

Query Processor

Provide SQL querying capabilities on CSV files.

In this assignment, you will be writing a program that takes an SQL statement as input and gives the result of the query as output. Typical queries would look like this:

Example 1

```
SELECT *  
FROM student.csv
```

Example 2

```
SELECT *  
FROM student.csv  
WHERE student.class = "I MTech"  
ORDER BY student.reg_no ASC;
```

Example 3

```
SELECT customer.name, account.balance  
FROM customer.csv NATURAL JOIN account.csv  
WHERE account.balance >= 100000  
ORDER BY account.balance DESC;
```

Assume that the first row of the CSV file contains the attribute names.

- The **SELECT** clause should support projection of the specified attributes and projection of all the attributes (specified by *****).
- The **FROM** clause should support cross product (cartesian join) and natural join.
- The **WHERE** clause should support equality and inequality of integers and strings. (For the sake of this assignment do not bother about nested queries and compound conditions using and, or, not, etc.)
- The **ORDER BY** clause should support sorting on an attribute in ascending or descending order. (If no ordering is specified, the default is ascending order).
- **SELECT** and **FROM** clauses are mandatory. **WHERE** and **ORDER BY** clauses are optional.
- The query result must be written to a CSV file.
- Implement materialization, do not bother about pipelining. You may assume, for the sake of simplicity, that the whole table will fit in the main memory.
- You may use Python or Java for implementation.