

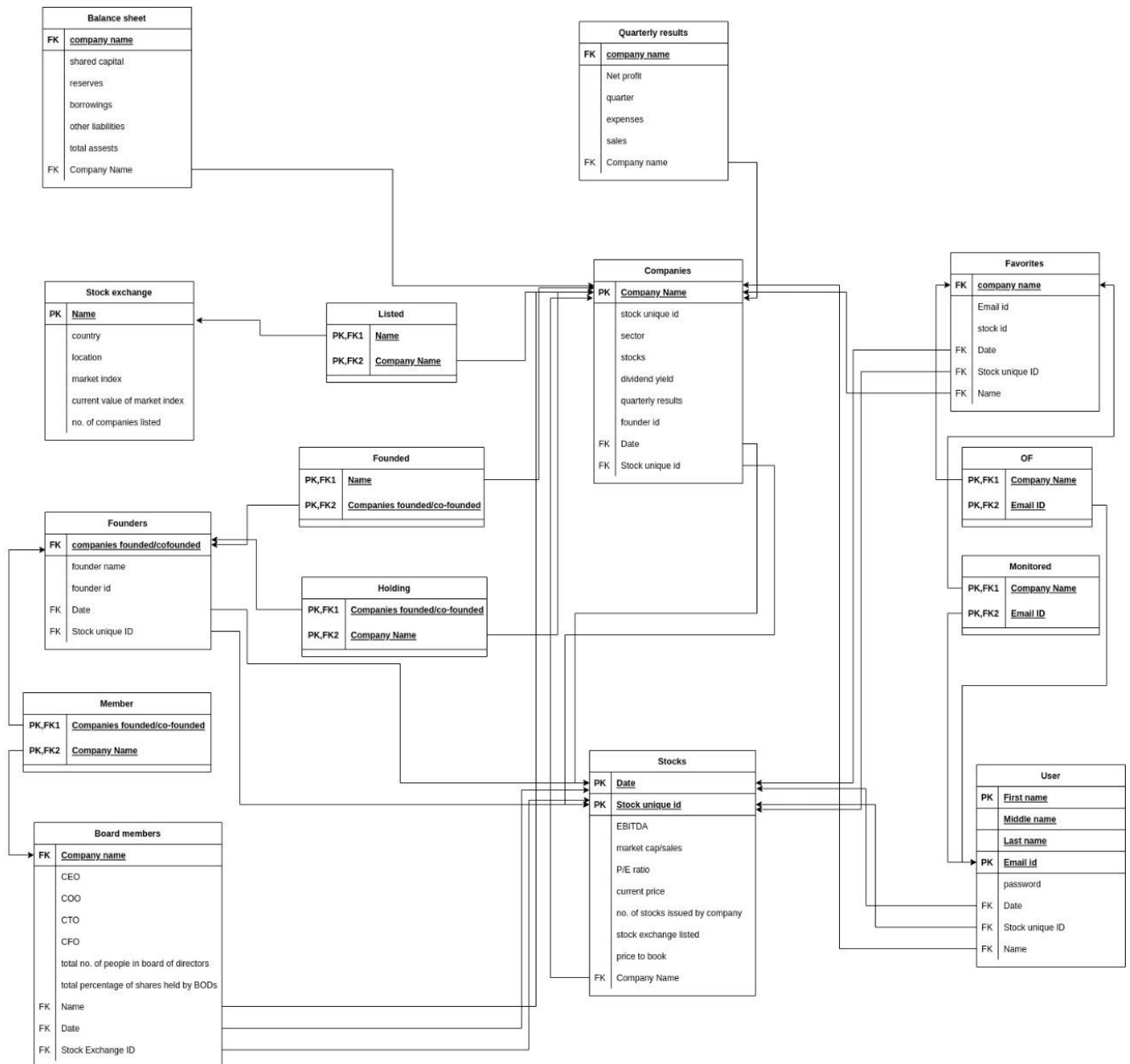
***Data & Applications Project Phase 3 -
Relational Model, Normal Forms
Team 26***

Steps Followed while making Relational Diagram:

1. For each Strong Entity type in the ER schema, we have created a relation that includes all the attributes of that Entity.
2. For each weak entity type in the ER schema a relation has been created which includes all attributes of the weak entity as attributes of relation. Each Relation includes the primary key of the deciding entity as a foreign key.
3. We mapped Primary keys of all Binary Relations of type 1:1 and 1:N as Foreign Keys in the respective relations.
4. We do not have any multivalued attributes in our Project, Therefore we did not have to follow any special steps to handle them.
5. All ternary relations were broken down into Binary Relations and were then handled.

(PTO)

Final Relational Model:



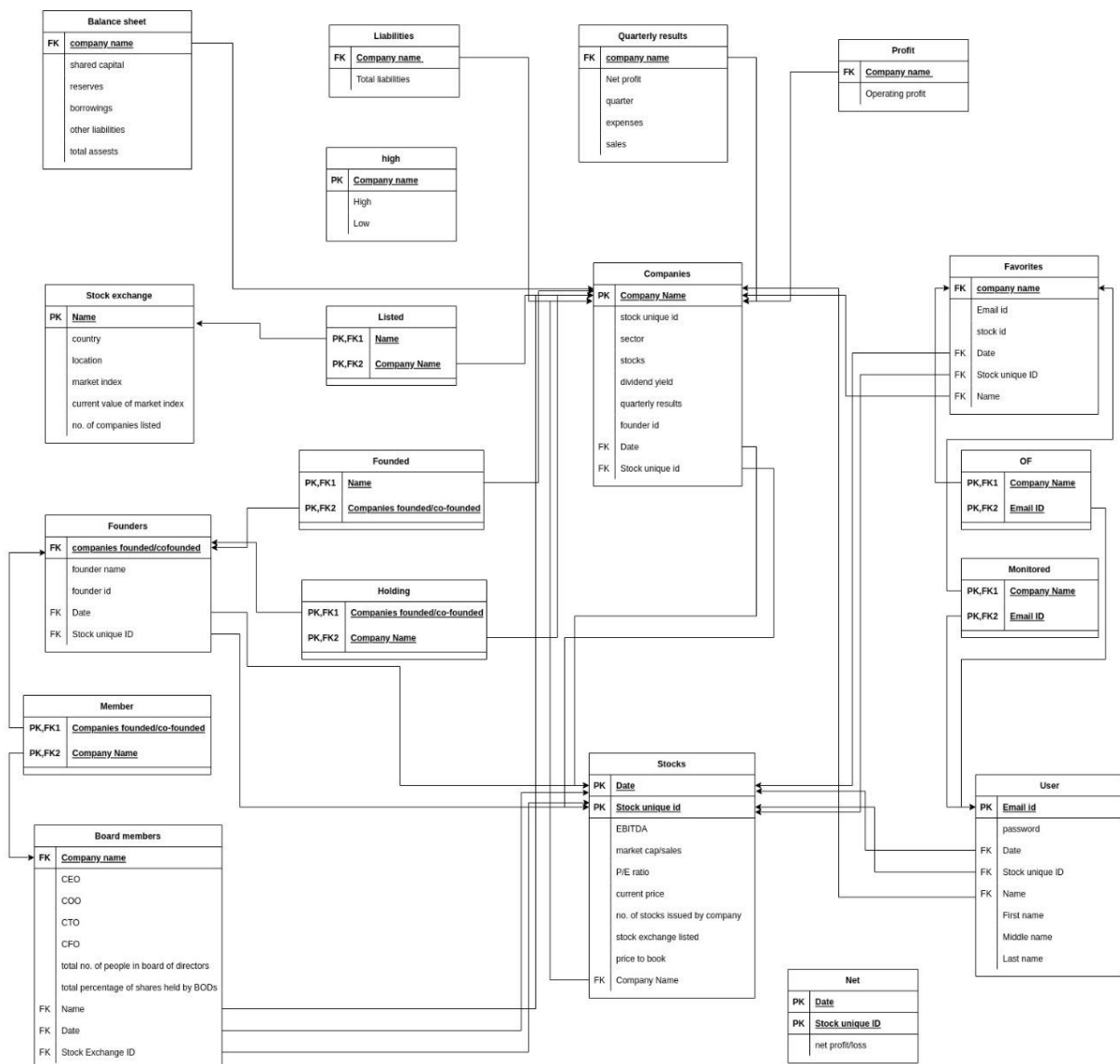
Conversion of Relational Model to 1NF:

The relational model is already in 1NF as new relations for multivalued attributes were created and composite attributes were converted to atomic attributes in the steps of conversion to Relational Model.

Conversion of Relational Model to 2NF:

The relational model is already in 2NF as all of its primary keys have exactly one attribute(i.e. either a single attribute as a primary key or a set of attributes as primary key). Also it does not have any non-prime attribute that is functionally dependent on any proper subset of any candidate key of the relation(No other candidate keys are present in the model except the Primary Key).

Conversion of Relational Model to 3NF:



All derived attributes have been added into different tables.