Assessment -02

Part A

Q01)

use touristDestinations

db.destinations.insertMany([

{"name":"Temple of the Sacred Tooth Relic","location":{"type":"Point","coordinates":[80.64136791300503,7.293843119222262]}},

{"name":"Royal Botanic Gardens","location":{"type":"Point","coordinates":[80.59664191300499,7.268538860328186]},

{"name":"Galavilla Boutique Hotel & Spa","location":{"type":"Point","coordinates":[80.69523475533465,7.22124883822854]}},

{"name":"Simpson's Forest Hotel","location":{"type":"Point","coordinates":[80.67865891300515,7.374819996848121]}},

{"name":"Sigiriya","location":{"type":"Point","coordinates":[80.7354806,7.9546994]}}])

```
> use touristDestinations
switched to db touristDestinations
> db.destinations.insertMany([
... {"name":"Temple of the Sacred Tooth Relic","location":{"type":"Point","coordinates":[80.64136791300503,7.293843119222262]}},
... {"name":"Royal Botanic Gardens","location":{"type":"Point","coordinates":[80.59664191300499,7.268538860328186]}},
... {"name":"Galavilla Boutique Hotel & Spa","location":{"type":"Point","coordinates":[80.69523475533465,7.22124883822854]}},
... {"name":"Simpson's Forest Hotel","location":{"type":"Point","coordinates":[80.67865891300515,7.374819996848121]}},
... {"name":"Sigiriya","location":{"type":"Point","coordinates":[80.7354806,7.9546994]}}])
{
        "acknowledged" : true,
        "insertedIds" : [
                ObjectId("6289ec1a9019dbc06f4e83db"),
                ObjectId("6289ec1a9019dbc06f4e83dc"),
                ObjectId("6289ec1a9019dbc06f4e83dd"),
                ObjectId("6289ec1a9019dbc06f4e83de"),
                ObjectId("6289ec1a9019dbc06f4e83df")
        ]
}
>
```

Q02)

db.destinations.createIndex({"location":"2dsphere"})

```
> db.destinations.createIndex({"location":"2dsphere"})
{
        "numIndexesBefore" : 1,
        "numIndexesAfter" : 2,
        "createdCollectionAutomatically" : false,
        "ok" : 1
}
>
```

Q03)

db.destinations.find({"location":{$near:{$geometry:{"type":"Point","coordinates":[80.65712588976963,7.276777968778148]},$maxDistance:50000}}}).pretty()

```
> db.destinations.find({location:{$near:{$geometry:{type:"Point",coordinates:[80.65712588976963,7.276777968778148],$maxDistance:50000}}}}).pretty()
{
        "_id" : ObjectId("6289ec1a9019dbc06f4e83db"),
        "name" : "Temple of the Sacred Tooth Relic",
        "location" : {
                "type" : "Point",
                "coordinates" : [
                        80.64136791300503,
                        7.293843119222262
                ]
        }
}
{
        "_id" : ObjectId("6289ec1a9019dbc06f4e83dc"),
        "name" : "Royal Botanic Gardens",
        "location" : {
                "type" : "Point",
                "coordinates" : [
                        80.59664191300499,
                        7.268538860328186
                ]
        }
}
{
        "_id" : ObjectId("6289ec1a9019dbc06f4e83dd"),
        "name" : "Galavilla Boutique Hotel & Spa",
        "location" : {
                "type" : "Point",
                "coordinates" : [
                        80.69523475533465,
                        7.22124883822854
                ]
        }
}
{
        "_id" : ObjectId("6289ec1a9019dbc06f4e83de"),
        "name" : "Simpson's Forest Hotel",
        "location" : {
                "type" : "Point",
                "coordinates" : [
                        80.67865891300515,
                        7.374819996848121
                ]
        }
}
{
        "_id" : ObjectId("6289ec1a9019dbc06f4e83df"),
        "name" : "Sigiriya",
        "location" : {
                "type" : "Point",
                "coordinates" : [
                        80.7354806,
                        7.9546994
                ]
        }
}
>
```

Part B

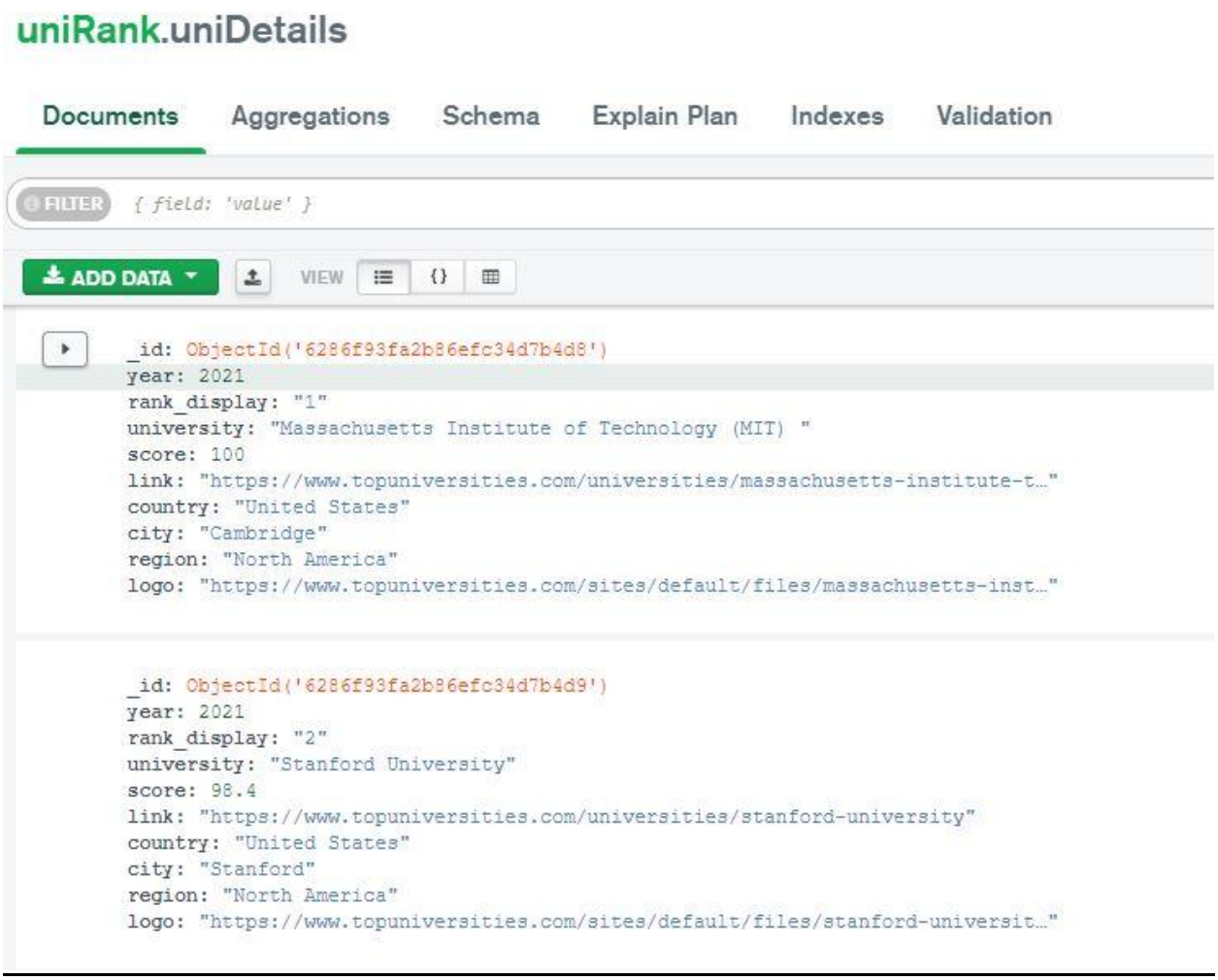
Q01)

- A replica set in MongoDB is a group of mongod processes that maintain the same data set.
- Replica sets provide redundancy and high availability, and are the basis for all production deployments
- Replication provides redundancy and increases data availability.
- With multiple copies of data on different database servers, replication provides a level of fault tolerance against the loss of a single database server.
- In some cases, replication can provide increased read capacity as clients can send read operations to different servers.
- Maintaining copies of data in different data centers can increase data locality and availability for distributed applications.
- You can also maintain additional copies for dedicated purposes, such as disaster recovery, reporting, or backup.

Q02)

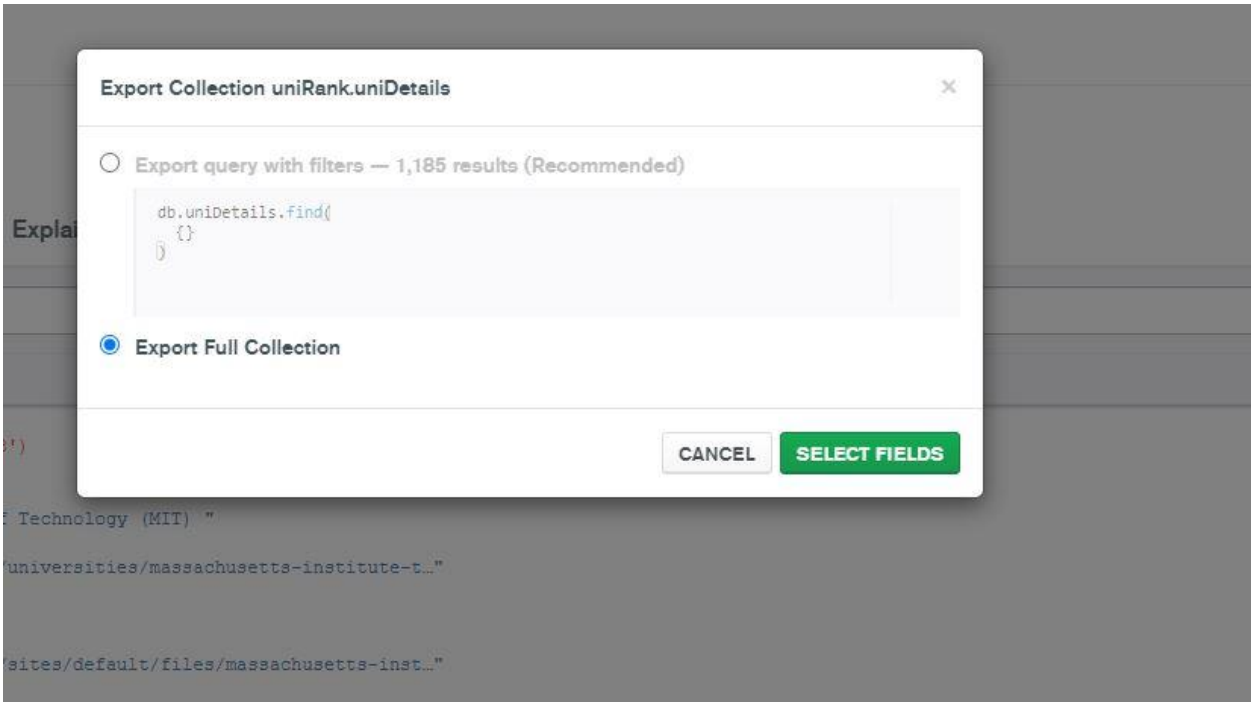
- Sharding is the process of storing data records across multiple machines and it is MongoDB's approach to meeting the demands of data growth.
- As the size of the data increases, a single machine may not be sufficient to store the data nor provide an acceptable read and write throughput.
- Sharding solves the problem with horizontal scaling.
- With sharding, you add more machines to support data growth and the demands of read and write operations.

Q03)

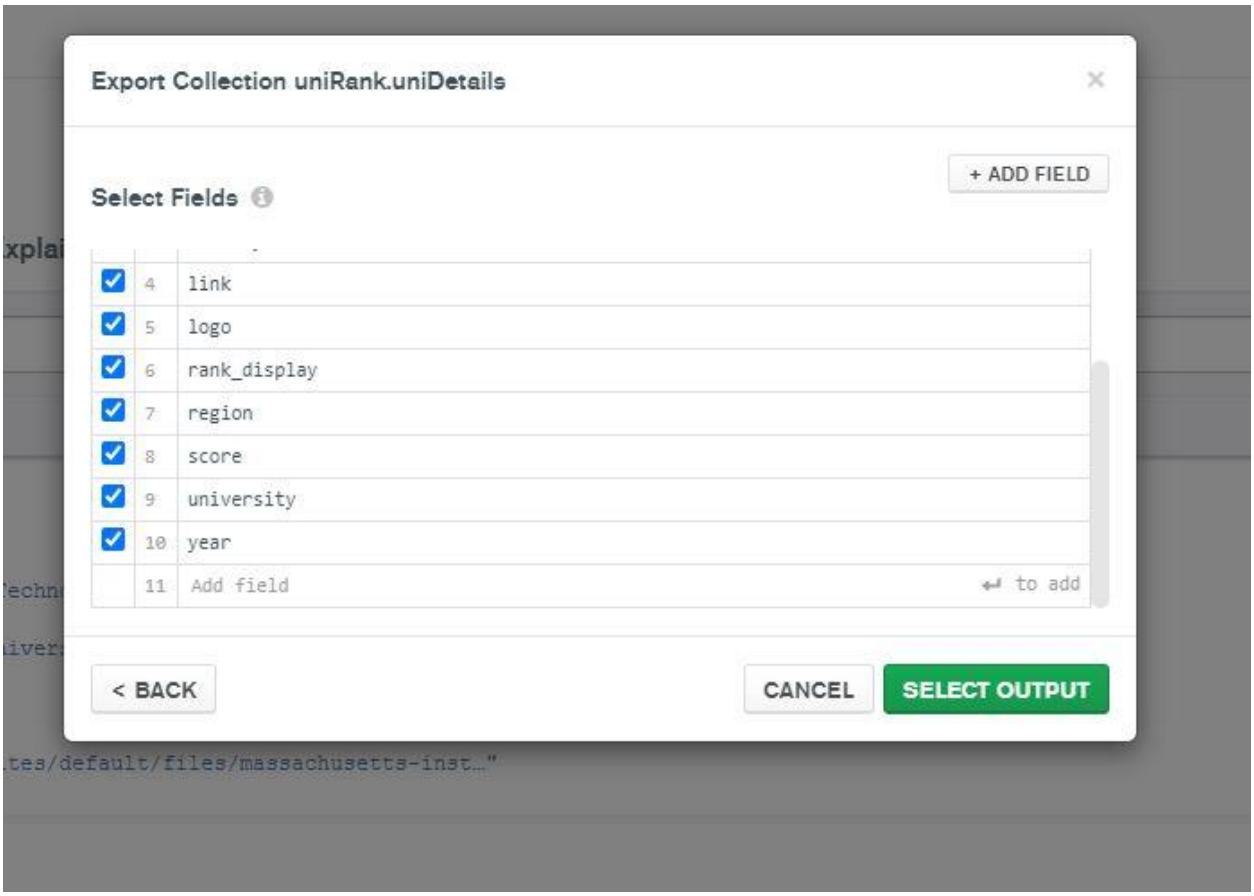


This is uniRank database. we want to export as a csv file. lets see step by step

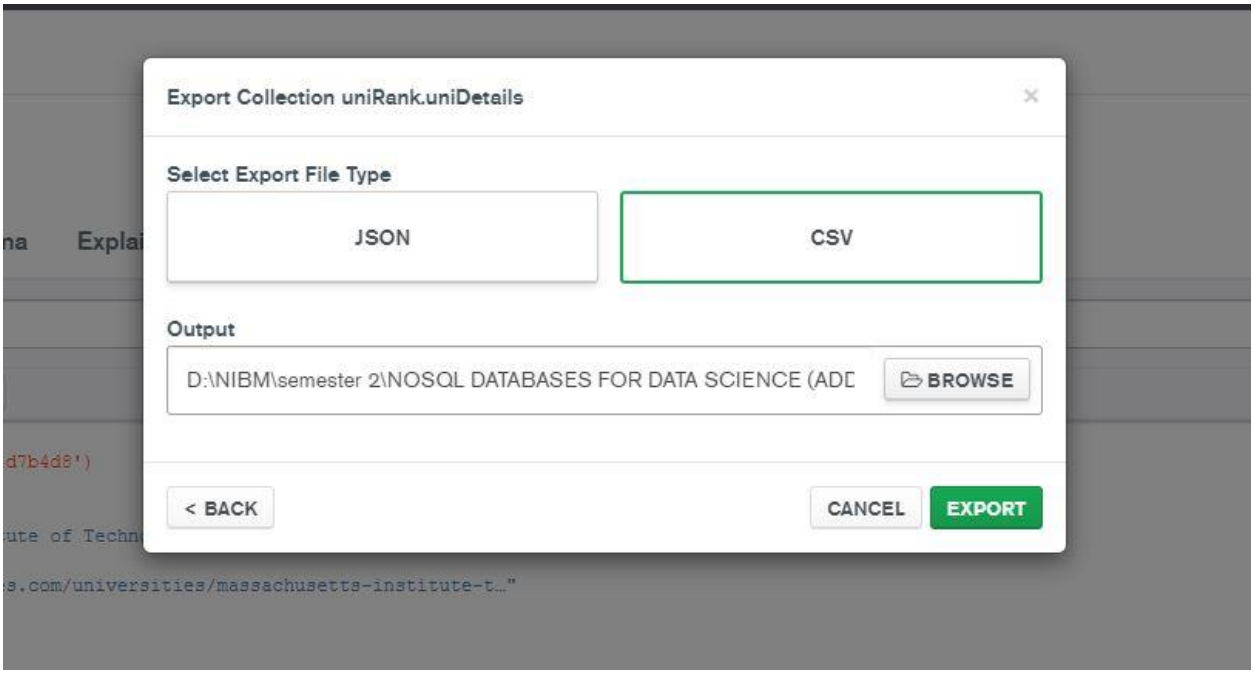
Click the export button(near the add data button)



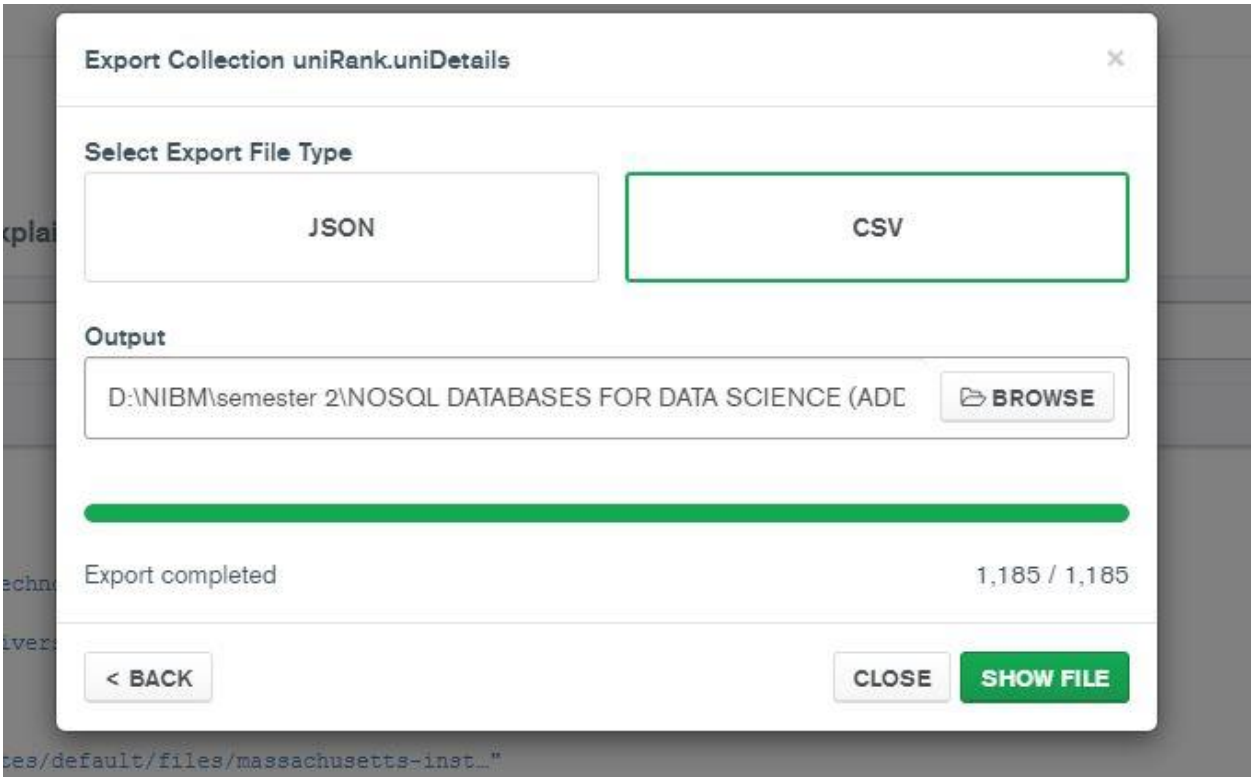
Then we want to export all the data from uniRank database as csv.



Select field what you want to export. Here I want all the field.sso I selected all the field.

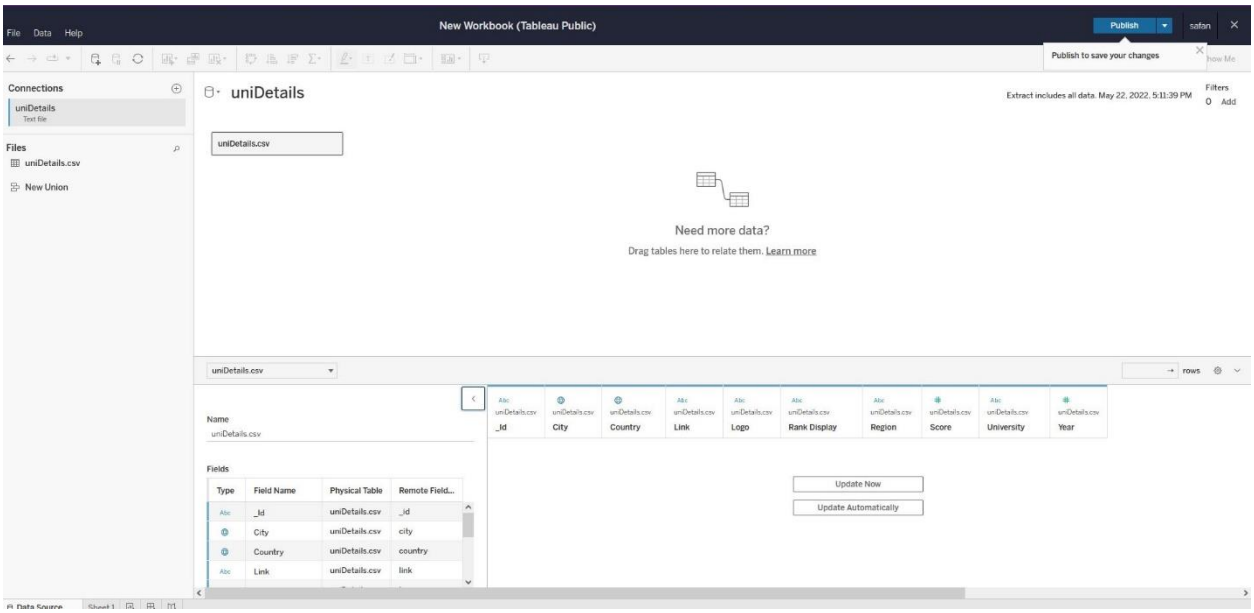


Here I want final output as csv file. So I selected export file type as csv.

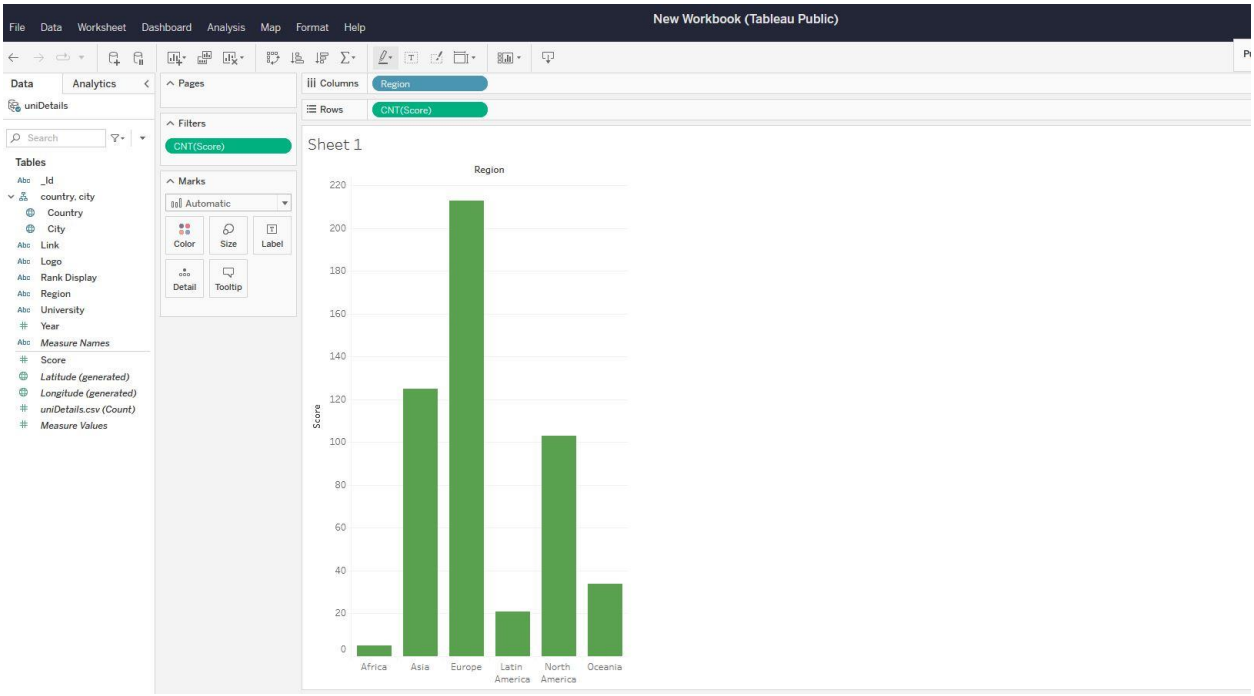


I exported all the 1185 data as csv.

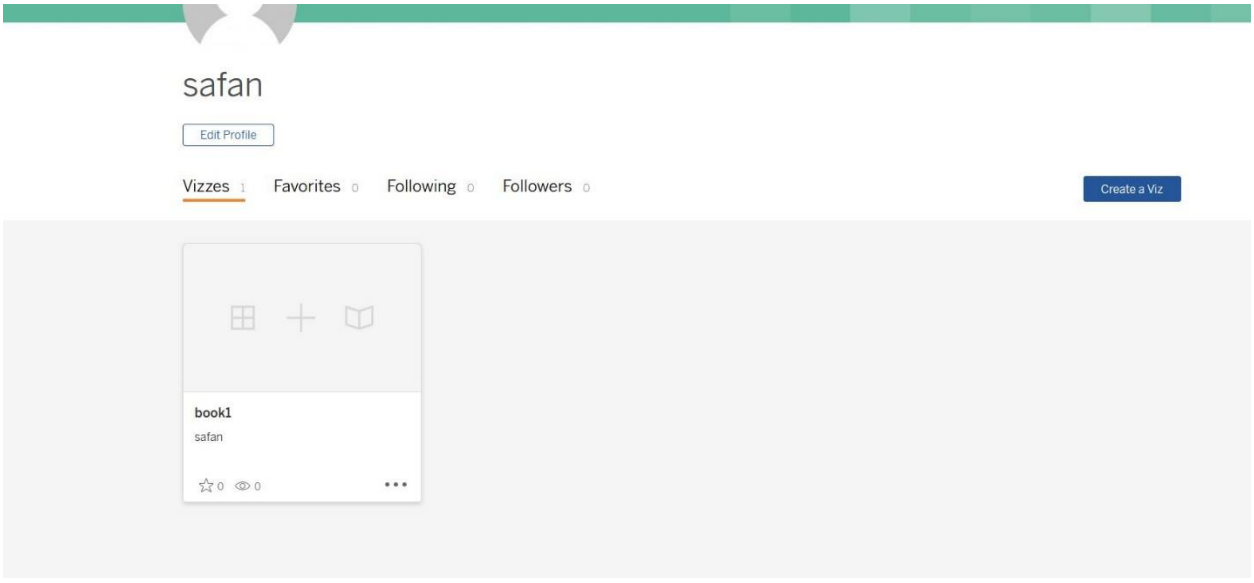
	A	B	C	D	E	F	G	H	I	J
1	_id	city	country	link	logo	rank_disp	region	score	university	year
2	6286f93fa	Cambridg	United St	https://w	https://www.topuniversities.com/sites/defa	1	North America	100	Massachusetts Institute of Technology (MIT)	2021
3	6286f93fa	Stanford	United St	https://w	https://www.topuniversities.com/sites/defa	2	North America	98.4	Stanford University	2021
4	6286f93fa	Cambridg	United St	https://w	https://www.topuniversities.com/sites/defa	3	North America	97.9	Harvard University	2021
5	6286f93fa	Pasadena	United St	https://w	https://www.topuniversities.com/sites/defa	4	North America	97	California Institute of Technology (Caltech)	2021
6	6286f93fa	Oxford	United Kir	https://w	https://www.topuniversities.com/sites/defa	5	Europe	96.7	University of Oxford	2021
7	6286f93fa	ZÃ¼rich	Switzerlar	https://w	https://www.topuniversities.com/sites/defa	6	Europe	95	ETH Zurich - Swiss Federal Institute of Technology	2021
8	6286f93fa	Cambridg	United Kir	https://w	https://www.topuniversities.com/sites/defa	7	Europe	94.3	University of Cambridge	2021
9	6286f93fa	London	United Kir	https://w	https://www.topuniversities.com/sites/defa	8	Europe	93.6	Imperial College London	2021
10	6286f93fa	Chicago	United St	https://w	https://www.topuniversities.com/sites/defa	9	North America	93.1	University of Chicago	2021
11	6286f93fa	London	United Kir	https://w	https://www.topuniversities.com/sites/defa	10	Europe	92.9	UCL	2021
12	6286f93fa	Singapore	Singapore	https://w	https://www.topuniversities.com/sites/defa	11	Asia	91.5	National University of Singapore (NUS)	2021
13	6286f93fa	Princeton	United St	https://w	https://www.topuniversities.com/sites/defa	12	North America	91	Princeton University	2021
14	6286f93fa	Singapore	Singapore	https://w	https://www.topuniversities.com/sites/defa	13	Asia	89.9	Nanyang Technological University, Singapore (NTU)	2021
15	6286f93fa	Lausanne	Switzerlar	https://w	https://www.topuniversities.com/sites/defa	14	Europe	89.6	EPFL	2021
16	6286f93fa	Beijing	China (Ma	https://w	https://www.topuniversities.com/sites/defa	15	Asia	89.2	Tsinghua University	2021
17	6286f93fa	Philadelp	United St	https://w	https://www.topuniversities.com/sites/defa	16	North America	88.6	University of Pennsylvania	2021
18	6286f93fa	New Have	United St	https://w	https://www.topuniversities.com/sites/defa	17	North America	88	Yale University	2021
19	6286f93fa	Ithaca	United St	https://w	https://www.topuniversities.com/sites/defa	18	North America	87.6	Cornell University	2021
20	6286f93fa	New York	United St	https://w	https://www.topuniversities.com/sites/defa	19	North America	86.5	Columbia University	2021
21	6286f93fa	Edinburgh	United Kir	https://w	https://www.topuniversities.com/sites/defa	20	Europe	85.8	The University of Edinburgh	2021
22	6286f93fa	Ann Arbor	United St	https://w	https://www.topuniversities.com/sites/defa	21	North America	84.6	University of Michigan-Ann Arbor	2021
23	6286f93fa	Hong Kon	Hong Kon	https://w	https://www.topuniversities.com/sites/defa	22	Asia	83.7	The University of Hong Kong	2021
24	6286f93fa	Beijing	China (Ma	https://w	https://www.topuniversities.com/sites/defa	23	Asia	83.5	Peking University	2021
25	6286f93fa	Tokyo	Japan	https://w	https://www.topuniversities.com/sites/defa	24	Asia	83.2	The University of Tokyo	2021
26	6286f93fa	Baltimore	United St	https://w	https://www.topuniversities.com/sites/defa	25	North America	82.7	Johns Hopkins University	2021
27	6286f93fa	Toronto	Canada	https://w	https://www.topuniversities.com/sites/defa	25	North America	82.7	University of Toronto	2021
28	6286f93fa	Hong Kon	Hong Kon	https://w	https://www.topuniversities.com/sites/defa	27	Asia	82.1	The Hong Kong University of Science and Technology	2021
29	6286f93fa	Manchest	United Kir	https://w	https://www.topuniversities.com/sites/defa	27	Europe	82.1	The University of Manchester	2021
30	6286f93fa	Evanston	United St	https://w	https://www.topuniversities.com/sites/defa	29	North America	81.5	Northwestern University	2021
31	6286f93fa	Berkeley	United St	https://w	https://www.topuniversities.com/sites/defa	30	North America	80.8	University of California, Berkeley (UCB)	2021
32	6286f93fa	Canberra	Australia	https://w	https://www.topuniversities.com/sites/defa	31	Oceania	80	The Australian National University	2021
33	6286f93fa	London	United Kir	https://w	https://www.topuniversities.com/sites/defa	31	Europe	80	King's College London	2021
34	6286f93fa	Montreal	Canada	https://w	https://www.topuniversities.com/sites/defa	31	North America	80	McGill University	2021



This is my tabula public account. I have inserted uniDetails from uniRank database.



Here I created bar chart Region vs count of score(number of students).we can see high number of student sited in Europe and less number of student sited in Africa.



This is my Dashboard.