MongoDB queries

1: Find the average salary for each combination of formatted_experience_level and work_type

```
db.LinkedinJobAnalysisData.aggregate([
  {
    $group: {
      _id: {
        experience_level: "$formatted_experience_level",
        work_type: "$work_type"
      },
      avg_salary: {$avg: {$add: ["$max_salary", "$min_salary"] } }
    }
  },
{
$sort: {avg_salary: -1}
}
]);
```

This query can be used to find the average salary for each combination of experience level and work type. From this query we can say that experience level Director seems to be having the highest average salary with work type as other, followed by executive experience level.

```
FirstDemo
Documents
Data225Lab2.Lin...
My Queries
>_MONGOSH
> db.LinkedinJobAnalysisData.aggregate([
    {
      $group: {
        _id: {
          experience_level: "$formatted_experience_level",
          work_type: "$work_type"
        },
        avg_salary: {$avg: {$add: ["$max_salary", "$min_salary"] } }
      }
    },
  {
  $sort: {avg_salary: -1}
  }
  ]);
< {
    _id: {
      experience_level: 'Director',
      work_type: 'OTHER'
    },
    avg_salary: 261282
  }
  {
    _id: {
      experience_level: 'Executive',
      work_type: 'OTHER'
    },
    avg_salary: 218555
  }
  {
    _id: {
      experience_level: 'Director',
      work_type: 'PART_TIME'
    },
    avg_salary: 211550
  }
  {
    _id: {
      experience_level: 'Director',
      work_type: 'FULL_TIME'
```

2: Most common specialty and which companies

```
db.LinkedinJobAnalysisData.aggregate([
{
   $unwind: "$company.speciality"
  },
  {
   $group: {
     _id: "$company.speciality",
     companyCount: { $sum: 1 },
     companies: { $addToSet: "$company.company_name" }
   }
  },
  {
   $sort: { companyCount: -1 }
  },
  {
   $limit: 1
  },
  {
   $project: {
     _id: 0,
     mostCommonSpeciality: "$_id",
     companyCount: 1,
     companies: 1
   }
  }
]);
```

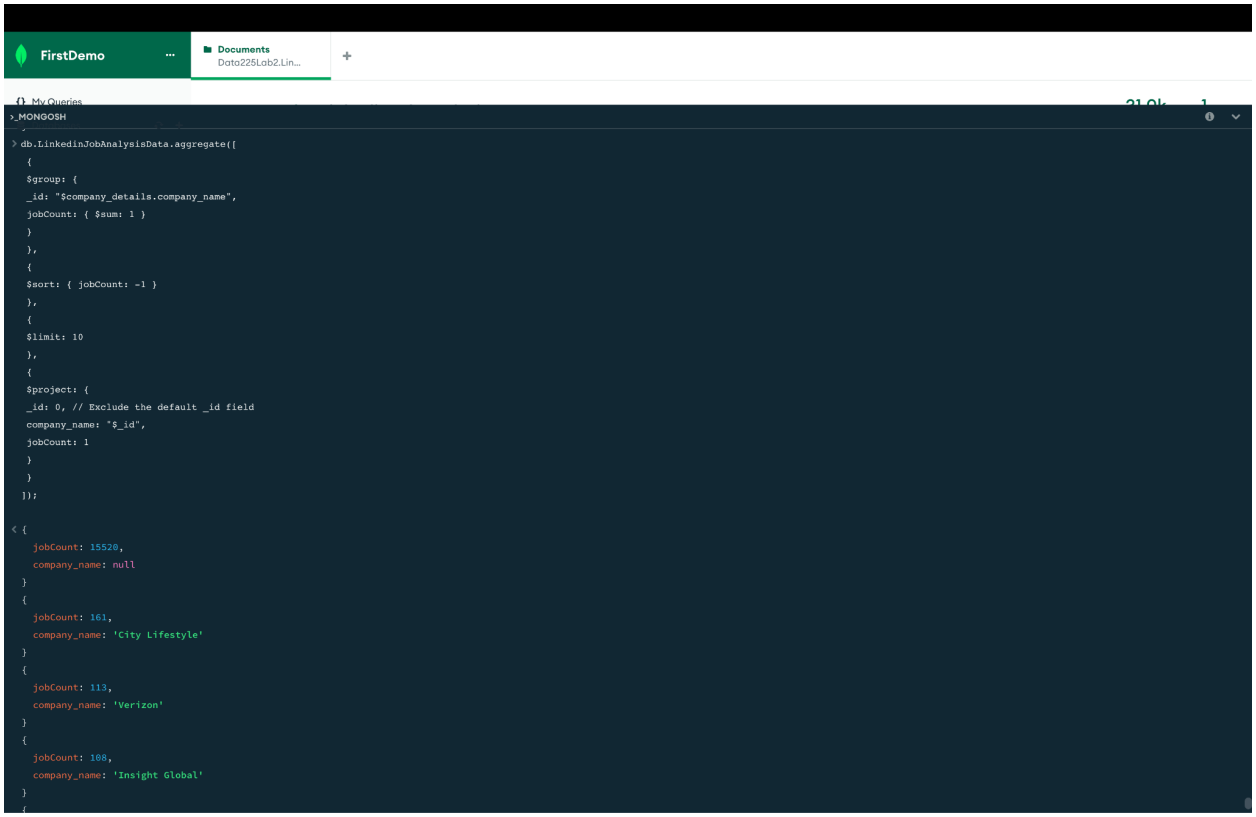
The above query can be used to find which specialty is most in demand and what all companies have this speciality.From the output , community is the most common speciality with companies like Lyft ,The Moms project, etc. having this specialty

```
FirstDemo
Documents
Data225Lab2.Lin...
My Queries
>_MONGOSH
> db.LinkedinJobAnalysisData.aggregate([
  {
    $unwind: "$company.speciality"
  },
  {
    $group: {
      _id: "$company.speciality",
      companyCount: { $sum: 1 },
      companies: { $addToSet: "$company.company_name" }
    }
  },
  {
    $sort: { companyCount: -1 }
  },
  {
    $limit: 1
  },
  {
    $project: {
      _id: 0,
      mostCommonSpeciality: "$_id",
      companyCount: 1,
      companies: 1
    }
  }
]);
< {
  companyCount: 34399,
  companies: [
    'Mechanics Bank',
    'Eleven Recruiting',
    'City Lifestyle',
    'Lyft',
    'Teachers Federal Credit Union',
    'East Bay Regional Park District',
    'The Mom Project'
  ],
  mostCommonSpeciality: 'Community'
}
```

3:10 Companies with the Most Job Listings:

```
db.LinkedinJobAnalysisData.aggregate([
 {
 $group: {
 _id: "$company_details.company_name",
 jobCount: { $sum: 1 }
 }
 },
 {
 $sort: { jobCount: -1 }
 },
 {
 $limit: 10
 },
 {
 $project: {
 _id: 0, // Exclude the default _id field
 company_name: "$_id",
 jobCount: 1
 }
 }
]);
```

The company that has the greatest number of postings are from the company ‘null’. From this we can tell that there are a lot of job postings where this company name is not mentioned. From the second company in the output is City Lifestyle which has a total postings of 161 offers.



4:Ratio of the employee count to the applications

```
db.LinkedinJobAnalysisData.aggregate([
  {
    $match: {
      $and: [
        { "company_details.employee_count": { $ne: null } },
        { "applies": { $ne: null } }
      ]
    }
  },
  {
    $group: {
      _id: "$company_details.company_name",
      total_employee_count: { $first: "$company_details.employee_count" },
      total_applications: { $sum: "$applies" }
    }
  },
  {
    $project: {
      _id: 0,
      company_name: "$_id",
      employee_to_application_ratio: { $divide: ["$total_employee_count", "$total_applications"]
}
    }
  },
  {
    $sort: { employee_to_application_ratio: -1 }
  }
]);
```

This calculates the ratio of the employee count with the applications, here the company PWC has the highest ratio with 273293, followed by Ericsson, McDonald and Starbucks. However, it is important to keep in mind that if there are a lot of job postings this subsequently leads to a lot of job applications.

```
FirstDemo
Documents
Data225Lab2.Lin...
My Queries
>_MONGOSH
> db.LinkedinJobAnalysisData.aggregate([
  {
    $match: {
      $and: [
        { "company_details.employee_count": { $ne: null } },
        { "applies": { $ne: null } }
      ]
    }
  },
  {
    $group: {
      _id: "$company_details.company_name",
      total_employee_count: { $first: "$company_details.employee_count" },
      total_applications: { $sum: "$applies" }
    }
  },
  {
    $project: {
      _id: 0,
      company_name: "$_id",
      employee_to_application_ratio: { $divide: ["$total_employee_count", "$total_applications"] }
    }
  },
  {
    $sort: { employee_to_application_ratio: -1 }
  }
]);
< {
  company_name: 'PwC',
  employee_to_application_ratio: 273293
}
{
  company_name: 'Ericsson',
  employee_to_application_ratio: 111798
}
{
  company_name: 'McDonalds',
  employee_to_application_ratio: 89761
```

```
FirstDemo
Documents
Data225Lab2.Lin...
My Queries
>_MONGOSH
  }
]);
< {
  company_name: 'PwC',
  employee_to_application_ratio: 273293
}
{
  company_name: 'Ericsson',
  employee_to_application_ratio: 111798
}
{
  company_name: 'McDonalds',
  employee_to_application_ratio: 89761
}
{
  company_name: 'Starbucks',
  employee_to_application_ratio: 41825.333333333336
}
{
  company_name: 'Siemens',
  employee_to_application_ratio: 35578.333333333336
}
{
  company_name: 'Target',
  employee_to_application_ratio: 34834
}
{
  company_name: 'State Street',
  employee_to_application_ratio: 34756
}
{
  company_name: 'Nationwide',
  employee_to_application_ratio: 30782
}
{
  company_name: 'SGS',
  employee_to_application_ratio: 28899.5
}
```

5:Job Postings with High Application-to-View Ratio

```
db.LinkedinJobAnalysisData.aggregate([
  {
        $match: {
        "views": { $gt: 0 },
        "applies": { $gt: 0 },
        $expr: { $gt: ["$views", "$applies"] }
        }
  },
  {
        $project: {
        _id: 0,
        job_posting_url: 1,
        company_name: "$company_details.company_name",
        views: 1,
        applies: 1,
        application_to_view_ratio: { $divide: ["$applies", "$views"] }
        }
  },
  {
        $sort: { application_to_view_ratio: -1 }
  }
]);
```

Similarly, like the above query this finds the ratio of Application to view of the job postings. Here we can understand the relationship of the views and the applications for that particular job posting.

FirstDemo

Documents
Data225Lab2.Lin...

My Queries

>_MONGOSH

```
> db.LinkedinJobAnalysisData.aggregate([
  {
  $match: {
    "views": { $gt: 0 },
    "applies": { $gt: 0 },
    $expr: { $gt: ["$views", "$applies"] }
  }
  },
  {
  $project: {
    _id: 0,
    job_posting_url: 1,
    company_name: "$company_details.company_name",
    views: 1,
    applies: 1,
    application_to_view_ratio: { $divide: ["$applies", "$views"] }
  }
  },
  {
  $sort: { application_to_view_ratio: -1 }
  }
]);
< {
  applies: 30,
  views: 31,
  job_posting_url: 'https://www.linkedin.com/jobs/view/3693063875/?trk=jobs_biz_prem_srch',
  company_name: 'Thinklusive Inc',
  application_to_view_ratio: 0.967741935483871
}
{
  applies: 22,
  views: 23,
  job_posting_url: 'https://www.linkedin.com/jobs/view/3701305891/?trk=jobs_biz_prem_srch',
  company_name: 'Non-Profit Organization',
  application_to_view_ratio: 0.9565217391304348
}
{
  applies: 6,
  views: 7,
```