CS5200

Assignment 3

Diagram

Description automatically generated

**ProcessActor**

This is a table that records the information of process actor.

Proof: For the ProcessActor table, there is no multivalued attribute (is in 1NF). “aid” is the primary key, and “name” is fully functional dependent on primary key. So, it is in 2NF (Since it is a single primary key, there is no problem with partial dependency). The “aid” alone can determine name and there is no transitive dependency. So, it is in 3NF.

aid → name

**ProcessPActor**

This table is generated to handle the many-to-many relationship between table Process and table ProcessActor. It has two attributes. The two attributes are both foreign key and composite primary key.

Proof: For the ProcessPActor table, there is no multivalued attribute (is in 1NF). “pid” and “aid” are composite primary key, and “name” is fully functional dependent on primary key. There is no other attribute, so it is in 3NF.

aid, pid

**Process**

This is a table that records the information of process.

Proof: For the Process table, there is no multivalued attribute (is in 1NF). “pid” is the primary key, and other attributes are fully functional dependent on primary key. Actually, if “pid” is the only PK and in 1NF it is automatically in 2NF. Also, there is no transitive dependency, so it is in 3NF.

pid → pName, pTime, pTimeUnit, pLastMod

**Activity**

This is a table that records the information of activity.

Proof: For the Activity table, there is no multivalued attribute (is in 1NF) after making “cTime” a single table. “cId” is the primary key, and other attributes are fully functional dependent on primary key. So, it is in 2NF. Also, there is no transitive dependency, so it is in 3NF.

cId → cName, pid

**ActivityTime**

The “cTime” is a non-atomic attribute in the original activity table. This table is generated to separate the attribute independently.

Proof: For the ActivityTime table, there is no multivalued attribute (is in 1NF). “cId” is the primary key also the foreign key, and other attributes are fully functional dependent on primary key. So, it is in 2NF. Also, there is no transitive dependency, so it is in 3NF.

cId → cAveTime, cWorstTime, cBestTime

Table

Description automatically generated