Phillip David Shields
DAT602 Milestone Two
Todd Cochrane

Milestone Two

ACID

ACID

The acronym ACID refers to the four main attributes of a solid database system. The four attributes, atomicity, consistency, isolation, and durability, are all used to analyze each transaction that occurs within the system.

Atomicity

Atomicity is an all or none approach to each transaction. This means that either that transaction completes all the procedures within the transaction, or if there is a problem, it completes none of the procedures within the transaction.

For Galaxias, each procedure was created as a single function to ensure atomicity. When a procedure does not finish properly, the database is not modified or updated. A good example of this being important is that only one pilot can move within a galaxy at a time. This procedure of limiting game activity to a single pilot movement procedure removes the possible database conflicts that would arise from multiple improper calls that would make changes to a galaxy.

Consistency

Consistency refers to each procedure or transaction producing the same complete outcome. A procedure should never leave a database half modified, or incompletely updated. If a procedure has multiple changes, all changes must be reverted if the procedure fails for any reason.

For Galaxias, all procedures are written so that the database is only updated when the entire procedure is completed successfully. All galaxy data is removed and player data is updated accordingly when a galaxy is successfully conquered by a player.

Isolation

Isolation is the separation of procedures and transactions by purpose. It may at times seem efficient to group unrelated procedures that are called at the same time, but doing so can lead to conflicts and unforeseen consequences. Isolation helps guarantee separation of purpose and that focus is given to a single priority for each procedure.

For Galaxias, each procedure was written to accomplish a single purpose driven transaction. This is especially important with a multiplayer turn-based game. A strong focus and emphasis was placed on completing each single player transaction with the most recent data.

Durability

Durability refers to the database's ability to recover from any type of shutdown, normal or abnormal. Each procedure should update relevant data so that if the system is improperly shutdown, the data persists when the system is turned back on.

Galaxias achieves durability by updating and storing relevant data to the database after each successful transaction, so that if the next transaction were interrupted or the system shutdown, the prior data would still persist in the database.