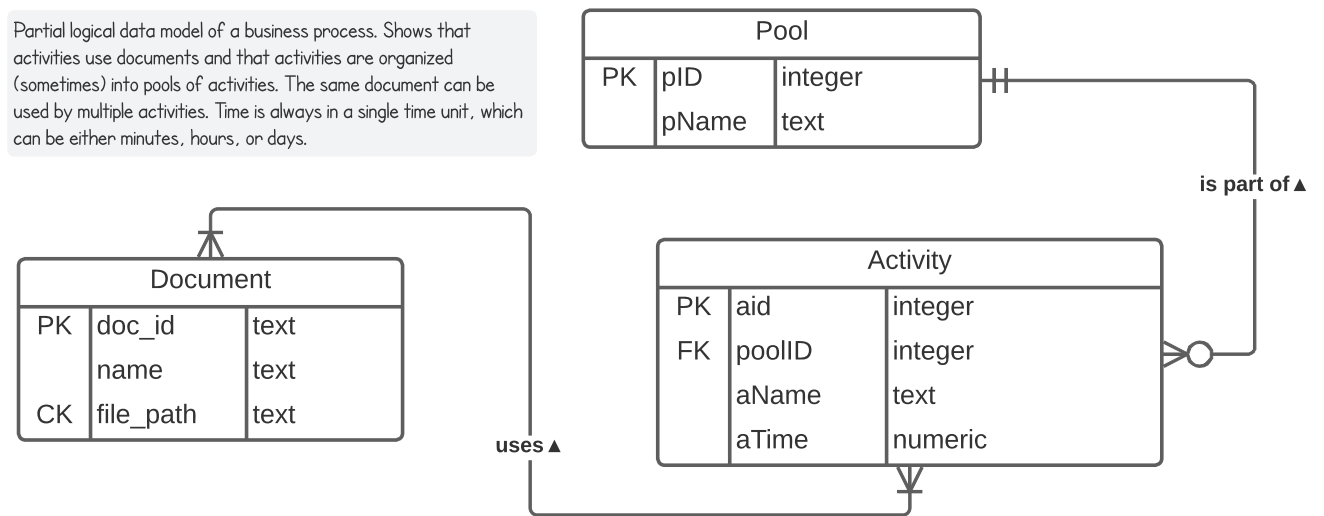
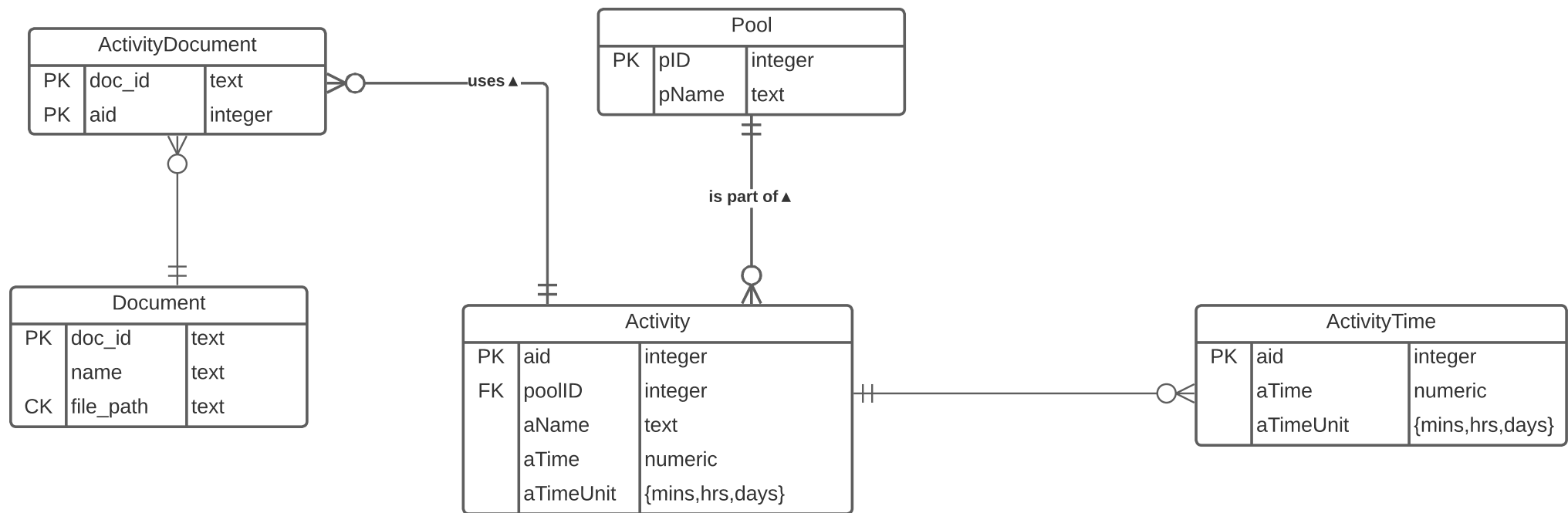


Duplicate

Partial logical data model of a business process. Shows that activities use documents and that activities are organized (sometimes) into pools of activities. The same document can be used by multiple activities. Time is always in a single time unit, which can be either minutes, hours, or days.



Normalized ERD



Proofs of 3NF Compliance

Document Table:

- $\text{doc_id} \rightarrow \text{name}, \text{file_path}$
- **doc_id** is the primary key, and both **name** and **file_path** are dependent only on **doc_id**.
- There are no transitive dependencies since **name** and **file_path** do not functionally determine any other attribute.

Pool Table:

- $\text{pID} \rightarrow \text{pName}$
- **pID** is the primary key, and **pName** is dependent only on **pID**.
- No transitive dependencies are present.

Activity Table:

- $\text{aid} \rightarrow \text{poolID}, \text{aName}, \text{aTime}, \text{aTimeUnitID}$
- **aid** is the primary key, and all other attributes are fully functionally dependent on **aid**.
- **aTimeUnitID** is a foreign key that references the **aTimeUnit** table, removing the partial dependency that existed with the original **aTimeUnit** attribute.

ActivityTime Table:

- $\text{aTimeUnitID} \rightarrow \text{aTimeUnit}$
- **aTimeUnitID** is the primary key, and **aTimeUnit** is dependent only on **aTimeUnitID**.
- This table is normalized to avoid repeating the time unit values in the **Activity** table.

ActivityDocument Table:

- $\text{adID} \rightarrow \text{doc_id}, \text{aid}$
- **adID** is the primary key, with **doc_id** and **aid** as foreign keys.
- This associative entity resolves the many-to-many relationship between **Document** and **Activity** and does not have any transitive dependencies.

All the tables listed above are in 3NF because:

- They are all in 2NF (no partial dependency of any non-prime attribute on a part of a candidate key).
- They have no transitive dependency (no non-prime attribute is dependent on another non-prime attribute).