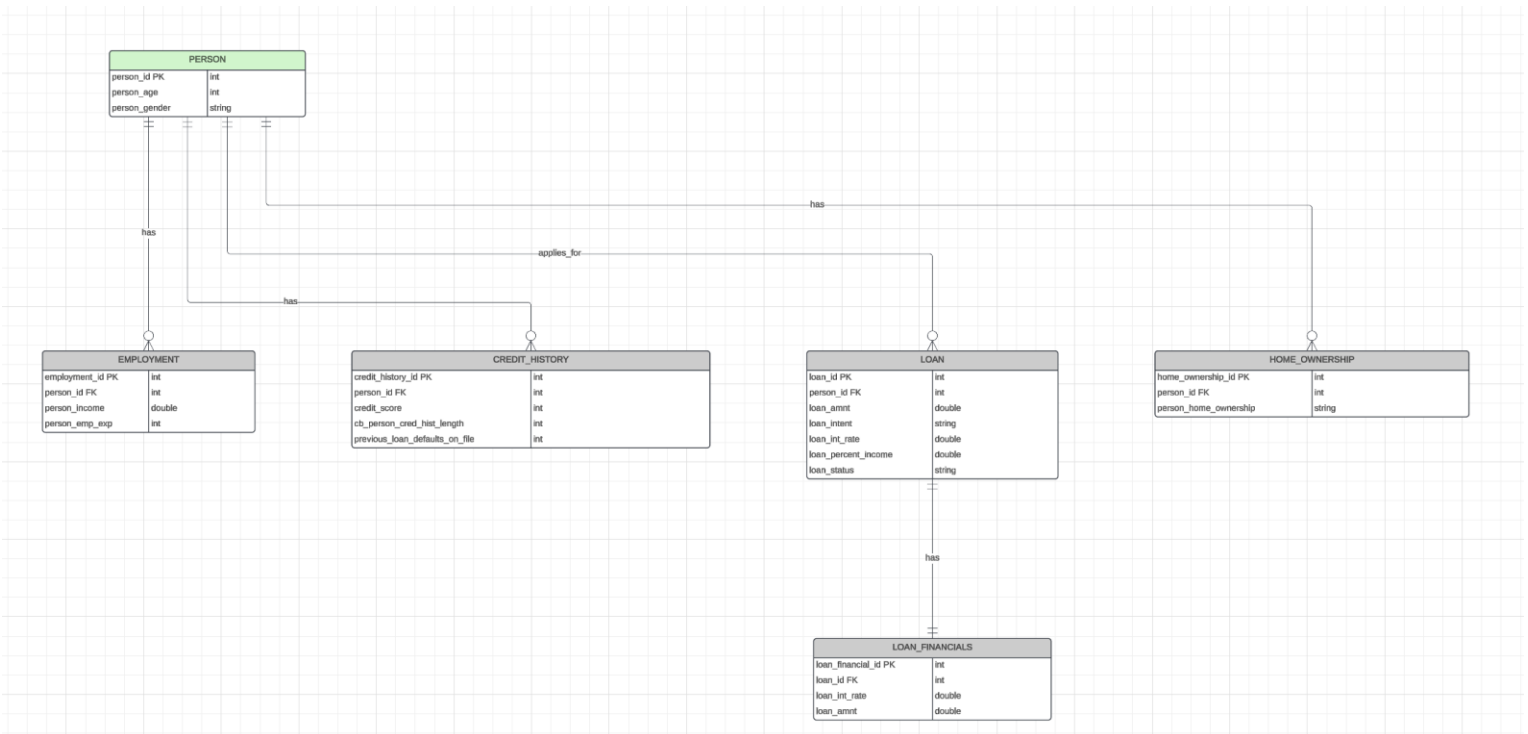# Project ERD Submission:

Dataset for Review:

Loan_Dataset.csv

Normalization:

1. First Normal Form (1NF): Atomic Values

- **Rule**: Ensure that each table cell contains only **atomic (indivisible)** values, and each record is uniquely identifiable by a **primary key**.

- **Application in my ERD**:

  - All tables have a **primary key**.

  - Each attribute has atomic values (no lists or nested data). For instance, person_age, person_gender, and other columns have singular, indivisible values for each record.

2. Second Normal Form (2NF): Eliminate Partial Dependencies

- **Rule**: Achieve **1NF** and ensure that all non-key attributes are **fully functionally dependent** on the entire primary key. This form mainly applies to tables with composite primary keys.

- **Application in my ERD**:

- o   All tables either have a single-column primary key or do not contain partial dependencies. Each non-key attribute in a table depends entirely on the primary key (e.g., person_income depends solely on employment_id in the **Employment** table).

3. Third Normal Form (3NF): Eliminate Transitive Dependencies

- **Rule**: Achieve **2NF** and ensure that all non-key attributes are **only dependent on the primary key**, not on other non-key attributes.

- **Application in our ERD**:

   - o   I've separated details into specific tables (e.g., **Person**, **CreditHistory**, **Employment**) to avoid transitive dependencies. For instance:

      - ▪ The **Person** table has only personal identifiers, while employment details are in the **Employment** table, ensuring employment data doesn't transitively depend on person attributes.

      - ▪ **LoanFinancials** is separated from **Loan,** so that financial details are not mixed with general loan attributes.

Column Name	Description
`person_id`	Primary Key for Person
`loan_id`	Primary Key for Loan
`credit_history_id`	Primary Key for CreditHistory
`employment_id`	Primary Key for Employment
`home_ownership_id`	Primary Key for HomeOwnership
`loan_financial_id`	Primary Key for LoanFinancials
Attributes	
`person_age`	Attribute of Person
`person_gender`	Attribute of Person
`credit_score`	Attribute of CreditHistory
`cb_person_cred_hist_length`	Attribute of CreditHistory
`previous_loan_defaults_on_file`	Attribute of CreditHistory
`person_income`	Attribute of Employment
`person_emp_exp`	Attribute of Employment
`person_home_ownership`	Attribute of HomeOwnership
`loan_amnt`	Attribute of Loan
`loan_intent`	Attribute of Loan
`loan_int_rate`	Attribute of LoanFinancials
`loan_percent_income`	Attribute of Loan
`loan_status`	Attribute of Loan
Transitive Dependencies	
`credit_score`, `cb_person_cred_hist_length`, `previous_loan_defaults_on_file`	Depend on `person_id` via `credit_history_id`
`person_income`, `person_emp_exp`	Depend on `person_id` via `employment_id`
`loan_int_rate`	Depends on `loan_id` via `loan_financial_id`