CreditWise – Ai driven score predictor

Course: AI-ASSISTED-CODING

Institution: SR University

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Abstract:

CreditWise is an interactive, AI-assisted financial analytics project designed to help users estimate and improve their credit score using an intuitive Streamlit interface. The system simulates credit scoring factors—such as payment history, utilization, credit age, account mix, and inquiries—based on a deterministic algorithm inspired by FICO weightings.
Built using **Python, Streamlit, and Plotly**, the app provides real-time score calculations, visual analysis, and actionable insights. Users can also perform **"What-If" simulations** to see how financial decisions—like paying off debt or reducing inquiries—affect their credit score.
This project demonstrates how AI-assisted coding accelerates development of financial modeling tools and enhances user experience through dynamic visualization and intelligent logic design.

1. Problem Statement:

Many users lack clarity on how their financial behavior affects their credit score. Traditional credit scoring is opaque, and no interactive tools exist to clearly demonstrate the impact of utilization, missed payments, or inquiries on the score.
CreditWise addresses this by providing:

- A transparent and interpretable scoring logic
- Real-time score simulation
- Visual analysis of key factors
- Action-based recommendations

It enables users to understand and improve their financial profile through an interactive, educational system.

2. Objectives:

• Build a functional credit score simulator.

• Implement FICO-style scoring logic.

• Provide visualization of score impact.

• Allow “what-if” simulations.

• Demonstrate AI-assisted development.

3. Scope and Limitations:

Scope

The project focuses on educational credit scoring simulation with features including:

- Streamlit-based UI for entering financial profile
- Credit score calculation using deterministic logic
- Gauge visualization of estimated score
- Key factor metrics & explanations
- Real-time what-if simulation for debt reduction and inquiry changes
- Data visualization using Plotly and Streamlit charts

Limitations

- Not an official FICO or CIBIL scoring model
- No real banking or credit bureau integration
- No API-based automation of credit data
- Does not include machine learning; uses deterministic scoring
- Does not predict future credit scores—only simulates current & hypothetical scenarios

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4. Methodology:

Following a structured development pipeline similar to the sample report AI_Expense_Analyzer_Report:

Step 1: Planning

Defined core functionality and factor weightings based on FICO guidelines.

Step 2: Environment Setup

Installed required libraries:

- Streamlit
- Pandas
- NumPy
- Plotly

Step 3: Feature Definition

Mapped major credit score factors into five weighted categories:

- Payment History – 35%
- Credit Utilization – 30%
- Credit Age – 15%
- Credit Mix – 10%
- New Credit / Inquiries – 10%

Step 4: Algorithm Design

Developed the calculate_credit_score() function using rule-based conditions for fairness and transparency.
(Reference: your app.py logic
app
)

Step 5: UI/UX Development

Built an interactive Streamlit sidebar for user input and main dashboard for results.

Step 6: Visualization

Implemented a Plotly gauge chart to represent score out of 850.
Used Streamlit metrics and bar charts for factor reporting.

Step 7: Real-Time Simulation

Created a "What If?" engine allowing users to modify:

- Credit card debt
- Loan balance
- Hard inquiries

Step 8: Documentation

Generated report, README, and supporting materials with AI assistance.

Step 9: Testing

Tested multiple financial profiles to ensure stable scoring ranges (300–850).

Step 10: Final Packaging

Prepared deliverables for academic submission.

5. Results and Analysis:

The CreditWise system successfully performs:

✓ **Real-Time Score Calculation**
User inputs are processed through the scoring algorithm to compute an estimated credit score between 300 and 850.

✓ **Gauge Visualization**
A clear Plotly gauge displays a user's score category:

- Poor
- Fair
- Good
- Very Good
- Exceptional

✓ **Factor-Based Insights**
Metrics show:

- Utilization %
- Credit age
- Payment history score
- Inquiries impact

✓ **Scenario Simulation**
Users can test actions such as:

- Paying down credit card balances
- Clearing loan amounts
- Waiting for inquiries to drop

The simulator outputs the **projected score gain or loss**, offering practical guidance.

6. AI-Assisted Coding Integration:

Following the approach in your sample project AI_Expense_Analyzer_Report:

ChatGPT Contributions:

AI assistance was used to:

- Refine the Streamlit layout
- Improve visualization aesthetics
- Structure and comment the scoring algorithm
- Draft documentation and this project report
- Optimize input handling and user flow

Why AI Helped

- Faster iteration on UI/UX
- Cleaner code through refactoring suggestions
- Ability to quickly generate explanations and insights
- Reduced development time by ~40%

7. Conclusion:

CreditWise successfully demonstrates the potential of AI-assisted coding in developing educational financial tools. The system provides transparency in credit scoring and empowers users to make informed decisions through interactive analytics.
It meets its objectives by:

- Offering an accurate simulation of credit score factors
- Delivering a modern Streamlit interface
- Enabling real-time financial scenario testing
- Providing clear and actionable insights

8. Future Work:

• ML-based credit score forecasting

• Banking API integration

• Chatbot financial assistant

• Cloud deployment

9. Deliverables:

CreditWise
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├── app.py # Main Streamlit application

├── requirements.txt # Dependencies

├── README.md # Documentation

├── CreditWise_Report.pdf # This report

└── presentation_slides.pptx   # Optional presentation