

# Assignment-1

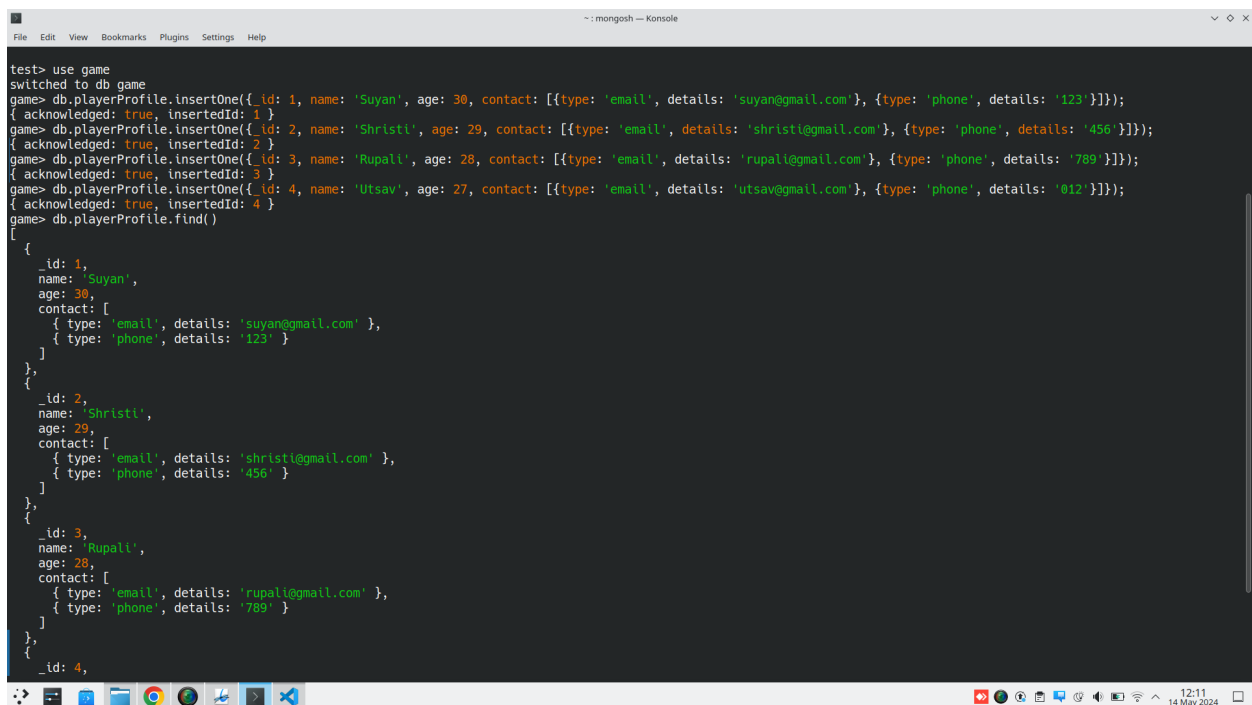
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## Requirements

- I work in a multiplayer online gaming company.
- Design a mongodb database, where collections can be playerProfile, sessions and transactions.
- Use embedding and referencing to link different collections accordingly.

## 1. playerProfile collection



```
test> use game
switched to db game
game> db.playerProfile.insertOne({_id: 1, name: 'Suyan', age: 30, contact: [{type: 'email', details: 'suyan@gmail.com'}, {type: 'phone', details: '123'}]});
{ acknowledged: true, insertedId: 1 }
game> db.playerProfile.insertOne({_id: 2, name: 'Shristi', age: 29, contact: [{type: 'email', details: 'shristi@gmail.com'}, {type: 'phone', details: '456'}]});
{ acknowledged: true, insertedId: 2 }
game> db.playerProfile.insertOne({_id: 3, name: 'Rupali', age: 28, contact: [{type: 'email', details: 'rupali@gmail.com'}, {type: 'phone', details: '789'}]});
{ acknowledged: true, insertedId: 3 }
game> db.playerProfile.insertOne({_id: 4, name: 'Utsav', age: 27, contact: [{type: 'email', details: 'utsav@gmail.com'}, {type: 'phone', details: '012'}]});
{ acknowledged: true, insertedId: 4 }
game> db.playerProfile.find()
[
  {
    _id: 1,
    name: 'Suyan',
    age: 30,
    contact: [
      { type: 'email', details: 'suyan@gmail.com' },
      { type: 'phone', details: '123' }
    ]
  },
  {
    _id: 2,
    name: 'Shristi',
    age: 29,
    contact: [
      { type: 'email', details: 'shristi@gmail.com' },
      { type: 'phone', details: '456' }
    ]
  },
  {
    _id: 3,
    name: 'Rupali',
    age: 28,
    contact: [
      { type: 'email', details: 'rupali@gmail.com' },
      { type: 'phone', details: '789' }
    ]
  },
  {
    _id: 4,
    name: 'Utsav',
    age: 27,
    contact: [
      { type: 'email', details: 'utsav@gmail.com' },
      { type: 'phone', details: '012' }
    ]
  }
]
```

## 2. Transactions collection

```
game> db.transactions.insertOne({ _id: 1, playerId: 1, paymentMethod: 'eSewa', transactionAmount: 100, transactionDate: new Date() });
{ acknowledged: true, insertedId: 1 }
game> db.transactions.insertOne({ _id: 2, playerId: 1, paymentMethod: 'Khalti', transactionAmount: 400, transactionDate: new Date() });
{ acknowledged: true, insertedId: 2 }
game> db.transactions.insertMany([ { _id: 3, playerId: 2, paymentMethod: 'Khalti', transactionAmount: 300, transactionDate: new Date() }, { _id: 4, playerId: 2, paymentMethod: 'eSewa', transactionAmount: 400, transactionDate: new Date() } ]);
...
game> db.transactions.insertMany([ { _id: 3, playerId: 2, paymentMethod: 'Khalti', transactionAmount: 300, transactionDate: new Date() }, { _id: 4, playerId: 2, paymentMethod: 'eSewa', transactionAmount: 8000, transactionDate: new Date() } ]);
{ acknowledged: true, insertedIds: { '0': 3, '1': 4 } }
game> db.transactions.find()
[
  {
    _id: 1,
    playerId: 1,
    paymentMethod: 'eSewa',
    transactionAmount: 100,
    transactionDate: ISODate('2024-05-14T06:31:20.491Z')
  },
  {
    _id: 2,
    playerId: 1,
    paymentMethod: 'Khalti',
    transactionAmount: 400,
    transactionDate: ISODate('2024-05-14T06:32:17.630Z')
  },
  {
    _id: 3,
    playerId: 2,
    paymentMethod: 'Khalti',
    transactionAmount: 300,
    transactionDate: ISODate('2024-05-14T06:35:17.781Z')
  },
  {
    _id: 4,
    playerId: 2,
    paymentMethod: 'eSewa',
    transactionAmount: 8000,
    transactionDate: ISODate('2024-05-14T06:35:17.781Z')
  }
]
```

- Since playerProfile doesn't have any field related to transactions, so we need to add them up using updateOne method and \$set operator

```
~ : mongosh —
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game> db.playerProfile.updateOne({name: 'Suyan'},{$set: {payments: [1, 2]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
game> db.playerProfile.updateOne({name: 'Shristi'},{$set: {payments: [3, 4]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
game> db.playerProfile.find()
[
  {
    _id: 1,
    name: 'Suyan',
    age: 30,
    contact: [
      { type: 'email', details: 'suyan@gmail.com' },
      { type: 'phone', details: '123' }
    ],
    payments: [ 1, 2 ]
  },
  {
    _id: 2,
    name: 'Shristi',
    age: 29,
    contact: [
      { type: 'email', details: 'shristi@gmail.com' },
      { type: 'phone', details: '456' }
    ],
    payments: [ 3, 4 ]
  },
]
```

- Now, we can use lookup operator to join these collections

```
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~: mongosh — Konsole
game> db.playerProfile.aggregate({$lookup: {from: 'transactions', localField: 'payments', foreignField: '_id', as: 'transactionDetails'}})
[
  {
    _id: 1,
    name: 'Suyan',
    age: 30,
    contact: [
      { type: 'email', details: 'suyand@gmail.com' },
      { type: 'phone', details: '123' }
    ],
    payments: [ 1, 2 ],
    transactionDetails: [
      {
        _id: 1,
        playerId: 1,
        paymentMethod: 'eSewa',
        transactionAmount: 100,
        transactionDate: ISODate('2024-05-14T06:31:20.491Z')
      },
      {
        _id: 2,
        playerId: 1,
        paymentMethod: 'Khalti',
        transactionAmount: 400,
        transactionDate: ISODate('2024-05-14T06:32:17.630Z')
      }
    ]
  },
  {
    _id: 2,
    name: 'Shristi',
    age: 20,
    contact: [
      { type: 'email', details: 'shristi@gmail.com' },
      { type: 'phone', details: '456' }
    ],
    payments: [ 3, 4 ],
    transactionDetails: [
      {
        _id: 4,
        playerId: 2,
        paymentMethod: 'eSewa',
        transactionAmount: 8000,
        transactionDate: ISODate('2024-05-14T06:35:17.781Z')
      },
      {
        _id: 3,
        playerId: 2,
        paymentMethod: 'Khalti',
        transactionAmount: 300,
        transactionDate: ISODate('2024-05-14T06:35:17.781Z')
      }
    ]
  }
]
```

- Instead of having separate fields like payments and transactionDetails after aggregation, we can give same value to both **localField** and **as** which will then give out a common field as result.

```
File Edit View Bookmarks Plugins Settings Help
~: mongosh — Konsole
game> db.playerProfile.aggregate({$lookup: {from: 'transactions', localField: 'payments', foreignField: '_id', as: 'payments'}})
[
  {
    _id: 1,
    name: 'Suyan',
    age: 30,
    contact: [
      { type: 'email', details: 'suyand@gmail.com' },
      { type: 'phone', details: '123' }
    ],
    payments: [
      {
        _id: 1,
        playerId: 1,
        paymentMethod: 'eSewa',
        transactionAmount: 100,
        transactionDate: ISODate('2024-05-14T06:31:20.491Z')
      },
      {
        _id: 2,
        playerId: 1,
        paymentMethod: 'Khalti',
        transactionAmount: 400,
        transactionDate: ISODate('2024-05-14T06:32:17.630Z')
      }
    ]
  },
  {
    _id: 2,
    name: 'Shristi',
    age: 20,
    contact: [
      { type: 'email', details: 'shristi@gmail.com' },
      { type: 'phone', details: '456' }
    ],
    payments: [
      {
        _id: 4,
        playerId: 2,
        paymentMethod: 'eSewa',
        transactionAmount: 8000,
        transactionDate: ISODate('2024-05-14T06:35:17.781Z')
      },
      {
        _id: 3,
        playerId: 2,
        paymentMethod: 'Khalti',
        transactionAmount: 300,
        transactionDate: ISODate('2024-05-14T06:35:17.781Z')
      }
    ]
  }
]
```

### 3. gameSessions collection

```
game> db.gameSessions.insertMany([ { _id: 3, sessionStart: new Date("2022-01-03T00:00:00Z"), sessionEnd: new Date("2022-01-03T01:00:00Z") }, { _id: 4, sessionStart: new Date("2022-01-04T00:00:00Z"), sessionEnd: new Date("2022-01-04T01:00:00Z") } ] )
{ acknowledged: true, insertedIds: { '0': 3, '1': 4 } }
game> db.gameSessions.insertMany([ { _id: 5, sessionStart: new Date("2022-01-05T00:00:00Z"), sessionEnd: new Date("2022-01-05T01:00:00Z") }, { _id: 6, sessionStart: new Date("2022-01-06T00:00:00Z"), sessionEnd: new Date("2022-01-06T01:00:00Z") } ] )
{ acknowledged: true, insertedIds: { '0': 5, '1': 6 } }
game> db.gameSessions.insertMany([ { _id: 7, sessionStart: new Date("2022-01-07T00:00:00Z"), sessionEnd: new Date("2022-01-07T01:00:00Z") }, { _id: 8, sessionStart: new Date("2022-01-08T00:00:00Z"), sessionEnd: new Date("2022-01-08T01:00:00Z") } ] )
{ acknowledged: true, insertedIds: { '0': 7, '1': 8 } }
game> db.gameSessions.find()
{
  "_id": 1,
  "sessionStart": ISODate("2022-01-01T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-01T01:00:00.000Z")
},
{
  "_id": 2,
  "sessionStart": ISODate("2022-01-02T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-02T01:00:00.000Z")
},
{
  "_id": 3,
  "sessionStart": ISODate("2022-01-03T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-03T01:00:00.000Z")
},
{
  "_id": 4,
  "sessionStart": ISODate("2022-01-04T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-04T01:00:00.000Z")
},
{
  "_id": 5,
  "sessionStart": ISODate("2022-01-05T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-05T01:00:00.000Z")
},
{
  "_id": 6,
  "sessionStart": ISODate("2022-01-06T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-06T01:00:00.000Z")
},
{
  "_id": 7,
  "sessionStart": ISODate("2022-01-07T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-07T01:00:00.000Z")
},
{
  "_id": 8,
  "sessionStart": ISODate("2022-01-08T00:00:00.000Z"),
  "sessionEnd": ISODate("2022-01-08T01:00:00.000Z")
}
]
```

- Updating playerProfile with sessions field to connect to gameSessions collection

```

game> db.playerProfile.updateOne({name: 'Suyan'}, {$set: {sessions: [1,2]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
game> db.playerProfile.updateOne({name: 'Shristi'}, {$set: {sessions: [3, 4, 5]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
game> db.playerProfile.updateOne({name: 'Rupali'}, {$set: {sessions: [6, 7]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}
game> db.playerProfile.updateOne({name: 'Utsav'}, {$set: {sessions: [8]}})
{
  acknowledged: true,
  insertedId: null,
  matchedCount: 1,
  modifiedCount: 1,
  upsertedCount: 0
}

```

**using lookup operator to link playerProfile and gameSessions**

```
File Edit View Bookmarks Plugins Settings Help
game> db.playerProfile.aggregate({$lookup: {from: 'gameSessions', localField: 'sessions', foreignField: '_id', as: 'sessions'}})
{
  _id: 1,
  name: 'Suyan',
  age: 30,
  contact: [
    { type: 'email', details: 'suyand@gmail.com' },
    { type: 'phone', details: '123' }
  ],
  payments: [ 1, 2 ],
  sessions: [
    {
      _id: 1,
      sessionStart: ISODate('2022-01-01T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-01T01:00:00.000Z')
    },
    {
      _id: 2,
      sessionStart: ISODate('2022-01-02T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-02T01:00:00.000Z')
    }
  ]
},
{
  _id: 2,
  name: 'Shristi',
  age: 29,
  contact: [
    { type: 'email', details: 'shristi@gmail.com' },
    { type: 'phone', details: '456' }
  ],
  payments: [ 3, 4 ],
  sessions: [
    {
      _id: 5,
      sessionStart: ISODate('2022-01-05T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-05T01:00:00.000Z')
    },
    {
      _id: 3,
      sessionStart: ISODate('2022-01-03T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-03T01:00:00.000Z')
    },
    {
      _id: 4,

```

```
File Edit View Bookmarks Plugins Settings Help
{
  _id: 4,
  sessionStart: ISODate('2022-01-04T00:00:00.000Z'),
  sessionEnd: ISODate('2022-01-04T01:00:00.000Z')
}
},
{
  _id: 3,
  name: 'Rupali',
  age: 28,
  contact: [
    { type: 'email', details: 'rupali@gmail.com' },
    { type: 'phone', details: '789' }
  ],
  sessions: [
    {
      _id: 6,
      sessionStart: ISODate('2022-01-06T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-06T01:00:00.000Z')
    },
    {
      _id: 7,
      sessionStart: ISODate('2022-01-07T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-07T01:00:00.000Z')
    }
  ]
},
{
  _id: 4,
  name: 'Utsav',
  age: 27,
  contact: [
    { type: 'email', details: 'utsav@gmail.com' },
    { type: 'phone', details: '012' }
  ],
  sessions: [
    {
      _id: 8,
      sessionStart: ISODate('2022-01-08T00:00:00.000Z'),
      sessionEnd: ISODate('2022-01-08T01:00:00.000Z')
    }
  ]
}
]
game>
```