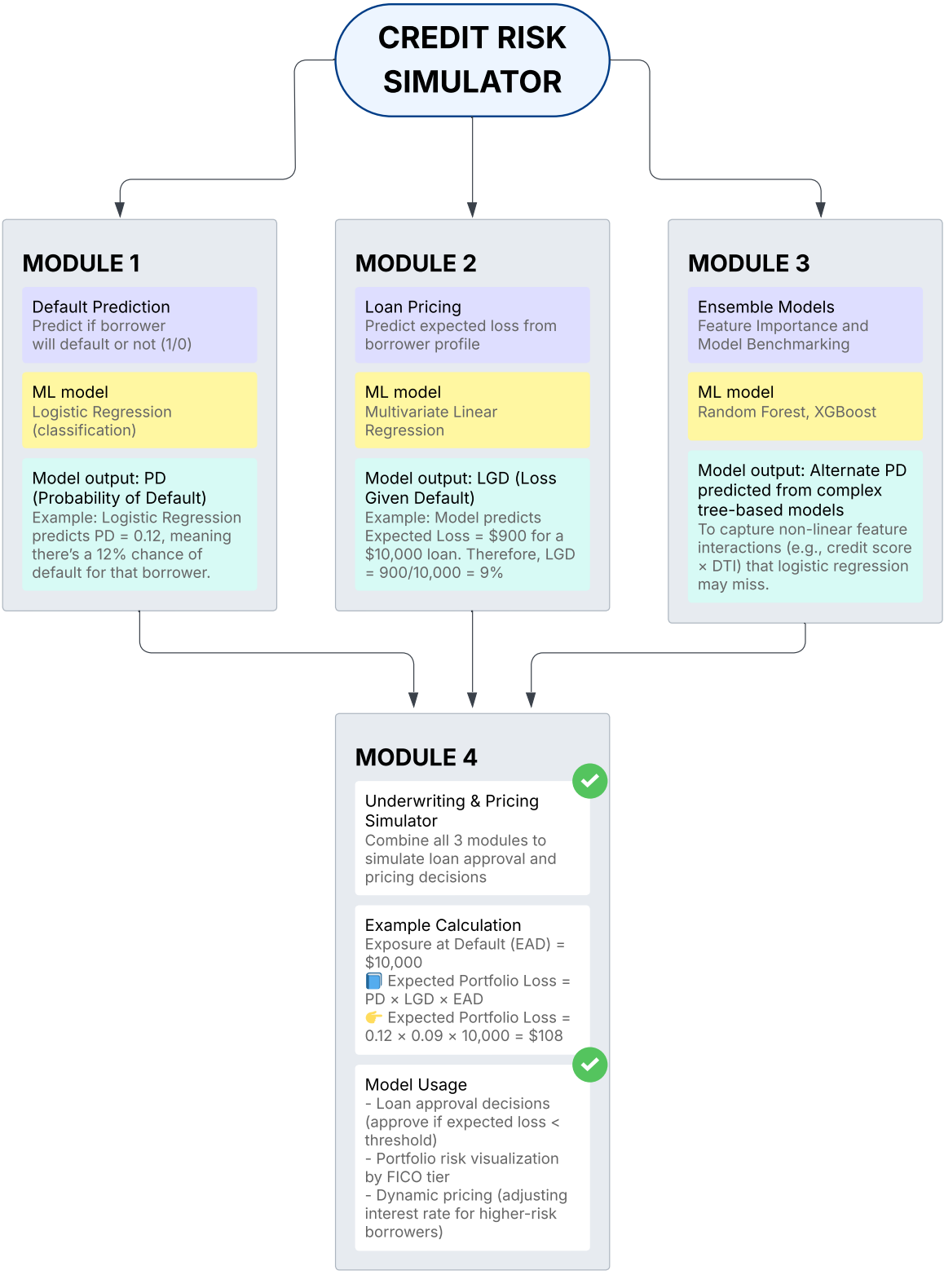
CREDIT RISK SIMULATOR
MODULE 1
Default Prediction
Predict if borrower will default or not (1/0)
ML model
Logistic Regression (classification)
Model output: PD (Probability of Default)
Example: Logistic Regression predicts PD = 0.12, meaning there's a 12% chance of default for that borrower.
MODULE 2
Loan Pricing
Predict expected loss from borrower profile
ML model
Multivariate Linear Regression
Model output: LGD (Loss Given Default)
Example: Model predicts Expected Loss = $900 for a $10,000 loan. Therefore, LGD = 900/10,000 = 9%
MODULE 3
Ensemble Models
Feature Importance and Model Benchmarking
ML model
Random Forest, XGBoost
Model output: Alternate PD predicted from complex tree-based models
To capture non-linear feature interactions (e.g., credit score × DTI) that logistic regression may miss.
MODULE 4
Underwriting & Pricing Simulator
Combine all 3 modules to simulate loan approval and pricing decisions
Example Calculation
Exposure at Default (EAD) = $10,000
🟦 Expected Portfolio Loss = PD × LGD × EAD
👉 Expected Portfolio Loss = 0.12 × 0.09 × 10,000 = $108
Model Usage
- Loan approval decisions (approve if expected loss < threshold)
- Portfolio risk visualization by FICO tier
- Dynamic pricing (adjusting interest rate for higher-risk borrowers)