# Assignment #2

Karla Martinez

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What are the differences between relation schema, relation and instance? Give an example using the university database to illustrate.

- **Relation:** A relation refers to a table and the set of data, it includes the tuples (rows) and attributes (columns). Programming-language notion of a variable

- **Relation Schema:** Structure (involves everything) Programming-language of programming language of type definition showing list of attributes and their domains

- **Instance:** An instance is basically a snapshot and relation of information stored in the database at a specific moment. Set of tuples(rows) . Like a status at any given time.

For Example, *teaches (ID, course id, sec id, semester, year)*
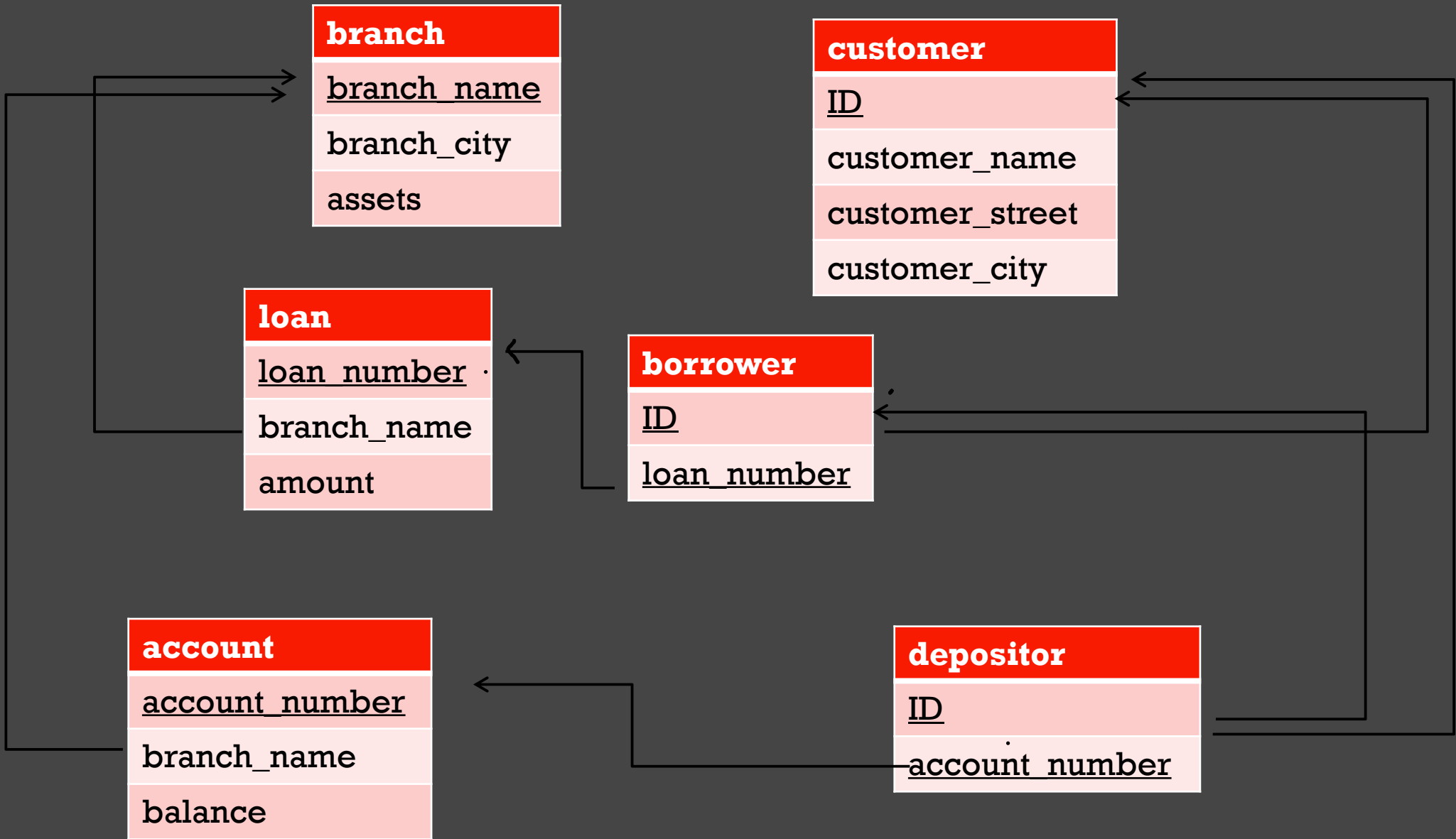- A relation schema represents all of the above, hence (teaches (ID, course id, sec id, semester, year)  demonstrating  what class/ class sections instructors are in
- Relation- the example above we can see the relation has 5 attributes – Shows which teacher teaches a specific course, in what section and during a specific semester
- Instance: The instance of the teacher relation at this given time, would represent instance here. In this case. (22222,PHY-101,1,''Fall'',2017) shows an instance when the instructor with ID 22222 teaches the Physics 101 course in section 1, during Fall semester of 2017.

branch(*branch_name, branch_city, assets*)
customer (*ID, customer_name, customer_street, customer_city*)
loan (*loan_number, branch_name, amount*)
borrower (*ID, loan_number*)
account (*account_number, branch_name, balance*)
depositor (*ID, account_number*)

Draw a schema diagram for the following bank database:
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**branch**

| branch_name |
|---|
| branch_city |
| assets |

**customer**

| ID |
|---|
| customer_name |
| customer_street |
| customer_city |

**loan**

| loan_number |
|---|
| branch_name |
| amount |

**borrower**

| ID |
|---|
| loan_number |

**account**

| account_number |
|---|
| branch_name |
| balance |

**depositor**

| ID |
|---|
| account_number |

Question#3 ii) Given your choice of primary keys, identify appropriate foreign keys.

**branch**

| branch_name |
| branch_city |
| assets |

Primary Key: branch_name

**customer**

| ID |
| customer_name |
| customer_street |
| customer_city |

Primary Key: ID

**loan**

| loan_number |
| branch_name |
| amount |

Primary Key: loan_number
Foreign Keys: branch)_name referencing branch

**borrower**

| ID |
| loan_number |

Primary Key: ID and loan_number
Foreign Keys: loan_number referencing loan

**account**

| account_number |
| branch_name |
| balance |

Primary Key: account_number
Foreign Keys: branch_name referencing branch

**depositor**

| ID |
| account_number |

Primary Key: ID and account_number
Foreign Keys: account_number referencing account