HW#XXX: NoSQL & MongoDB

1) I would use the relational model because the attribute count is static. Using MongoDB would just slow the query speed down without any benefit.

2) I would use MongoDB here since the attribute count is uncertain. If I were to use relational model, then I would have to alter the table every time there's an additional attribute.

3.) I would use the relational model because the database needs to be time sensitive, and the attribute count is static.

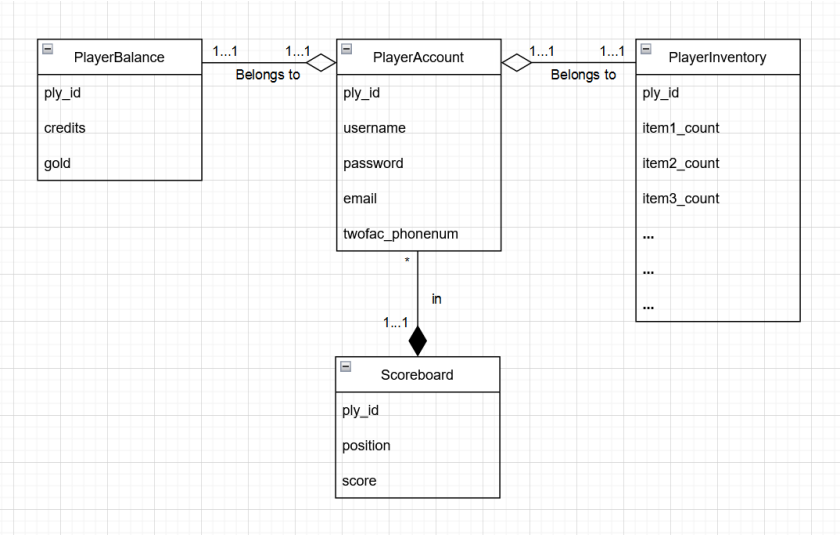
4.) Gaming | MongoDB

PlayerAccount(<u>ply_id</u>, <u>username</u>, password, email, twofac_phonenum)

PlayerBalance(<u>ply_id</u>, credits, gold)

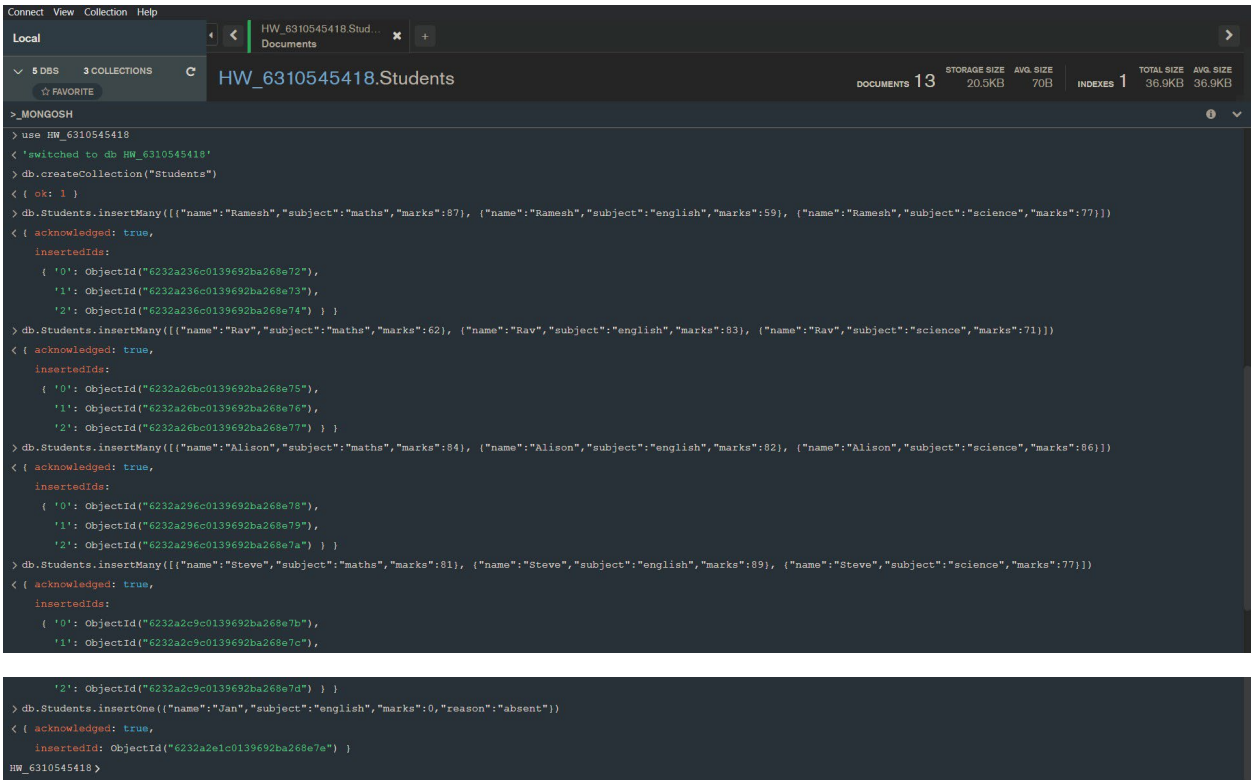
PlayerInventory(<u>ply_id</u>, item1_count, item2_count, …)

Scoreboard(<u>ply_id</u>, <u>position</u>, score)



5.)

Database creation



Queries

- Find the total marks for each student across all subjects.

```
> db.Students.aggregate([{$group: {_id: "$name", "total_marks": {"$sum": "$marks"}}}])
< { _id: 'Rav', total_marks: 216 }
  { _id: 'Alison', total_marks: 252 }
  { _id: 'Ramesh', total_marks: 223 }
  { _id: 'Steve', total_marks: 247 }
  { _id: 'Jan', total_marks: 0 }
```

- Find the maximum marks scored in each subject.

```
> db.Students.aggregate([{$group: {_id: "$subject", "max_score": {"$max": "$marks"}}}])
< { _id: 'english', max_score: 89 }
  { _id: 'science', max_score: 86 }
  { _id: 'maths', max_score: 87 }
```

- Find the minimum marks scored by each student.

```
> db.Students.aggregate([{$group: {_id: "$name", "min_score": {"$min": "$marks"}}}])
< { _id: 'Alison', min_score: 82 }
  { _id: 'Steve', min_score: 77 }
  { _id: 'Jan', min_score: 0 }
  { _id: 'Ramesh', min_score: 59 }
  { _id: 'Rav', min_score: 62 }
```

- Find the top two subjects based on average marks.

```
> db.Students.aggregate([{$group: {_id: "$subject", "average_score": {"$avg": "$marks"}}}, {$sort: {average_score: -1}}, {$limit: 2}])
< { _id: 'maths', average_score: 78.5 }
  { _id: 'science', average_score: 77.75 }
```