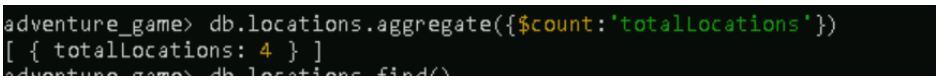
Muhammad Shas K T
281775

Assignment 2 - MongoDB Essentials - A Complete MongoDB Guide

1. Game Insights with Aggregation (Aggregation Framework):
   - Utilize the Aggregation Framework to perform data manipulation and analysis within your game

     - Count the total number of locations in your game world.

       db.locations.aggregate({$count: "totalLocations"})



     - Calculate the average number of exits per location.

       db.locations.aggregate([{ $project: { totalNumberOfExits: { $size: "$exits" } } }, { $group: { _id: null, averageExits: { $avg: "$totalNumberOfExits" } } }])

     - Identify the most prevalent item type (e.g., weapons, potions) using aggregation pipelines.

       db.items.aggregate([{$group: {_id:"$type", count: {$sum: 1}}}, {$sort: {count: -1}}, {$limit: 1}])

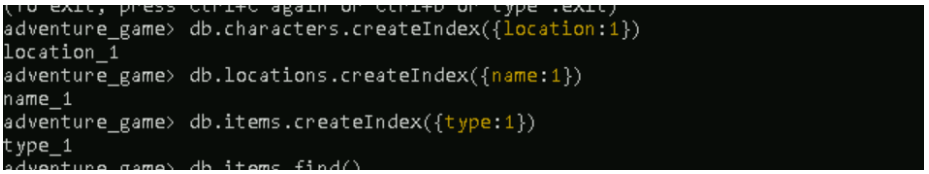
2. Speedy Navigation with Indexing:

   - Identify frequently used query fields in your game (e.g., location names, item types).

     i). location in the characters collection
     ii). name in the locations collection
     iii). type in the items collection

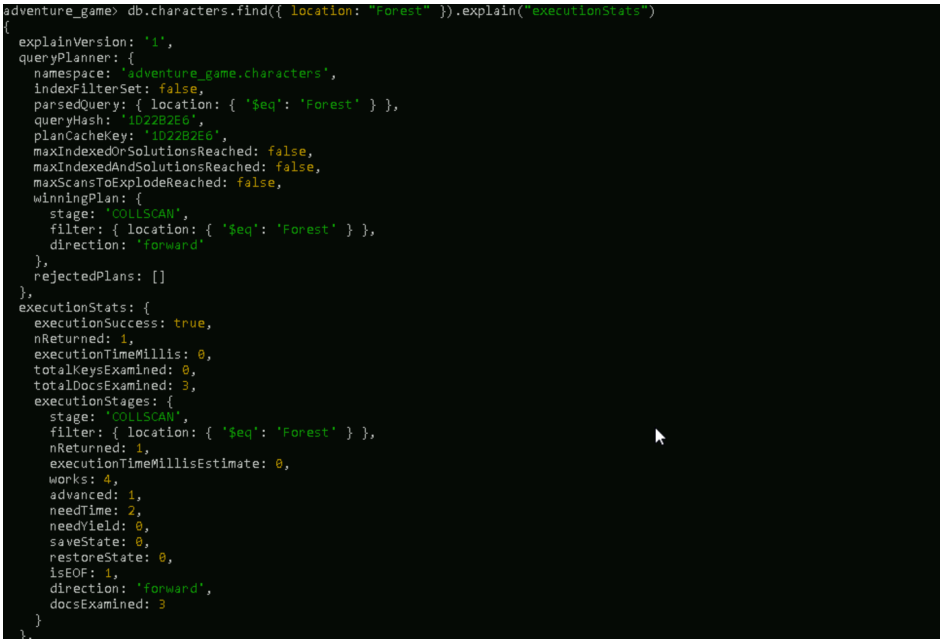
   - Create indexes on these fields within the relevant collections.

```
db.characters.createIndex({ location: 1 });
db.locations.createIndex({ name: 1 });
db.items.createIndex({ type: 1 });
```

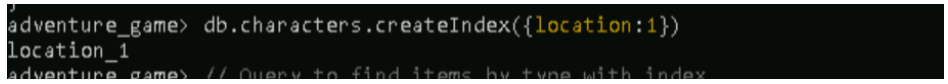


- Test the impact of indexes on query speed by comparing performance before and after indexing.

```
// Query to find characters in 'Forest' location without index
db.characters.find({ location: "Forest" }).explain("executionStats")
```




```
// Create an index on the 'location' field in the 'characters' collection
db.characters.createIndex({ location: 1 })
```



// Query to find characters in 'Forest' location with index
db.characters.find({ location: "Forest" }).explain("executionStats")