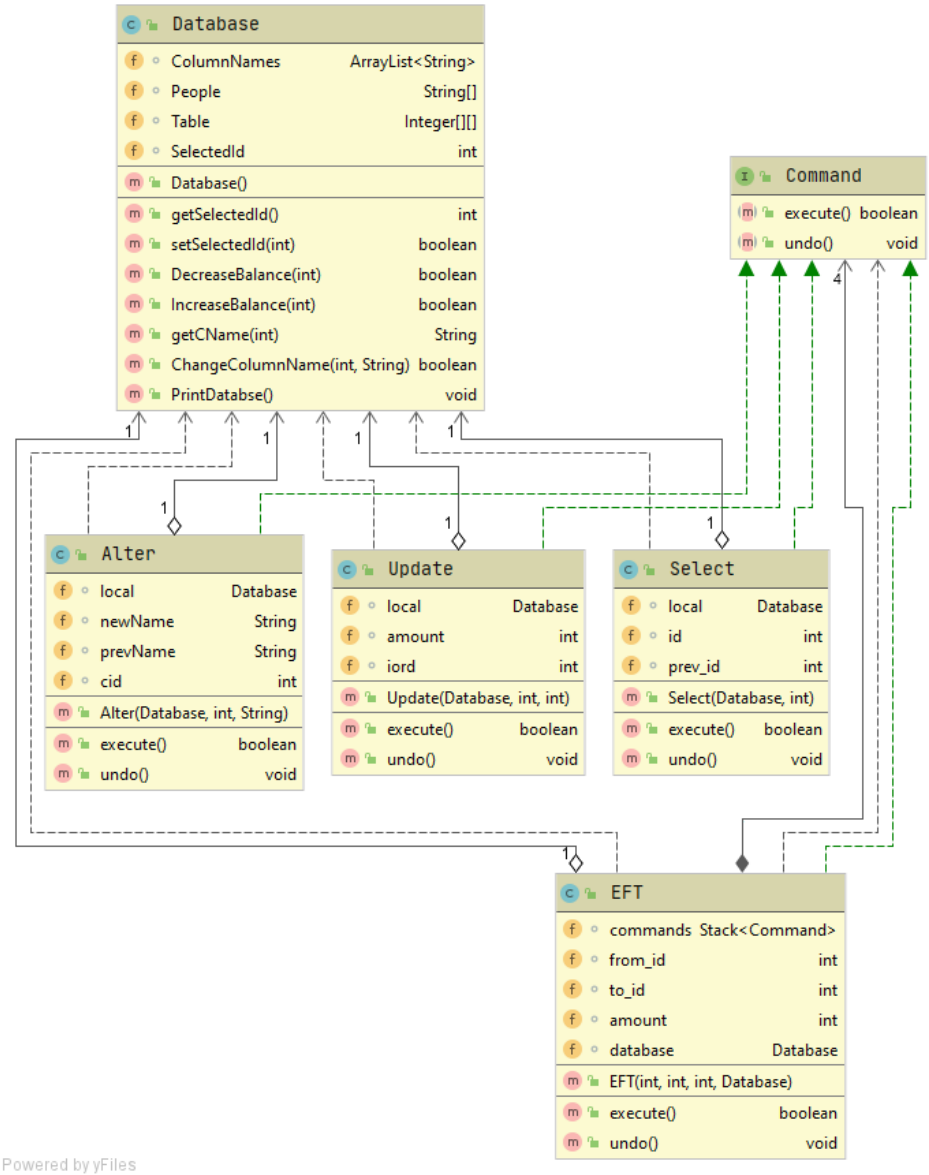
a)

I used the command design pattern because each of the database operations can be used as a command. Each command has execute and undo methods, so I can run each operation and I can undo the operation according to the operation result using the undo method.

Database class was created to model a database and operations were performed on this class. SELECT, UPDATE and ALTER commands are implementing the command interface. The select command selects and marks any user id to perform the update process. The update command decreases or increases the balance of the selected user by a specified amount. The alter command is used to change the name of the selected column. eft command takes 2 user ids and an amount. Runs select update select update commands respectively. In this way, money is transferred between two users. The undo method of the eft command cancels the money transfer and restores the money taken into account. Eft class holds a command stack to cancel the operation.

My Class Diagram:



b)

I create an EFT class for testing operations.EFT class takes Account ID’s both sender and receiver.And firstly runs SELECT operation and select sender Account ID and UPDATE sender Account balance and then SELECT receiver Account ID , UPDATE receiver Account balance.If there is a problem on process ,

Undo all operations worked before failed operation.Also EFT is a command so it is a reversible transaction.

Outputs: