-----Requirements description-----

To design an Entity-Relationship Diagram (ERD) for a database system that supports the specified requirements, follow these guidelines:

--Entities Identification--

Card (Cartão): This entity represents individual payment cards. Each card is uniquely identified by a card number and belongs to one account. Cards also present an expiry date and a security code, so it can be used for e-commerce and in other card-not-present transactions.

Account (Conta): This entity represents a bank account. An account can have multiple cards associated with it. It is uniquely identified by an account number. It holds a balance for all transactions produced against it, such as purchases and payments.

Account Statement (Fatura): This entity represents a billing statement for an account. Each account generates a new account statement for each billing cycle (usually monthly). The account statement is uniquely identified by an account statement number and includes details such as the billing date and total amount due.

Transaction (Transação): This entity represents a financial transaction. Transactions can be produced against either a card number or an account number. Each transaction is uniquely identified by a transaction ID and includes details such as the nature (original or reversal), type (purchase, payment, refund, cash advance, interest charge, fee, etc.), transaction date, amount, and description.

--Relationships--

Card to Account: There is a many-to-one (M:1) relationship between the Card and Account entities. A card belongs to one account, but an account can have multiple cards.

Account to Account Statement: There is a one-to-many (1:M) relationship between the Account and Account Statement entities. Each account generates one account Statement per billing cycle, resulting in multiple account statements over time.

Transaction to Card/Account: Transactions can be linked to either a Card or an Account. Therefore, there should be an optional relationship between Transaction and Card, and another between Transaction and Account.

Transaction to Account Statement: There is a many-to-many (M:M) relationship between Transaction and Account Statement. Each transaction is associated with one or more account statements, and each account statement can contain multiple transactions.

--Observations and Recommendations--

Build any additional relationship you see fit to better accommodate the Entities in your Diagram - per Normal Forms in DBMS.

Build any constraints - unique, keys, checks - you see would fit this model, also respecting Normal Forms and providing integrity to the model.