**Q3**

<https://medium.com/swlh/relational-operations-using-mapreduce-f49e8bd14e31#:~:text=For%20example%2C%20If%20a%20relation,values%20and%20output%20the%20result>**.**

**And**

**Relational Algebra Operations:**

1. Selection.
2. Projection.
3. Union & Intersection.
4. Natural Join.
5. Grouping & Aggregation.

**Selection:**

* Apply a condition c to each taple in the relation and produce as output only those tuples that satisfy c.
* The result of this selection is denoted by 6c(R)6c(R)
* Selection really do not need the full power of MapReduce.
* They can be done most conveniently in the map portion alone, although they could also be done in the reduce portion also.
* The pseudo code is as follows :

Map (key, valve)

for tuple in valve :

if tuple satisfies C :

emit (tuple, tuple)

Reduce (key, valves)

emit (key, key)

**projection:**

* for some subset s of the attribute of the relation, produce from each tuple only the components for the attributes in S.
* The result of this projection is denoted TTs (R)
* Projection is performed similarly to selection.
* As projection may cause the same tuple to appear several times, the reduce function eliminate duplicates.
* The pseudo code for projection is as follows :

Map (key, valve)

for tuple in valve :

ts = tuple with only the components for the attributes in S.

emit (ts, ts)

Reduce (key, values)

emit (key, key)

Q4.

https://www.manipalprolearn.com/blog/real-life-example-how-big-data-hadoop-changing-life-real-company

<https://www.cio.com/article/2377808/9-hadoop-companies-you-should-know.html#:~:text=Many%20companies%20from%20IBM%20to,easily%2Dconsumable%20distributions%20or%20services>.

Q5

Also refer to book

<https://www.educba.com/cap-theorem/>

<https://medium.com/@skeller88/cap-and-acid-8bbf9b45941>

https://www.quora.com/What-is-the-difference-between-CAP-and-ACID-property-related-to-database