

Homework-3

MongoDB MapReduce Assignment

Part 1:

-Use mongoDB map-reduce on the example set of game data. Insert 10 different games data in the games collection.

Code:

```
Terminal Shell Edit View Window Help
priyankapatil — ssh ppatil3@swsec.is.umbc.edu — 200x56

> use ppatil3
switched to db ppatil3
> db.Games.drop()
true
> db.createCollection("Games")
{ "ok" : 1 }
>
> db.Games.insertOne({name: "Mini Militia", publisher: "Miniclip", released: "20110405", rating:95, "scores" : [
... {
...   "name": "derrick",
...   "score": 100
... },
... {
...   "name": "tim",
...   "score": 250
... },
... {
...   "name": "bryan",
...   "score": 150
... }
... ]})
{
  "acknowledged" : true,
  "insertedId" : ObjectId("5e8d27c4cef0db43822a5ab3")
}
> db.Games.insertOne({name: "Rocket League", publisher: "Psyonix", released: "20150707", rating:100, "scores" : [
... {
...   "name": "derrick",
...   "score": 780
... },
... {
...   "name": "tim",
...   "score": 460
... },
... {
...   "name": "Jack",
...   "score": 300
... },
... {
...   "name": "bryan",
...   "score": 600
... }
... ]})
{
  "acknowledged" : true,
  "insertedId" : ObjectId("5e8d27c4cef0db43822a5ab4")
}
> db.Games.insertOne({name: "pubg", publisher: "Pugb Corporation", released: "20170323", rating:70, "scores" : [
... {
...   "name": "derrick",
...   "score": 230
... }
```

Output:

```
Terminal Shell Edit View Window Help
priyankapatil — ssh ppatil3@swsec.is.umbc.edu — 200x56

}
}
{
  "_id" : ObjectId("5e8d27c4cef0db43822a5aba"),
  "name" : "Minecraft",
  "publisher" : "Mojang",
  "released" : "20110526",
  "rating" : 100,
  "scores" : [
    {
      "name" : "derrick",
      "score" : 550
    },
    {
      "name" : "tim",
      "score" : 340
    },
    {
      "name" : "bryan",
      "score" : 110
    }
  ]
}
{
  "_id" : ObjectId("5e8d27c4cef0db43822a5abb"),
  "name" : "Counter-Strike",
  "publisher" : "Nexon",
  "released" : "20001108",
  "rating" : 97,
  "scores" : undefined
}
{
  "_id" : ObjectId("5e8d27c4cef0db43822a5abc"),
  "name" : "Mario ",
  "publisher" : "Nintendo",
  "released" : "19850813",
  "rating" : 95,
  "scores" : [
    {
      "name" : "Jack",
      "score" : 450
    },
    {
      "name" : "Jill",
      "score" : 200
    },
    {
      "name" : "bryan",
      "score" : 700
    }
  ]
}
}
> db.Games.count()
10
```

- Write a map reduce operation that calculates the **total score** from all games for **each player**. For the output, please use your student id `_Part1` in your collection name so you don't overwrite other peoples'. The easiest way to create functions in the mongo shell, is to write the methods in a text editor and paste them in, then call them within the shell.

Code and Output:

```
> db.Games.mapReduce(function(){
...   for(var i in this.scores) {
...     emit({PlayerName: this.scores[i].name}, {totalScore: this.scores[i].score});
...   },
...   function(key, values){
...     var total=0;
...     for(var i=0; i<values.length;i++)
...       {total += values[i].totalScore;}
...     return {finalTotal: total}}, {out: "ppatil3_Part1"}).find()
{ "_id" : { "PlayerName" : "Jack" }, "value" : { "finalTotal" : 770 } }
{ "_id" : { "PlayerName" : "Jill" }, "value" : { "finalTotal" : 330 } }
{ "_id" : { "PlayerName" : "bryan" }, "value" : { "finalTotal" : 2430 } }
{ "_id" : { "PlayerName" : "derrick" }, "value" : { "finalTotal" : 2200 } }
{ "_id" : { "PlayerName" : "tim" }, "value" : { "finalTotal" : 2520 } }
>
> █
```

Part 2:

Exercise 1: Upload these 2 json files to 2 different collections on your MongoDB database

Code and Output:

```
-----
> use ppatil3
switched to db ppatil3
> db.mapreduce_task1.drop()
true
> db.mapreduce_task2.drop()
true
>
> db.createCollection("mapreduce_task1")
{ "ok" : 1 }
> db.createCollection("mapreduce_task2")
{ "ok" : 1 }
> quit()
-sh-4.2$
-sh-4.2$ mongoimport --db ppatil3 --collection mapreduce_task1 --file /home/local/AD/ppatil3/task1.json
2020-04-07T21:59:10.921-0400   connected to: localhost
2020-04-07T21:59:10.924-0400   imported 5 documents
-sh-4.2$
-sh-4.2$ mongoimport --db ppatil3 --collection mapreduce_task2 --file /home/local/AD/ppatil3/task2.json
2020-04-07T21:59:10.967-0400   connected to: localhost
2020-04-07T21:59:10.970-0400   imported 27 documents
-sh-4.2$
-sh-4.2$ █
```

Exercise 2: We need to merge these 2 files. All the comments associated with a title should come from Task-2 file under one title of Task-1 file in the below format. If you notice you find only the comments from Task -2 (highlighted in RED) added to Task-1 file.

Code:

```
> use ppatil3
switched to db ppatil3
>
> map_task1 = function(){
... emit(this.title, {"title": this.title, "num_comments": this.num_comments, "subreddit": this.subreddit, "description": this.description });
... }
function (){
emit(this.title, {"title": this.title, "num_comments": this.num_comments, "subreddit": this.subreddit, "description": this.description });
}
>
> map_task2 = function(){
... emit(this.title, {"comment": this.comment});
... };
function (){
emit(this.title, {"comment": this.comment});
}
>
> reduce = function(k, values) {
...   var final_result = {}, task2_comment = {
...     "comment": '',
...   };
...   values.forEach(function(value) {
...     var field;
...     if ("comment" in value) {
...       if (!("comments" in final_result)) {
...         final_result.comments = [];
...       }
...       final_result.comments.push(value);
...     } else if ("comments" in value) {
...       if (!("comments" in final_result)) {
...         final_result.comments = [];
...       }
...       final_result.comments.push.apply(final_result.comments, value.comments);
...     }
...     for (field in value) {
...       if (value.hasOwnProperty(field) && !(field in task2_comment)) {
...         final_result[field] = value[field];
...       }
...     }
...   });
...   return final_result;
... };
```

```
> exec1 = db.mapreduce_task1.mapReduce(map_task1, reduce, {out: {reduce : 'ppatil3_Part2'}});
{
  "result" : "ppatil3_Part2",
  "timeMillis" : 58,
  "counts" : {
    "input" : 5,
    "emit" : 5,
    "reduce" : 0,
    "output" : 5
  },
  "ok" : 1
}
> exec2 = db.mapreduce_task2.mapReduce(map_task2, reduce, {out: {reduce : 'ppatil3_Part2'}});
{
  "result" : "ppatil3_Part2",
  "timeMillis" : 50,
  "counts" : {
    "input" : 27,
    "emit" : 27,
    "reduce" : 5,
    "output" : 5
  },
  "ok" : 1
}
```

Output:

```
> db.ppatil3_Part2.find().pretty()
{
  "_id" : "Applying for a French student visa",
  "value" : {
    "comments" : [
      {
        "comment" : "Where was he born? Some documents are issued in Canada by default in English and French. That would save a bit of translating. \n\nEdit to add: To more fully answer the question, there isn't really a better passport since neither is in the EU. After finishing a masters, he can get a 12-month extension to look for a job ([source](http://www.campusfrance.org/fr/page/travailler-en-france-apres-ses-etudes)).\n\nIs he already in France on a work-visa? If he's already here then he should probably be speaking with the university's international student office, or the local government."
      },
      {
        "comment" : "How close does your friend live to a French consulate in the US? I'm not sure if it's changed since 2013 but I had to apply *in person* for my student visa and wait for my \"Campus France\" application to process before I could make my consulate appointment which took *forever*. I had to go to San Francisco for my appointment so I turned it into a vacation but aside from that it wasn't a huge deal. FWIW, dress well for your consulate appointment; the photo they took at the consulate is the one they ended up putting on my visa. I also had to pay a reciprocity fee (around $100), not sure what it costs for Canadians. \n\nedit: reread your post after writing this. Is he currently living in France? Not sure what would be required if he's already over there tbh. \n\nhe wants a visa that will allow him to look for a job at the end of his degree\n\nAside from au pairing and student jobs, student visas are not employment visas. His visa will likely terminate exactly as his masters is ending. At that point, he can exit the Schengen zone and return once his student visa expires (now on his 90 day Schengen visa) to look for a job. As a US/Canadian, he has the 90 day visa-free window anyway."
      }
    ],
    "title" : "Applying for a French student visa",
    "num_comments" : 3,
    "subreddit" : "travel",
    "description" : "I have a friend who is applying for a French student visa to study in Paris. He has a dual nationality as an American and a Canadian. Is there a better passport to apply on? \n\nFor context he's already done half of his masters, he was on a temporary working visa when he got accepted to his masters but he wants a visa that will allow him to look for a job at the end of his degree."
  }
}
{
  "_id" : "Frustration with obtaining a long-stay French student visa",
  "value" : {
    "comments" : [
      {
        "comment" : "UPDATE: turns out I was able to schedule an appointment in Atlanta, but I've got one in NYC after all!!"
      },
      {
        "comment" : "It's a Schengen visa right?\n\nSorry to say, you might be screwed. For Spain in CA, you basically had one shot and needed to schedule it months in advance, on only 2 embassies. Otherwise, it's checking online and calling 2-4x/day for a cancelled appointment.\n\nIt doesn't seem like mid-December would be enough time to get it back anyway, I think mine took 3 weeks."
      },
      {
        "comment" : "Traveling from the US, you can stay in many European countries for 90 days prior to needing a visa. I don't know anything about specifically getting a French visa, but I have done my entire visa process since arriving in Germany from the US. [Due to timing with my university acceptance, I could not do any of the visa process before coming here.] \n\nI don't know your specific situation, but this is a possibility. I came very prepared with all possible documents that I thought I could need, and made my visa appointment immediately. The next available appointment when I arrived was about two months out, but that was fine because it gave me time to make a bank account, get health insurance, etc. "
      }
    ],
    "title" : "Frustration with obtaining a long-stay French student visa",
    "num_comments" : 6,
    "subreddit" : "studyabroad",
    "description" : "I recently got accepted to study abroad at an exchange program in France. I got my new passport in the mail yesterday (had to apply for a new one as the old one expired over a decade ago). However, I'm having a HUGE problem with obtaining an appointment to apply for a French student Visa. I'm from New Jersey but I go to school in North Carolina; it would make sense for me to go to the Atlanta consulate, but I don't have an NC driver's license. Then there's D.C., right? Nah, I don't live in that jurisdiction. So then I can only go to the one in NYC, and that particular consulate is all booked up until *February*. This is a massive problem seeing as I need to have a mid-December appointment so I can leave in early *January*. I've got no earthly idea how *that* many people"
  }
}
```

```
"_id" : "[Text] So my best friend sent me this when I was depressed about my US student visa renewal rejection",
"value" : {
  "comments" : [
    {
      "comment" : "Sounds like a really nice friend! Definitely a motivational text OP! Thanks!"
    },
    {
      "comment" : "[deleted]"
    },
    {
      "comment" : "Really needed this rn OP. Really been feeling like everyone's leaving me in the dust lately."
    },
    {
      "comment" : "Your friend is wise. You want to hold on to friends like that your whole life."
    },
    {
      "comment" : "Needed this right now! Thank you!"
    },
    {
      "comment" : "This just changed my view on things. I'm always worried about falling behind others."
    },
    {
      "comment" : "Hits home. Thanks OP."
    },
    {
      "comment" : "Wow totally needed this! Just got out of the Marines and I start school tomorrow for the first time in 3 or so years. All my friends graduate within the year and/or next year. I'm a little behind them but hey, I'm in my own 'time zone' so I'm not worried. Thank you for posting this :)"
    },
    {
      "comment" : "Of all things that I've seen posted in this subreddit, this is the most satisfying thing to read. After graduating earlier this year, moving back home with my family, being the most skint I have ever been in 3 years and generally feeling pretty damn depressed. \n\nThis made me pause for a second and think that'll be alright eventually."
    },
    {
      "comment" : "You don't know how much this post just helps me stay positive despite my current situation here in the US. It's tough but I'm carrying on. "
    },
    {
      "comment" : "It's been hard to stay focused and positive lately, what a good message. "
    },
    {
      "comment" : "Damn I needed this as well. Sounds like you have a great friend!"
    },
    {
      "comment" : "\\\"A wizard is never late, nor is he early; he arrives precisely when he means to.\\\" \n\n Words to live by!"
    },
    {
      "comment" : "This was one of my biggest fears every time I left the country when I was on the student visa. Every time I left I knew there was no guarantee I could return. Every time I tried to renew I knew there was no guarantee I could. It motivated me to do the best I can. \n\nNow that I have the citizenship I have leezed down considerably. "
    }
  ],
  "title" : "[Text] So my best friend sent me this when I was depressed about my US student visa renewal rejection",
  "num_comments" : 367,
  "subreddit" : "GetMotivated",
  "description" : "Stay Strong, Your Time Will Come \n\nKenya is 2 hrs ahead of Nigeria, but it does not mean that Nigeria is slow, or that Kenya is fast. Both countries are working based on their own 'Time Zone'. \n\nSome one is still single.. Someone got married and 'waited' 10 yrs before having a child, there is another who had a baby within a year of marriage. \n\nSomeone graduated at the"
}
```