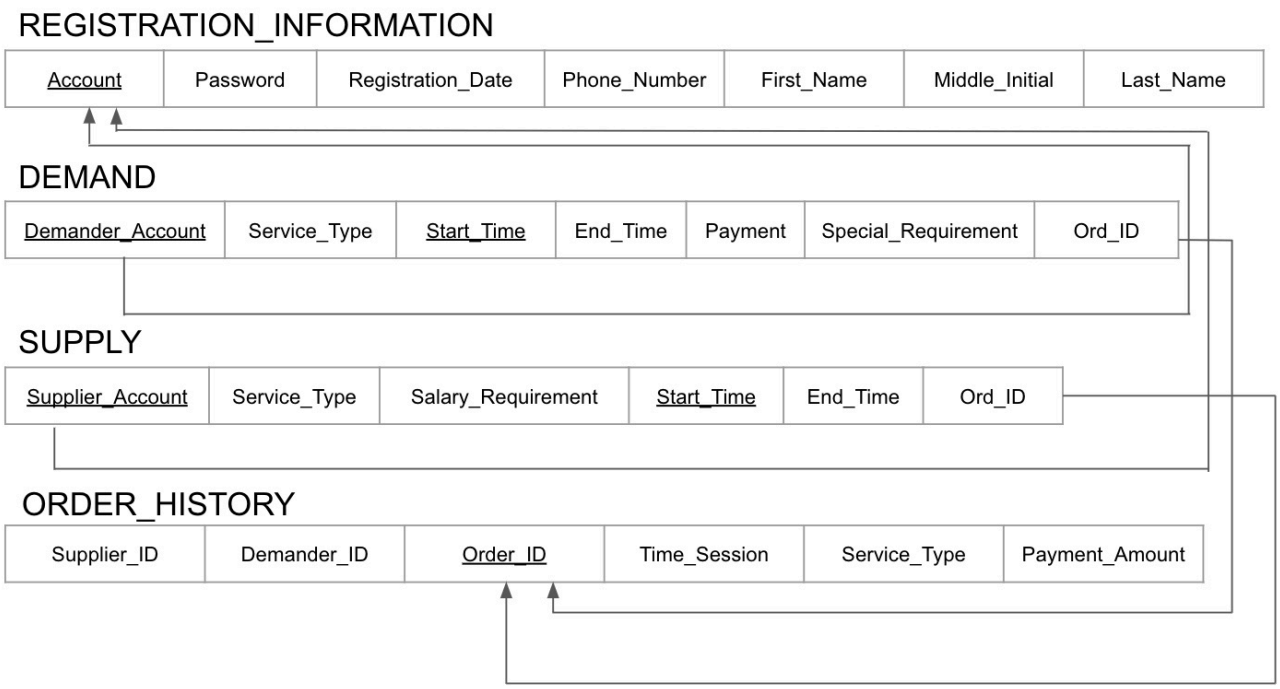
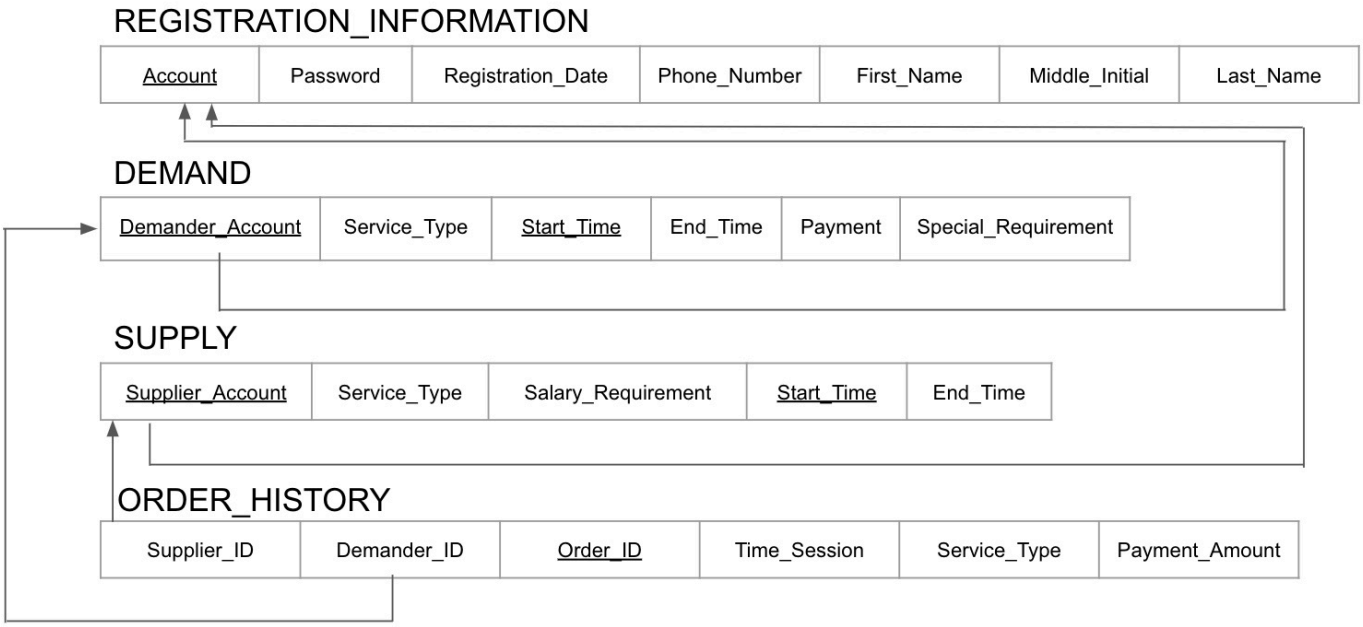
Milestone3

The initial schema that we came up with is presented below:



First of all, we would like to modify our relational schema, due to some trivial mistakes presented. One important change would be deleting the `Ord_ID` from both `DEMAND` and `SUPPLY` table, since they are not neccessary and there is a better way to costruct the schema. Instead of using the `Ord_ID` as the foreign keys to connect these two tables to the `ORDER_HISTORY` table, the `Supplier_ID` and the `Demander_ID` in the table can serve as the foreign key connected to `Demander_Account` in `DEMAND` and `Supplier_Account` in `SUPPLY`. Therefore, our new schema looks like the following:



Our schema has fulfilled the requirement of 1NF, since each attribute contains only atomic values.

The schema is also in 2NF, since no partial dependency is observed.

The schema is also in 3NF, since there is no transitive dependency.

The schema is also in BCNF, since there is no redundancy from any functional dependency.

We present the functional dependencies in our schema below:

`REGISTRATION_INFORMATION`:
$Account \rightarrow \{Password, Registration\_Date, Phone\_Number, First\_Name, Middle\_Initial, Last\_Name\}$

`DEMAND`:
$\{Demander\_Account, Start\_Time\} \rightarrow \{Service\_Type, End\_Time, Payment, Special\_Requirement\}$

`SUPPLY`:
$\{Supplier\_Account, Start\_Time\} \rightarrow \{Service\_Type, Salary\_Requirement, End\_Time\}$

`ORDER_HISTORY`:
$Order\_ID \rightarrow \{Supplier\_ID, Demander\_ID, Time\_Session, Service\_Type, Payment\_Amount\}$