action: 'kills',
        Player: 'BK',
        Role: '(Crew).',
        Day: 1,
        'Impostors Alive': 2,
        Score: '8-2'
       Event: 2,
        Map: 'Polus',
       Outcome: '',
        Action: 'finds body of',
        Player: 'BK',
        Role: '(Crew).'
        'Game Feed': 'Keaton (Impostor) finds body of BK (Crew).'.
```

Question 2.1 - Display the Game Feed data for the game in the new collection.

Command -

AmongUS_Assigmnent> db. NewGame. aggregate([{ \$unwind: '\$Game_Feed' }, {\$project: {'Game_Feed':1}}])

```
o x
 mongosh mongodb://localho ×
AmongUS_Assignment.NewGame.GameFeed
AmongUS_Assigmnent> db.NewGame.aggregate([{ $unwind: '$Game_Feed' },{$project: {'Game_Feed':1}}])
    _id: ObjectId("6506b6fa51464c1d<u>00059b30"),</u>
    Game_Feed: {
      Event: 1,
      Map: 'Polus',
      Outcome: '',
      Action: 'kills',
      Player: 'BK',
Role: '(Crew).',
      'Vote ID': '',
'Day 1 vote': '',
      'Impostors Alive': 2,
      Score: '8-2'
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: {
      Event: 2,
      Map: 'Polus',
      Outcome: "
      Outcome: '',
'Player/Team': 'Keaton',
      Action: 'finds body of',
      Player: 'BK',
Role: '(Crew).'
      'Game Feed': 'Keaton (Impostor) finds body of BK (Crew).',
      'Votes Off Code': 0,
      'Vote ID': '3-1',
      Score: '7-2'
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: {
      Event: 3,
      Map: 'Polus',
      Outcome: '',
```

Question 2.2 - Display the last event in game 3.

```
AmongUS_Assignment> db.NewGame.aggregate([{ $unwind: '$Game_Feed' }, {$project: {'Game_Feed':1}}, { $match: { 'Game_Feed.Event': 10 }}])
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: {
     Event: 10,
      Map: 'Polus',
      Outcome: '3-End',
      'Player/Team': '',
      Action: 'Crew Win - Voting',
     Player: '',
      Role: '',
      'Game Feed': 'Crew Win - Voting',
      Day: 4,
      'Votes Off Code': '',
      'Crew Alive': 5,
      'Impostors Alive': 0,
      Score: '5-0'
AmongUS_Assigmnent> A
```

Question 2.3 - Who won game 3, imposters or crew?

Command -

db. NewGame. aggregate([{ \$unwind: '\$Game_Feed' }, {\$project: {'Game_Feed. Game Feed':1}}])

Answer - Crew wins by voting

```
0
mongosh mongodb://127.0.0. \times + \vee
AmongUS_Assigmnent> db.NewGame.aggregate([{ $unwind: '$Game_Feed' },{$project: {'Game_Feed.Game Feed':1}}])
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Keaton (Impostor) kills BK (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Keaton (Impostor) finds body of BK (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
   Game_Feed: { 'Game Feed': 'Crew skips voting.' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Keaton (Impostor) kills zlubars (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Mani (Crew) finds body of zlubars (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Crew votes off Keaton (Impostor).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Dreamy (Impostor) kills wrapter (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Dreamy (Impostor) finds body of wrapter (Crew).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Crew votes off Dreamy (Impostor).' }
    _id: ObjectId("6506b6fa51464c1d00059b30"),
    Game_Feed: { 'Game Feed': 'Crew Win - Voting' }
```

Question 2.4 - Who picked the black color in game 3? Was that player crew or imposter?

Question 2.5 - How many voting events happened in game 3?

```
AmongUS_Assignment> db.NewGame.aggregate([{ $unwind: '$voting_data' },{$project: {'voting_data.Vote_Event':1}},{$group: {_id:null,count:{$sum:1}}}])
[ { _id: null, count: 24 } ]
AmongUS_Assignment>

AmongUS_Assignment>
```

Question 2.6 - This task was focused on exploring a single document. As explained earlier the document is made of 4 main fields and three of those are nested and hold a lot of data. If you were to redesign this database to make it easier to query, what changes would you make to the structure? Explain your design decisions. Do not modify the structure, simply explain the changes you want to make and justify them.

Answer - Create 4 collections. Game collection will have references to other collections via Game id. Using multiple collections should make the queries efficient.

• id • Game_Feed_id • Player Data ID

• Voting Data ID

Game Feed

- Game_id
- Game Feed id
- Event

Player Data

- Game id
- Player_Data

Voting Data

- Game id
- Voting_data

Overall Aggregation

Question 3.1 – How many events in total do you have data for, in this collection (across all games)? An event as explained earlier is a record of development in the game.

```
Command - AmongUS_Assignment> db.amgus.aggregate([{ $unwind:
   '$Game_Feed' }, {$project: {'Game_Feed':1}}, {$group: {_id:null, count:{$sum:1}}}])
```

Answer - Total of 5889 events exist in all games

```
AmongUS_Assigmnent> db.amgus.aggregate([{ $unwind: '$Game_Feed' },{$project: {'Game_Feed':1}},{$group: {_id:null,count:{$sum:1}}}])
[ { _id: null, count: 5889 } ]
AmongUS_Assigmnent> |
```

Question 3.2 - How many matches did the crew win versus how many matches did the impostors win?

Answer -

- 1. Crew Wins 323 (279+44)
- 2. Imposter Wins 176 (2+174)

Question 3.3 - Find out how many matches were played on each map. Your output should contain the names of maps and the number of games played on each map0

Answer - # of Matches played on each map is

- 1. The Skeld 88 Matches
- 2. MIRA HQ 7 Matches
- 3. Polus 404 Matches

Question 3.4 - How many times in total across all games did the crew skip a vote?

Answer - The crew skipped voting 692 times

```
AmongUS_Assignment> db.amgus.aggregate([{ $unwind: '$Game_Feed' },{$project: {'Game_Feed':1}},{$match:{'Game_Feed.Game Feed':'Crew skips voting.'}},{$group: {_id:null,count:{$sum:1}}}])
[ { _id: null, count: 692 } ]
AmongUS_Assignment> |
```

Question 3.5 - How many times in total across all matches does the crew vote against imposters?

Answer - The crew wins voting 279 times

Question 3.6 – The questions you answered in this task were all related to high-level aggregations across the entire collection. In your opinion, is the game more or less hard for impostors? Justify your answer with suitable insights from the data.

Answer - Imposter won 35.27% (176 out of 499) of the time and Crew won 64.7% (323 out of 499). Since the odds of winning by Crew is ~65%, the game is hard for imposters.

```
AmongUS_Assignment> db.amgus.aggregate([{ $unwind: '$Game_Feed' },{$project: {'Game_Feed':1}},{$match:{'Game_Feed.Outcome':{ $regex: "End$"}}},{ $group: { _id: { Action: "$Game_Feed.Action" }, totalwins: { $sum:1} } }])
[
{ _id: { Action: 'Crew Win - Voting' }, totalwins: 279 },
    { _id: { Action: 'Impostor Win - Sabotage' }, totalwins: 2 },
    { _id: { Action: 'Crew Win - Tasks' }, totalwins: 44 },
    { _id: { Action: 'Impostor Win - Kills' }, totalwins: 174 }
]
AmongUS_Assignment>
```

Player-Level Aggregation

Question 4.1 - Find the number of unique players in the data set.

Command:

db. amgus. distinct("player_data. name")

```
AmongUS_Assignment> db.amgus.distinct("player_data.name")
                   'Aberdasher', 'AbeyBaby',
  'Ahamkara',
                   'BRazz',
                                 'Barnabus',
                   'BennyB',
  'Bonde',
                   'CoolJets',
                                                     'DBatterskull',
                                 'DoubleFried',
  'DuckMyInt',
                                 'GGards',
  'GrahamLRR',
                                 'JohnnyCatz',
                                  'LSV',
                   'LegenVD',
                   'MurkLurker',
                                 'Oltanya',
                                                     'PANCAKE',
                   'Platypus',
                                                     'Rada',
                                 'Ryuu',
  'Rafon',
                                 'ScaldingHotSoup',
                   'SamSherman',
  'Seabats',
                                 'SwayingRug',
                                                     'TheAsianAvenger',
                                                     'Trotske',
                                 'Wolf',
  'dcsports8',
                                                     'hafu',
                   'jorbs',
                                                     'niphette',
  ... 8 more items
AmongUS_Assigmnent>
```

db. amgus. distinct("player_data").length

```
AmongUS_Assigmnent> db.amgus.distinct("player_data.name").length
108
AmongUS_Assigmnent> |
```

Answer - 108 players exist in all Games

Question 4.3 - Who is the best crew member?

Command

```
• db. Game. aggregate([{ $unwind: '$voting_data'}, {$project:
      {'voting_data.Vote':1}}, {$match: {'voting_data.Vote': {$regex: "Impostor voted
      off. $"}}}, {\$match: {'voting_data. Vote': {\$regex: "^2-"}}}, {\$group: { _id: { Action:
      "$voting_data.Vote" }, BestCrew: { $sum:1} } }, {$sort:{BestCrew: -1}} ])
AmongUS_Assignment> db.amgus.aggregate([{ $unwind: '$voting_data' }, {$project: {'voting_data.Vote':{}}, {$match:{'voting_data.Vote':{}regex: "Impostor voted"}}
off.$"}}}, {$match:{'voting_data.Vote':{$regex: "^2-"}}}, { $group: { _id: { Action: "$voting_data.Vote" }, BestCrew: { $sum:1} } }, {$sort:{BestCrew: -1}} ])
  { _id: { Action: '2-BK-Impostor voted off.' }, BestCrew: 54 },
  { _id: { Action: '2-dokomoy-Impostor voted off.' },                         BestCrew: 44 },
  { _id: { Action: '2-Sam-Impostor voted off.' }, BestCrew: 43 },
   _id: { Action: '2-Pheylop-Impostor voted off.' }, BestCrew: 42 },
   _id: { Action: '2-Keaton-Impostor voted off.' }, BestCrew: 34 },
  { _id: { Action: '2-Ahamkara-Impostor voted off.' }, BestCrew: 34 },
  { _id: { Action: '2-Andrew-Impostor voted off.' }, BestCrew: 31 },
  { _id: { Action: '2-LSV-Impostor voted off.' }, BestCrew: 28 },
  { _id: { Action: '2-zlubars-Impostor voted off.' }, BestCrew: 28 },
  { _id: { Action: '2-Pojo-Impostor voted off.' }, BestCrew: 25 },
  { _id: { Action: '2-jorbs-Impostor voted off.' }, BestCrew: 25 },
   _id: { Action: '2-Bloody-Impostor voted off.' }, BestCrew: 25 },
  { _id: { Action: '2-Mani-Impostor voted off.' }, BestCrew: 25 },
  { _id: { Action: '2-bsweitz-Impostor voted off.' }, BestCrew: 23 },
  { _id: { Action: '2-Oltanya-Impostor voted off.' }, BestCrew: 22 },
  { _id: { Action: '2-LadyAtarka-Impostor voted off.' }, BestCrew: 21 },
  { _id: { Action: '2-Zhoola-Impostor voted off.' }, BestCrew: 20 },
  { _id: { Action: '2-Ian-Impostor voted off.' }, BestCrew: 19 },
  { _id: { Action: '2-Scott-Impostor voted off.' }, BestCrew: 19 },
  { _id: { Action: '2-Chosaucer-Impostor voted off.' }, BestCrew: 17 }
Type "it" for more
AmongUS_Assigmnent>
```

ANSWER: BK is found to be the best crew member as he voted off imposters 54 number of times

Question 4.3 - Who is the worst crew member?

Command db. Game. aggregate([{ \$unwind: '\$voting_data' }, {\$project: {'voting_data.Vote':1}}, {\$match: {'voting_data.Vote': {\$regex: "Crew voted off. \$"}}}, {\$match: {'voting_data. Vote': {\$regex: "^1-"}}}, { \$group: { _id: { Action: "\$voting_data.Vote" }, WorstCrew: { \$sum:1} } }, {\$sort:{WorstCrew: -1}}]) AmongUS_Assigmnent> db.amgus.aggregate([{ \$unwind: '\$voting_data' },{\$project: {'voting_data.Vote':1}},{\$match:{'voting_data.Vote':{\$regex: "Crew voted off. \$"}}},{\$match:{'voting_data.Vote':{\$regex: "^1-"}}},{ \$group: { _id: { Action: "\$voting_data.Vote" }, WorstCrew: { \$sum:1} } },{\$sort:{WorstCrew: -1}}]) { _id: { Action: '1-Sam-Crew voted off.' }, WorstCrew: 16 }, { _id: { Action: '1-dokomoy-Crew voted off.' }, WorstCrew: 13 }, { _id: { Action: '1-Andrew-Crew voted off.' }, WorstCrew: 13 }, { _id: { Action: '1-LSV-Crew voted off.' }, WorstCrew: 13 }, { _id: { Action: '1-BK-Crew voted off.' }, WorstCrew: 12 }, { _id: { Action: '1-Pheylop-Crew voted off.' }, WorstCrew: 10 }, { _id: { Action: '1-Mani-Crew voted off.' }, WorstCrew: 10 }, { _id: { Action: '1-DBatterskull-Crew voted off.' }, WorstCrew: 10 }, { _id: { Action: '1-Scott-Crew voted off.' }, WorstCrew: 9 }, { _id: { Action: '1-Barnabus-Crew voted off.' }, WorstCrew: 9 }, { _id: { Action: '1-Bloody-Crew voted off.' }, WorstCrew: 8 }, { _id: { Action: '1-Ahamkara-Crew voted off.' }, WorstCrew: 8 }, { _id: { Action: '1-bsweitz-Crew voted off.' }, WorstCrew: 8 }, { _id: { Action: '1-Chosaucer-Crew voted off.' }, WorstCrew: 8 }, { _id: { Action: '1-Gaby-Crew voted off.' }, WorstCrew: 8 }, { _id: { Action: '1-Pojo-Crew voted off.' }, WorstCrew: 7 }, { _id: { Action: '1-BennyB-Crew voted off.' }, WorstCrew: 7 }, { _id: { Action: '1-Ian-Crew voted off.' }, WorstCrew: 7 }, { _id: { Action: '1-zlubars-Crew voted off.' }, WorstCrew: 7 }, { _id: { Action: '1-Zhoola-Crew voted off.' }, WorstCrew: 6 } Type "it" for more

Answer - Sam is the worst Crew who voted out crew 16 times

AmongUS_Assigmnent>

