1. Find total League, Season, Matches played in each Country:

Query:

db.Matches.aggregate([

  {$group:{_id:'$Country', TL:{$addToSet:'$League'},TS:{$addToSet:'$Season'}, TM:{$sum:1}}},

  {$project:{_id:0,Country:'$_id',TotalLeague:{$size:'$TL'},TotalSeason:{$size:'$TS'},TotalMatch:'$TM'}}

])

```
FIFAWorldCup> db.Matches.aggregate([
...     {$group:{_id:'$Country', TL:{$addToSet:'$League'},TS:{$addToSet:'$Season'}, TM:{$sum:1}}},
...     {$project:{Country:'$_id',TotalLeague:{$size:'$TL'},TotalSeason:{$size:'$TS'},TotalMatch:'$TM',_id:0}}
... ])
[
  {
    Country: 'France',
    TotalLeague: 1,
    TotalSeason: 8,
    TotalMatch: 3040
  },
  {
    Country: 'England',
    TotalLeague: 1,
    TotalSeason: 8,
    TotalMatch: 3038
  },
  {
    Country: 'Belgium',
    TotalLeague: 1,
    TotalSeason: 8,
    TotalMatch: 1520
  },
  {
    Country: 'Germany',
    TotalLeague: 1,
    TotalSeason: 8,
    TotalMatch: 2192
  }
]
FIFAWorldCup> 
```

2. Find Countries, Total Matches played in each Season:

Query:

db.Matches.aggregate([

   {$group:{_id:'$Season', Country:{$addToSet:'$Country'}, TM:{$sum:1}}},

   {$project:{_id:0,Season:'$_id', Country:'$Country',TotalMatch:'$TM'}}

])

```
FIFAWorldCup> db.Matches.aggregate([
...     {$group:{_id:'$Season', Country:{$addToSet:'$Country'}, TM:{$sum:1}}},
...     {$project:{_id:0,Season:'$_id', Country:'$Country',TotalMatch:'$TM'}}
... ])
[
  {
    Season: '2011/2012',
    Country: [ 'France', 'England', 'Germany', 'Belgium' ],
    TotalMatch: 1306
  },
  {
    Season: '2014/2015',
    Country: [ 'France', 'England', 'Belgium', 'Germany' ],
    TotalMatch: 1306
  },
  {
    Season: '2008/2009',
    Country: [ 'France', 'Belgium', 'Germany', 'England' ],
    TotalMatch: 1164
  },
  {
    Season: '2015/2016',
    Country: [ 'France', 'Belgium', 'Germany', 'England' ],
    TotalMatch: 1050
  },
  {
    Season: '2009/2010',
    Country: [ 'France', 'Belgium', 'Germany', 'England' ],
    TotalMatch: 1276
  },
  {
    Season: '2012/2013',
    Country: [ 'France', 'England', 'Belgium', 'Germany' ],
    TotalMatch: 1306
  },
```

- Total Matches played in each Season Country wise:

Query: db.Matches.aggregate([{$group:{_id:{Season:'$Season',Country:'$Country'}, Matches:{$sum:1}}},{$sort:{_id:1}}])

```
FIFAWorldCup> db.Matches.aggregate([{$group:{_id:{Season:'$Season',Country:'$Country'}, Matches:{$sum:1}}},{$sort:{_id:1}}])
[
  { _id: { Season: '2008/2009', Country: 'Belgium' }, Matches: 98 },
  { _id: { Season: '2008/2009', Country: 'England' }, Matches: 380 },
  { _id: { Season: '2008/2009', Country: 'France' }, Matches: 380 },
  { _id: { Season: '2008/2009', Country: 'Germany' }, Matches: 306 },
  { _id: { Season: '2009/2010', Country: 'Belgium' }, Matches: 210 },
  { _id: { Season: '2009/2010', Country: 'England' }, Matches: 380 },
  { _id: { Season: '2009/2010', Country: 'France' }, Matches: 380 },
  { _id: { Season: '2009/2010', Country: 'Germany' }, Matches: 306 },
  { _id: { Season: '2010/2011', Country: 'Belgium' }, Matches: 240 },
  { _id: { Season: '2010/2011', Country: 'England' }, Matches: 379 },
  { _id: { Season: '2010/2011', Country: 'France' }, Matches: 380 },
  { _id: { Season: '2010/2011', Country: 'Germany' }, Matches: 306 },
  { _id: { Season: '2011/2012', Country: 'Belgium' }, Matches: 240 },
  { _id: { Season: '2011/2012', Country: 'England' }, Matches: 380 },
  { _id: { Season: '2011/2012', Country: 'France' }, Matches: 380 },
  { _id: { Season: '2011/2012', Country: 'Germany' }, Matches: 306 },
  { _id: { Season: '2012/2013', Country: 'Belgium' }, Matches: 240 },
  { _id: { Season: '2012/2013', Country: 'England' }, Matches: 380 },
  { _id: { Season: '2012/2013', Country: 'France' }, Matches: 380 },
  { _id: { Season: '2012/2013', Country: 'Germany' }, Matches: 306 }
]
Type "it" for more
FIFAWorldCup> it
```

3. Find Total Goals and Match played by each Team:

```
var map = function(){

    emit(this.HomeTeam.Name,{M:1,G:this.Goals.HomeTeam});

    emit(this.AwayTeam.Name,{M:1,G:this.Goals.AwayTeam});

}


var sum = function(key,value){

    var myElem = {Match:0,Goal:0};

    for(var i=0; i < value.length; i++)

    {

        myElem.Match += value[i].M;

        myElem.Goal += value[i].G;

    }

    return myElem;

}


db.Matches.mapReduce(map,sum,{out:'TeamAnalysis'})

db.TeamAnalysis.aggregate([{$project:{_id:0,Team:'$_id',Matches:'$value.Match',Goals:'$value.Goal'}},{$sort:{Goals:-1}}])
```

```
FIFAWorldCup> db.TeamAnalysis.aggregate([{$project:{_id:0,Team:'$_id',Matches:'$value.Match',Goals:'$value.Goal'}},{$sort:{Goals:-1}}])
[
  { Team: 'Manchester City(MCI)', Matches: 304, Goals: 606 },
  { Team: 'FC Bayern Munich(BMU)', Matches: 244, Goals: 591 },
  { Team: 'Chelsea(CHE)', Matches: 303, Goals: 583 },
  { Team: 'Manchester United(MUN)', Matches: 304, Goals: 582 },
  { Team: 'Arsenal(ARS)', Matches: 303, Goals: 571 },
  { Team: 'Paris Saint-Germain(PSG)', Matches: 304, Goals: 568 },
  { Team: 'Liverpool(LIV)', Matches: 303, Goals: 531 },
  { Team: 'Olympique Lyonnais(LYO)', Matches: 304, Goals: 497 },
  { Team: 'Borussia Dortmund(DOR)', Matches: 244, Goals: 489 },
  { Team: 'Tottenham Hotspur(TOT)', Matches: 304, Goals: 481 },
  { Team: 'Olympique de Marseille(MAR)', Matches: 304, Goals: 462 },
  { Team: 'LOSC Lille(LIL)', Matches: 304, Goals: 450 },
  { Team: 'Bayer 04 Leverkusen(LEV)', Matches: 244, Goals: 439 },
  { Team: 'Everton(EVE)', Matches: 303, Goals: 438 },
  { Team: 'VfL Wolfsburg(WOL)', Matches: 244, Goals: 427 },
  { Team: 'Girondins de Bordeaux(BOR)', Matches: 304, Goals: 404 },
  { Team: 'FC Schalke 04(S04)', Matches: 244, Goals: 384 },
  { Team: 'Club Brugge KV(CLB)', Matches: 189, Goals: 382 },
  { Team: 'SV Werder Bremen(WBR)', Matches: 244, Goals: 380 },
  { Team: 'FC Lorient(LOR)', Matches: 304, Goals: 378 }
]
Type "it" for more
FIFAWorldCup>
```

4. Find Number of Matches won by each Team:

```
var map = function(){

   var Difference = 0;

   if(this.Goals.HomeTeam != this.Goals.AwayTeam)

   {

     if(this.Goals.HomeTeam > this.Goals.AwayTeam)

     {

        Difference = this.Goals.HomeTeam - this.Goals.AwayTeam;

        emit(this.HomeTeam.Name,{M:1,G:Difference});

     }


     else

     {

        Difference = this.Goals.AwayTeam - this.Goals.HomeTeam;

        emit(this.AwayTeam.Name,{M:1,G:Difference});

     }

   }

}


var sum = function(key,value){

   var myElem = {Match:0,AvgGoal:0};

   for(var i=0; i < value.length; i++)

   {

     myElem.Match += value[i].M;

     myElem.AvgGoal += value[i].G;

   }

   myElem.AvgGoal /= i;

   return myElem;

}
```

db.Matches.mapReduce(map,sum,{out:'WonTeamAnalysis'})

db.WonTeamAnalysis.aggregate([{$project:{_id:0,Team:'$_id',Won:'$value.Match',AvgWonGoal:'$value.AvgGoal'}},{$sort:{Won:-1}}])

```
FIFAWorldCup> db.WonTeamAnalysis.aggregate([{$project:{_id:0,Team:'$_id',Won:'$value.Match',AvgWonGoal:'$value.AvgGoal'}},{$sort:{Won:-1}}])
[
  { Team: 'Manchester United(MUN)', Won: 192, AvgWonGoal: 2.015625 },
  { Team: 'Chelsea(CHE)', Won: 176, AvgWonGoal: 2.1818181818181817 },
  {
    Team: 'Paris Saint-Germain(PSG)',
    Won: 175,
    AvgWonGoal: 2.1542857142857144
  },
  {
    Team: 'Manchester City(MCI)',
    Won: 175,
    AvgWonGoal: 2.2742857142857145
  },
  {
    Team: 'FC Bayern Munich(BMU)',
    Won: 170,
    AvgWonGoal: 2.6294117647058823
  },
  { Team: 'Arsenal(ARS)', Won: 169, AvgWonGoal: 2.0828402366863905 },
  {
    Team: 'Olympique Lyonnais(LYO)',
    Won: 153,
    AvgWonGoal: 1.9607843137254901
  },
  {
    Team: 'Tottenham Hotspur(TOT)',
    Won: 151,
    AvgWonGoal: 1.7483443708609272
  },
  { Team: 'Liverpool(LIV)', Won: 150, AvgWonGoal: 2.16 },
  { Team: 'LOSC Lille(LIL)', Won: 147, AvgWonGoal: 1.7755102040816326 },
  {
    Team: 'Olympique de Marseille(MAR)',
    Won: 143,
    AvgWonGoal: 1.7342657342657342
  },
```

5. Display Details and Played Matches by each Player of Top 1 Won Team:

```
var map = function(){

    if(this.HomeTeam.Name =='Manchester United(MUN)')

    {

        for(var i=0; i < this.HomeTeam.Players.length; i++)

            emit(this.HomeTeam.Players[i].FifaId,1);

    }


    else if(this.AwayTeam.Name == 'Manchester United(MUN)')

    {

        for(var i=0; i < this.AwayTeam.Players.length; i++)

            emit(this.AwayTeam.Players[i].FifaId,1);

    }

}


var sum = function(key,value){return Array.sum(value);}


db.Matches.mapReduce(map,sum,{out:'Top1TeamPlayers',query:{$or:[{'HomeTeam.Name':'Manchester
United(MUN)'},{'AwayTeam.Name':'Manchester United(MUN)'}]}})


db.Top1TeamPlayers.aggregate([

    {

        $lookup:

        {

            from: 'Players',

            localField: '_id',

            foreignField: 'FifaId',

            as: 'Details'

        }

    },
```
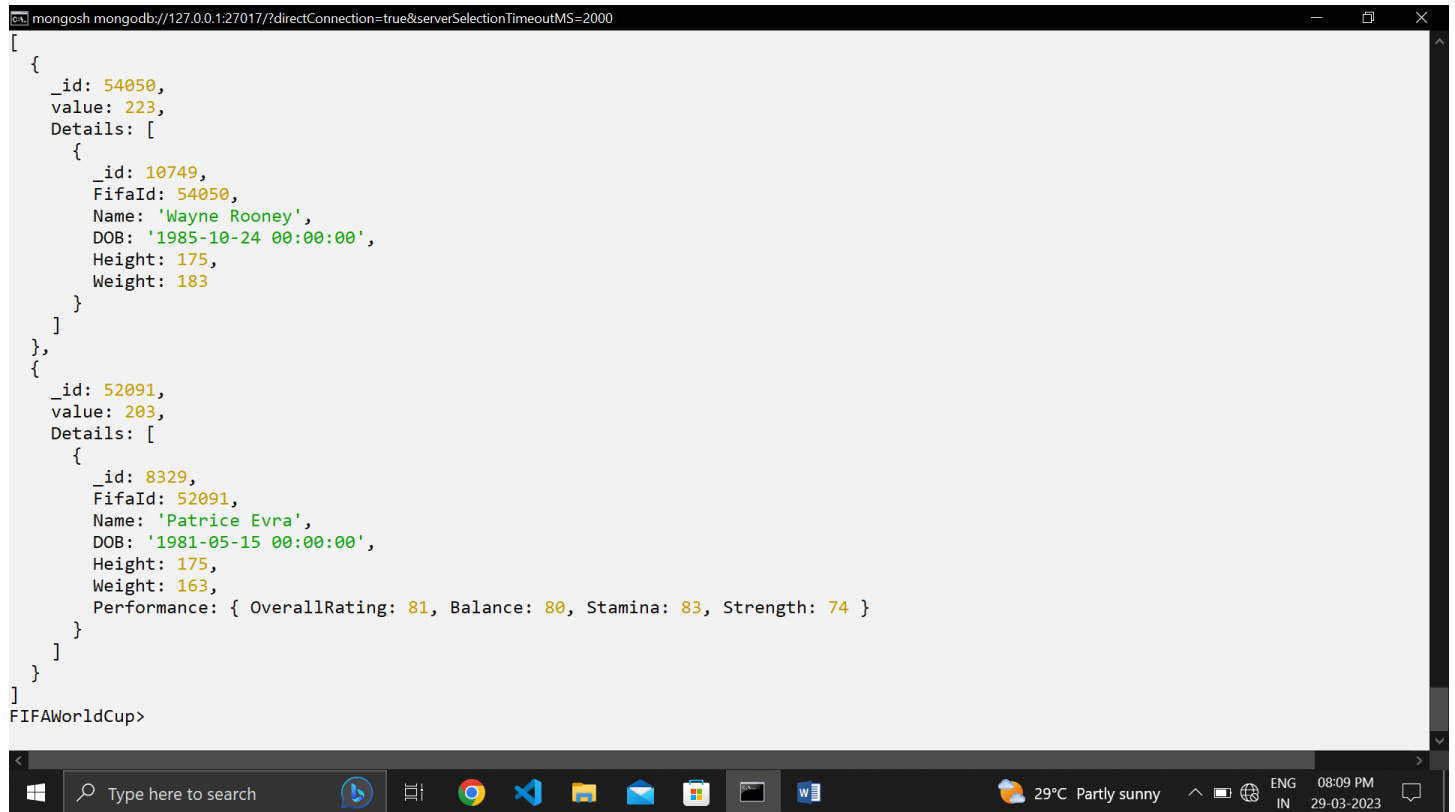
```
  {
    $sort:{value:-1}
  },
])
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000
[
  {
    _id: 54050,
    value: 223,
    Details: [
      {
        _id: 10749,
        FifaId: 54050,
        Name: 'Wayne Rooney',
        DOB: '1985-10-24 00:00:00',
        Height: 175,
        Weight: 183
      }
    ]
  },
  {
    _id: 52091,
    value: 203,
    Details: [
      {
        _id: 8329,
        FifaId: 52091,
        Name: 'Patrice Evra',
        DOB: '1981-05-15 00:00:00',
        Height: 175,
        Weight: 163,
        Performance: { OverallRating: 81, Balance: 80, Stamina: 83, Strength: 74 }
      }
    ]
  }
]
FIFAWorldCup>
```

6. Display Top 5 High Perfomance Players from Top1TeamPlayers:

```
db.Top1TeamPlayers.aggregate([

  {

    $lookup:

    {

      from: 'Players',

      localField: '_id',

      foreignField: 'FifaId',

      as: 'Details'

    }

  },

  {

    $unwind:'$Details'

  },

  {

    $sort:{'Details.Performance.OverallRating':-1}

  },

  {

    $limit:5

  },

  {

    $project:{_id:0,FifaId:'$_id',Name:'$Details.Name',Performance:'$Details.Performance.OverallRating'}

  }

])
```

```
[
  { FifaId: 20801, Name: 'Cristiano Ronaldo', Performance: 91 },
  { FifaId: 143001, Name: 'Carlos Tevez', Performance: 86 },
  { FifaId: 121944, Name: 'Bastian Schweinsteiger', Performance: 86 },
  { FifaId: 140601, Name: 'Nemanja Vidic', Performance: 85 },
  { FifaId: 51539, Name: 'Edwin van der Sar', Performance: 84 }
]
FIFAWorldCup>
```

7. Find the Teams, which Won even Team has less Players than opposite Team:

```
var map = function(){

   if(this.HomeTeam.Players.length < this.AwayTeam.Players.length && this.Goals.HomeTeam >
this.Goals.AwayTeam)

   {

     emit(this.HomeTeam.Name,1);

   }

   else if(this.AwayTeam.Players.length < this.HomeTeam.Players.length && this.Goals.AwayTeam >
this.Goals.HomeTeam)

   {

     emit(this.AwayTeam.Name,1);

   }

}


var sum = function(key,value){return Array.sum(value);}


db.Matches.mapReduce(map,sum,{out:'WonEvenLessPlayers'})
```

db.WonEvenLessPlayers.aggregate([{$project:{_id:0,Team:'$_id',NoTimeWon:'$value'}},{$sort:{NoTimeWon:-1}},{$limit:3}])

```
FIFAWorldCup> db.WonEvenLessPlayers.aggregate([{$project:{_id:0,Team:'$_id',NoTimeWon:'$value'}},{$sort:{NoTimeWon:-1}},{$limit:3}])
[
  { Team: 'Sporting Charleroi(CHA)', NoTimeWon: 8 },
  { Team: 'Sint-Truidense VV(STT)', NoTimeWon: 6 },
  { Team: 'Sporting Lokeren(LOK)', NoTimeWon: 5 }
]
FIFAWorldCup>
```

8. Find Number of Played Matches of each Player in each Season:

```
var map = function(){

    for(var index=0;index<this.HomeTeam.Players.length;index++)

        emit({Season:this.Season,FifaId:this.HomeTeam.Players[index].FifaId},1);


    for(var index=0;index<this.AwayTeam.Players.length;index++)

        emit({Season:this.Season,FifaId:this.AwayTeam.Players[index].FifaId},1);

}


var reduce = function(key,value){return Array.sum(value);}


db.Matches.mapReduce(map,reduce,{out:"PlayersSeasonPlayedMatch"})
```

db.PlayersSeasonPlayedMatch.aggregate([{$project:{_id:0,Season:'$_id.Season', FifaId:'$_id.FifaId', MatchPlayed:'$value'}},{$sort:{Season:1}}])

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000                                    —    □    X
FIFAWorldCup> db.PlayersSeasonPlayedMatch.aggregate([{$project:{_id:0,Season:'$_id.Season', FifaId:'$_id.FifaId', MatchPlayed:'$value'}},{$sort:{
Season:1}}])
[
  { Season: '2008/2009', FifaId: 116494, MatchPlayed: 37 },
  { Season: '2008/2009', FifaId: 156385, MatchPlayed: 17 },
  { Season: '2008/2009', FifaId: 175911, MatchPlayed: 7 },
  { Season: '2008/2009', FifaId: 183387, MatchPlayed: 2 },
  { Season: '2008/2009', FifaId: 7455, MatchPlayed: 8 },
  { Season: '2008/2009', FifaId: 111023, MatchPlayed: 11 },
  { Season: '2008/2009', FifaId: 21146, MatchPlayed: 24 },
  { Season: '2008/2009', FifaId: 187051, MatchPlayed: 3 },
  { Season: '2008/2009', FifaId: 45167, MatchPlayed: 5 },
  { Season: '2008/2009', FifaId: 134906, MatchPlayed: 25 },
  { Season: '2008/2009', FifaId: 100143, MatchPlayed: 10 },
  { Season: '2008/2009', FifaId: 165429, MatchPlayed: 4 },
  { Season: '2008/2009', FifaId: 163662, MatchPlayed: 5 },
  { Season: '2008/2009', FifaId: 189261, MatchPlayed: 29 },
  { Season: '2008/2009', FifaId: 25420, MatchPlayed: 24 },
  { Season: '2008/2009', FifaId: 101473, MatchPlayed: 3 },
  { Season: '2008/2009', FifaId: 157191, MatchPlayed: 13 },
  { Season: '2008/2009', FifaId: 167990, MatchPlayed: 36 },
  { Season: '2008/2009', FifaId: 178056, MatchPlayed: 9 },
  { Season: '2008/2009', FifaId: 137733, MatchPlayed: 2 }
]
Type "it" for more
FIFAWorldCup>
```

9. Find Top 3 Players, who Played most:

```
var map = function(){

    for(var index=0;index<this.HomeTeam.Players.length;index++)

        emit(this.HomeTeam.Players[index].FifaId,1);


    for(var index=0;index<this.AwayTeam.Players.length;index++)

        emit(this.AwayTeam.Players[index].FifaId,1);

}


var reduce = function(key,value){return Array.sum(value);}


db.Matches.mapReduce(map,reduce,{out:"PlayersPlayedMatch"})

db.PlayersPlayedMatch.aggregate([

        {$project:{_id:0,FifaId:"$_id",MatchPlayed:"$value"}},

        {$sort:{MatchPlayed:-1}},

        {$limit:3},{$lookup:{from:'Players',localField:'FifaId',foreignField:'FifaId',as:'Details'}},

        {$unwind:'$Details'},

        {$project:{_id:0,FifaId:"$FifaId",Name:'$Details.Name',MatchPlayed:"$MatchPlayed",Performance:'$Details.Performance.OverallRating'}}

])
```

```
FIFAWorldCup> db.PlayersPlayedMatch.aggregate([{$project:{_id:0,FifaId:"$_id",MatchPlayed:"$value"}},{$sort:{MatchPlayed:-1}},{$limit:3},{$lookup
FIFAWorldCup> db.PlayersPlayedMatch.aggregate([{$project:{_id:0,FifaId:"$_id",MatchPlayed:"$value"}},{$sort:{MatchPlayed:-1}},{$limit:3},{$lookup
:{from:'Players',localField:'FifaId',foreignField:'FifaId',as:'Details'}},{$unwind:'$Details'},{$project:{_id:0,FifaId:"$FifaId",Name:'$Details.N
ame',MatchPlayed:"$MatchPlayed",Performance:'$Details.Performance.OverallRating'}}])
[
  { FifaId: 163705, Name: 'Steve Mandanda', MatchPlayed: 300 },
  { FifaId: 167628, Name: 'Stephane Ruffier', MatchPlayed: 294 },
  {
    FifaId: 167948,
    Name: 'Hugo Lloris',
    MatchPlayed: 282,
    Performance: 83
  }
]
FIFAWorldCup> ▉
```

10. Find Top 3 High Performance Players:

Query: db.Players.find().sort({'Performance.OverallRating':-1}).limit(3)

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000

FIFAWorldCup> db.Players.find().sort({'Performance.OverallRating':-1}).limit(3)
[
  {
    _id: 6176,
    FifaId: 158023,
    Name: 'Lionel Messi',
    DOB: '1987-06-24 00:00:00',
    Height: 170,
    Weight: 159,
    Performance: { OverallRating: 92, Balance: 92, Stamina: 78, Strength: 60 }
  },
  {
    _id: 1995,
    FifaId: 20801,
    Name: 'Cristiano Ronaldo',
    DOB: '1985-02-05 00:00:00',
    Height: 185,
    Weight: 176,
    Performance: { OverallRating: 91, Balance: 74, Stamina: 88, Strength: 79 }
  },
  {
    _id: 742,
    FifaId: 41,
    Name: 'Andres Iniesta',
    DOB: '1984-05-11 00:00:00',
    Height: 170,
    Weight: 150,
    Performance: { OverallRating: 88, Balance: 86, Stamina: 78, Strength: 60 }
  }
]
FIFAWorldCup>
```

11. Find The most competitor Teams:

```
var map = function(){
    emit({HomeTeam:this.HomeTeam.Name,AwayTeam:this.AwayTeam.Name},1);
    emit({HomeTeam:this.AwayTeam.Name,AwayTeam:this.HomeTeam.Name},1);
}


var reduce = function(key,value){return Array.sum(value);}


db.Matches.mapReduce(map,reduce,{out:"Competitors"})
db.Competitors.aggregate([
{$sort:{value: -1}},
{$project:{_id:0,Team1:'$_id.HomeTeam',Team2:'$_id.AwayTeam', MatchPlayed:'$value'}}
])
```

```
mongosh mongodb://127.0.0.1:27017/?directConnection=true&serverSelectionTimeoutMS=2000       —  □  X
FIFAWorldCup> db.Competitors.aggregate([{$sort:{value: -1}},{$project:{_id:0,Team1:'$_id.HomeTeam',Team2:'$_id.AwayTeam', MatchPlayed:'$value'}}]
)
[
  {
    Team1: 'Manchester City(MCI)',
    Team2: 'Sunderland(SUN)',
    MatchPlayed: 16
  },
  { Team1: 'Everton(EVE)', Team2: 'Liverpool(LIV)', MatchPlayed: 16 },
  { Team1: 'Sunderland(SUN)', Team2: 'Chelsea(CHE)', MatchPlayed: 16 },
  { Team1: 'Chelsea(CHE)', Team2: 'Liverpool(LIV)', MatchPlayed: 16 },
  { Team1: 'Everton(EVE)', Team2: 'Sunderland(SUN)', MatchPlayed: 16 },
  {
    Team1: 'Stoke City(STK)',
    Team2: 'Tottenham Hotspur(TOT)',
    MatchPlayed: 16
  },
  {
    Team1: 'OGC Nice(NIC)',
    Team2: 'Toulouse FC(TOU)',
    MatchPlayed: 16
  },
  { Team1: 'Aston Villa(AVL)', Team2: 'Everton(EVE)', MatchPlayed: 16 },
  {
    Team1: 'FC Lorient(LOR)',
    Team2: 'Girondins de Bordeaux(BOR)',
    MatchPlayed: 16
  },
  {
    Team1: 'Sunderland(SUN)',
    Team2: 'Manchester City(MCI)',
    MatchPlayed: 16
  },
  {
    Team1: 'Arsenal(ARS)',
    Team2: 'Manchester City(MCI)',
```

12. Find Total Number of Matches Played Between 2011-01-01 and 2012-12-31:

Query: db.Matches.find({$and:[{Date:{$gte:"2011-01-01"}},{Date:{$lte:"2012-12-31"}}]}).count()

```
FIFAWorldCup> db.Matches.find({$and:[{Date:{$gte:"2011-01-01"}},{Date:{$lte:"2012-12-31"}}]}).count()
2635
FIFAWorldCup> ▪
```

13. Find Date on wich most Matches played:

Query: db.Matches.aggregate([{$group:{_id:"$Date",MatchPlayed:{$sum:1}}},{$sort:{MatchPlayed: -1}},{$project:{_id:0,Date:'$_id',MatchPlayed:'$MatchPlayed'}},{$limit:5}])

```
FIFAWorldCup> db.Matches.aggregate([{$group:{_id:"$Date",MatchPlayed:{$sum:1}}},{$sort:{MatchPlayed: -1}},{$project:{_id:0,Date:'$_id',MatchPlaye
MatchPlayed:'$MatchPlayed'}},{$limit:5}])
[
  { Date: '2009-05-16 00:00:00', MatchPlayed: 31 },
  { Date: '2011-02-12 00:00:00', MatchPlayed: 28 },
  { Date: '2009-08-15 00:00:00', MatchPlayed: 28 },
  { Date: '2009-04-11 00:00:00', MatchPlayed: 28 },
  { Date: '2011-09-24 00:00:00', MatchPlayed: 27 }
]
FIFAWorldCup>
```