# Homework #1 *Relation Algebra* (1/2)

☐ **Implement the operators of relational algebra by using <u>data frame</u> as the input/output.**

– Python pandas.Dataframe, R data.frame, etc.

– Do NOT use any database embedded packages.

1. **Basic operators as six functions** **60%**

– Unary operators: select, project, rename

– Binary operators: cartesian product, set union, set difference

2. **One/all additional operators to call six functions** **20%**

– set intersection, division, natural join

3. **User Interface: friendly menu/command line** **20%**

– Required commands: load database, show schema, quit

# Homework #1 *Relation Algebra* (2/2)

☐ **Hand in the required results 15%**

1. Upload your source code with detailed comments.

2. DEMO your program in classroom.

   ■ **If you miss the deadline, provide the URL of a DEMO Video (5-7 min.) in your source code.**

☐ **Alternative: embedded with a server-less database**

   – Use a database engine like SQLite or DuckDB to manage the data in the conceptual layer.

### Scoring ###

Basic operators: 60%

**Additional operators: 20%**

UI & DEMO: 20%