

# Aplicación de aprendizaje

## Reto 1: Starbucks

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Usando la latitud y longitud de tu posición actual, encuentra el Starbucks más cercano a tu posición. Para conocer tu posición actual puedes usar Google Maps para, sólo debes copiar los datos de la URL.

### Ubicación prueba:

- Latitude: 20.641859
- Longitude: -103.440948

```
[$match: {
  $and: [
    {
      Latitude: {
        $gte: 20.64
      }
    },
    {
      Latitude: {
        $lte: 20.66
      }
    },
    {
      Longitude: {
        $gte: -103.45
      }
    },
    {
      Longitude: {
        $lte: -103.44
      }
    }
  ]
}]
```

\$match

Output after \$match stage

(Sample of 1 document)

```

1 {
2   $and: [
3     {
4       Latitude: {
5         $gte: 20.64
6       }
7     },
8     {
9       Latitude: {
10        $lte: 20.66
11      }
12    },
13    {
14      Longitude: {
15        $gte: -103.45
16      }
17    },
18    {
19      Longitude: {
20        $lte: -103.44
21      }
22    }
23  ]
24 }

```

```

_id: ObjectId("5eee4a6abc6f1858356d028d")
Brand: "Starbucks"
Store Number: "32667-132448"
Store Name: "Guadalupe"
Ownership Type: "Licensed"
Street Address: "6000 Guadalupe Avenue"
City: "Guadalupe"
State/Province: "NLE"
Country: "MX"
Postcode: "45030"
Phone Number: ""
Timezone: "GMT-06:00 America/Mexico_City"
Longitude: -103.44
Latitude: 20.66

```

## Reto 2: Pandemia A (H1N1)

¿Cuál fue el país con mayor número de muertes?

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$addFields: {
  date: {
    $dateFromString: {
      dateString: "$Update Time",
      format: "%m/%d/%Y %H:%M"
    }
  }
}}, {$sort: {
  date: -1
}}, {$sort: {
  Deaths: -1
}}, {$limit: 1}]

```

\$limit

+

Output after \$limit stage ⓘ (Sample of 1 document)

```

_id: ObjectId("5eee4e9abc6f1858356d41b1")
Country: "United States of America"
Cases: 33902
Deaths: 170
Update Time: "7/6/2009 9:00"
date: 2009-07-06T09:00:00.000+00:00

```

```

1 ▾ /**
2   * Provide the number of documents to limit.
3   */
4   1

```

¿Cuál fue el país con menor número de muertes?

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  },
  Deaths: {
    $ne: NaN
  }
}}, {$addFields: {
  date: {
    $dateFromString: {
      dateString: "$Update Time",
      format: "%m/%d/%Y %H:%M"
    }
  }
}}, {$sort: {
  date: -1
}}, {$sort: {
  Deaths: 1
}}, {$limit: 1}]

```

\$limit

+

Output after \$limit stage ⓘ (Sample of 1 document)

```

_id: ObjectId("5eee4e9abc6f1858356d4139")
Country: "Bahrain"
Cases: 15
Deaths: 0
Update Time: "7/6/2009 9:00"
date: 2009-07-06T09:00:00.000+00:00

```

```

1 ▾ /**
2   * Provide the number of documents to limit.
3   */
4   1

```

¿Cuál fue el país con el mayor número de casos?

```
[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$addFields: {
  date: {
    $dateFromString: {
      dateString: "$Update Time",
      format: "%m/%d/%Y %H:%M"
    }
  }
}}, {$sort: {
  date: -1
}}, {$sort: {
  Cases: -1
}}, {$limit: 1}]
```



The screenshot shows a MongoDB Atlas query editor interface. On the left, a query pipeline is defined with a `$limit` stage. The `$limit` stage is selected, and its value is set to `1`. A comment in the query states: `1 ▾ /**`  
`2 * Provide the number of documents to limit.`  
`3 */`  
`4 1`

On the right, the output of the `$limit` stage is displayed, showing a sample of 1 document. The output is a JSON object with the following fields:

```
{
  "_id": ObjectId("5eee4e9abc6f1858356d41b1"),
  "Country": "United States of America",
  "Cases": 33902,
  "Deaths": 170,
  "Update Time": "7/6/2009 9:00",
  "date": "2009-07-06T09:00:00.000+00:00"
}
```

¿Cuál fue el país con el menor número de casos?

```
[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$addFields: {
  date: {
    $dateFromString: {
      dateString: "$Update Time",
      format: "%m/%d/%Y %H:%M"
    }
  }
}}
```

```

    }
  }, { $sort: {
    date: -1
  } }, { $sort: {
    Cases: 1
  } }, { $limit: 1}]

```

The screenshot shows a MongoDB Atlas pipeline editor. The left pane displays a JSON query stage with the following configuration:

```

1 ▾ /**
2   * Provide the number of documents to limit.
3   */
4   1

```

The right pane shows the output after the `$limit` stage, labeled "Output after `$limit` stage (Sample of 1 document)". The output is a single document:

```

{
  "_id": ObjectId("5eee4e9abc6f1858356d416b"),
  "Country": "Iran, Islamic Republic",
  "Cases": 1,
  "Deaths": 0,
  "Update Time": "7/6/2009 9:00",
  "date": "2009-07-06T09:00:00.000+00:00"
}

```

¿Cuál fue el número de muertes promedio?

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$group: {
  _id: '$Country',
  maxDeathsPerCountry: {
    $max: '$Deaths'
  }
}}, {$sort: {
  maxDeathsPerCountry: -1
}}, {$group: {
  _id: null,
  totalDeaths: {
    $sum: '$maxDeathsPerCountry'
  },
  totalCountries: {
    $sum: 1
  }
}}, {$addFields: {
  averageDeaths: {
    $divide: [
      '$totalDeaths',

```

```

    '$totalCountries'
  ]
}
}}, {$project: {
  _id: 0,
  averageDeaths: 1
}}]

```

The screenshot shows the MongoDB Atlas pipeline editor. On the left, a code editor displays a JSON document with the following structure:

```

1 ▾ /**
2  * specifications: The fields to
3  * include or exclude.
4  */
5 ▾ {
6   _id: 0,
7   averageDeaths: 1
8 }

```

On the right, the output of the '\$project' stage is shown. The output is a single document with the following structure:

```

averageDeaths: 3.152317880794702

```

¿Cuál fue el número de casos promedio?

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$group: {
  _id: '$Country',
  maxCasesPerCountry: {
    $max: '$Cases'
  }
}}, {$sort: {
  maxCasesPerCountry: -1
}}, {$group: {
  _id: null,
  totalCases: {
    $sum: '$maxCasesPerCountry'
  },
  totalCountries: {
    $sum: 1
  }
}}, {$addFields: {
  averageCases: {
    $divide: [
      '$totalCases',

```

```

    '$totalCountries'
  ]
}
}}, {$project: {
  _id: 0,
  averageCases: 1
}}]

```

Output after `$project` stage ⓘ (Sample of 1 document)

```

1 {
2   _id: 0,
3   averageCases: 1
4 }

```

averageCases: 746.3509933774834

## Top 5 de países con más muertes

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$group: {
  _id: '$Country',
  maxDeathsPerCountry: {
    $max: '$Deaths'
  }
}}, {$sort: {
  maxDeathsPerCountry: -1
}}, {$limit: 5}]

```

Output after `$limit` stage ⓘ (Sample of 5 documents)

Country	maxDeathsPerCountry
United States of America	179
Mexico	119
Argentina	68
United States of America	44
Canada	25

## Top 5 de países con menos muertes

```

[{$match: {
  Country: {
    $ne: 'Grand Total'
  }
}}, {$sort: {
  maxDeathsPerCountry: 1
}}, {$limit: 5}]

```

```

    }
  }, { $group: {
    _id: '$Country',
    maxDeathsPerCountry: {
      $max: '$Deaths'
    }
  } }, { $sort: {
    maxDeathsPerCountry: 1
  } }, { $limit: 5}]

```

<div> <div>Limit</div> <div>Output after <b>Limit</b> stage (Sample of 5 documents)</div> </div>	<div> <div>_id: "Russia"</div> <div>maxDeathsPerCountry: 0</div> </div>	<div> <div>_id: "Russia"</div> <div>maxDeathsPerCountry: 0</div> </div>	<div> <div>_id: "Russia"</div> <div>maxDeathsPerCountry: 0</div> </div>	<div> <div>_id: "Iran, Islamic Republic"</div> <div>maxDeathsPerCountry: 0</div> </div>	<div> <div>_id: "Cook Island"</div> <div>maxDeathsPerCountry: 0</div> </div>
--	---	---	---	---	--

## Reto 3: Pandemia Covid-19

¿Cuál es país con mayor número de casos?

```

[{$group: {
  _id: '$Region',
  maxCasesPerCountry: {
    $max: '$Confirmed'
  }
}}, {$sort: {
  maxCasesPerCountry: -1
}}, {$limit: 1}]

```

<div> <div>Limit</div> <div>Output after <b>Limit</b> stage (Sample of 1 document)</div> </div>	<div> <div>1 1</div> </div>	<div> <div>_id: "Mainland China"</div> <div>maxCasesPerCountry: 67217</div> </div>
---	-----------------------------	--

¿Cuál es el país con mayor número de muertes?

```

[{$group: {
  _id: '$Region',
  maxDeathsPerCountry: {
    $max: '$Deaths'
  }
}}, {$sort: {
  maxDeathsPerCountry: -1
}}, {$limit: 1}]

```



```

    }
  }, { $sort: {
    maxDeathsPerCountry: -1
  } }, { $limit: 1 } ]

```



## Usando las coordenadas, encuentra el epicentro del virus

```

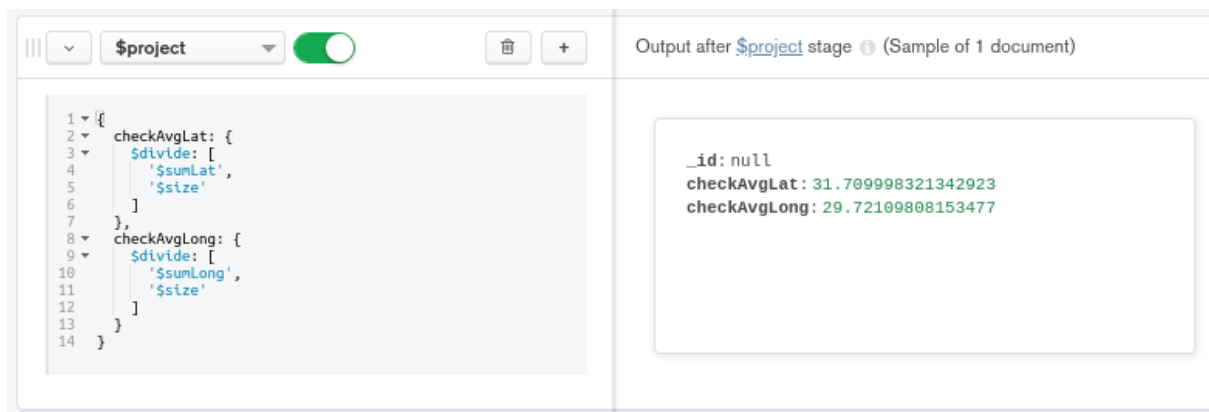
[ { $match: {
  Lat: { $ne: "" },
  Long: { $ne: "" }
}, { $addFields: {
  Lat: { $convert: { input: "$Lat", to: "double" } },
  Long: { $convert: { input: "$Long", to: "double" } }
}, { $group: {
  _id: null,
  size: {
    $sum: 1
  },
  sumLat: {
    $sum: '$Lat'
  },
  sumLong: {
    $sum: '$Long'
  },
  avgLat: {
    $avg: '$Lat'
  },
  avgLong: {
    $avg: '$Long'
  }
}, { $project: {
  checkAvgLat: {
    $divide: [

```

```

    '$sumLat',
    '$size'
  ]
},
checkAvgLong: {
  $divide: [
    '$sumLong',
    '$size'
  ]
}
}}

```



**Usando el epicentro, encuentra las 5 regiones más cercanas a dicho epicentro**

```

[{$match: {
  Lat: {
    $ne: ""
  },
  Long: {
    $ne: ""
  }
}}, {$group: {
  _id: "$Region",
  Lat: {
    $max: "$Lat"
  },
  Long: {
    $max: "$Long"
  }
}}, {$addFields: {
  Lat: {
    $convert: {
      input: '$Lat',

```

