FirstHome Advisor

# Classes

##### UserData

Description: Represents the user's financial and personal data.

Attributes:

* age: int
* employment\_type: str
* monthly\_income: float
* monthly\_expenses: float
* existing\_loans: float
* own\_contribution: float
* property\_value: float
* dependents: int

Methods:

to\_dataframe() -> pd.DataFrame: Prepares the data for the classifier.

##### RiskClassifier

Description: Wrapper for the ML model used to assess user risk.

Attributes:

* model – e.g., a scikit-learn object
* preprocessor – pipeline / scaler / encoder

Methods:

predict(user\_data: UserData) -> str: Returns classification (e.g., "eligible")

predict\_proba(user\_data: UserData) -> float: Returns risk probability

##### CreditCalculator

Description: Performs auxiliary calculations based on user data.

Methods:

calculate\_dti(user\_data: UserData) -> float

calculate\_max\_credit(user\_data: UserData) -> float

recommendations(user\_data: UserData) -> list[str]

##### AssessmentResult

Description: Structure for the assessment result.

Attributes:

* risk\_category: str
* risk\_score: float
* max\_loan: float
* dti: float
* recommendations: list[str]

##### AppController

Description: Coordinates the application logic; connects components and returns the final result to the UI.

Methods:

run\_assessment(user\_data: UserData) -> AssessmentResult

##### MainUI

Description: Interface layer.

Methods:

render\_form() -> UserData

display\_result(result: AssessmentResult)

# Architecture Pattern: MVC with ML logic in the service layer

Model – UserData, AssessmentResult, ML data (RiskClassifier)

Service – CreditCalculator, AppController

View/Interface – MainUI

# Data Flow

User fills out the form → MainUI creates UserData

AppController.run\_assessment():

Uses RiskClassifier for prediction

Uses CreditCalculator for calculations

Creates AssessmentResult

MainUI presents the result to the user

# Diagram UML

Obraz zawierający tekst, diagram, Czcionka, paragon

Opis wygenerowany automatycznie