CS554, Homework 1

- **The** `Supplier/Part/Project (SPJ) Database`

  - The `SPJ` **data model** consists of **4 relations**:

    - **supplier((snum, sname, status, city)**: stores information on **suppliers**
    - **part(pnum, pname, color, weight, city)**: stores information on **parts**
    - **proj(jnum, jname, city)** stores information on **projects**
    - **spj(snum, pnum, jnum, qty)**: stores information on **which supplier** supplies **what part** to **which project**

  - The **meaning** of the **attributes** in **each relation** is as follows:

    1. supplier(snum, sname, status, city)
       - snum = supplier number (key)
       - sname = supplier name
       - status = supplier status (how good he/she is)
       - city = location of the supplier

    2. part(pnum, pname, color, weight, city)
       - pnum = part number (key)
       - pname = part name
       - color = color of the part
       - weight = weight of the part
       - city = city where the part is made

    3. proj(jnum, jname, city)
       - jnum = project number (key)
       - jname = project name
       - city = city where the project takes place

    4. spj(snum, pnum, jnum, qty):
       - snum = supplier number (foreign key)
       - pnum = part number (foreign key)
       - jnum = project number (foreign key)
       - qty = quantity

       The meaning of a tuple in the **spj** relation is: supplier `snum' supplies the part `pnum' to the project `jnum'.

- **Formulate the following queries in *Relational Algebra* on the `SPJ Database`**

  1. Find name of suppliers who supplies to some project in Altanta with a red part

  2. Find name of suppliers who supplies to at least 4 projects in Altanta with a red part

  3. Find name of suppliers who do not supply to any project in Altanta

4. For each supplier and part, list (1) supplier name, (2) part name and (3) the (total) quantity of of the parts being shipped.

The answer has the following form:

```
sname      pname      total shipped
---------- ---------- --------------------------------
Adams      Bolt                                    300
Adams      Cam                                    1000
Blake      Screw                                   700
Bond       Cam                                     100
...
```

5. Find name of suppliers who has more shipments than the supplier 'Newton' (one tuple in relation **spj** represents one shipment)

- **Turn in**

  ○ Print this webpage out and write (clearly) the relational algebra query in the provided space and turn in in class on the due date.