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Smart Subscription & Billing Management System

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Abstract:

The Smart Subscription & Billing Management System is developed using Python and Streamlit to help users manage their subscriptions easily. Many users subscribe to multiple platforms like Netflix, Spotify, and others but forget to track their usage and expenses.

This system stores subscription details such as platform name, cost, usage, and discount. It classifies subscriptions into Active, Semi-Active, and Passive categories based on usage. It also suggests suitable plans and identifies subscriptions that can be cancelled.

The system includes features like balance management, Autopay, transaction history, and data visualization using charts. These features help users understand their spending and manage money better.

The application is simple, user-friendly, and works efficiently. It can be improved in future by adding payment gateways, mobile app support, and advanced AI features.

Keywords — Subscription Management, Billing System, Data Analysis, Streamlit Application, Autopay System, Usage Classification, Financial Management, Data Visualization

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I. INTRODUCTION

In today's digital world, subscription-based services such as video streaming, music platforms, and cloud storage have become very common. Users often subscribe to multiple platforms for convenience and entertainment. However, managing these subscriptions becomes difficult because users do not always track their usage or expenses. Many users continue paying for services even when they are not actively using them, which leads to unnecessary financial loss.

Existing financial management systems mainly focus on general expenses and do not provide specific features for tracking and analyzing subscriptions., there is a need for a smart system that can help users manage their subscriptions effectively.

II. SCOPE OF THE PROJECT

1)current scope

- Tracks subscription details (platform, cost, usage, discount)

• Classifies subscriptions (Active, Semi-Active, Passive)
• Provides plan recommendations based on usage
• Supports Autopay and transaction tracking

2)FUTURE SCOPE

• Integration with real payment systems
• Development of mobile application
• Cloud-based data storage
• AI-based recommendation system

III. SYSTEM ARCHITECTURE

The Smart Subscription & Billing Management System is designed using a modular architecture that ensures smooth functioning, easy data handling, and better user interaction. The system is divided into different layers, each responsible for a specific task.

1. User Interface Layer
• Developed using Streamlit for creating an interactive web dashboard
• Displays subscription details such as platform, cost, usage, and recommendations
• Allows users to add balance and run the Autopay feature
• Shows visualizations like charts and graphs for better understanding

2. Processing Layer
• Handles all the core logic of the system
• Classifies subscriptions into Active, Semi-Active, and Passive
• Generates plan recommendations based on usage
• Calculates cancellation score to identify low-value subscriptions

3. Autopay Module
• Manages automatic payment of subscriptions
• Deducts subscription cost from user balance
• Checks for sufficient balance before processing payments
• Records successful and failed transactions

4. Data Layer
• Stores subscription data using Pandas DataFrames
• Maintains transaction history and user balance
• Ensures quick access and updates of data
• Supports efficient data processing

5. Working Flow
User Input → Data Processing → Usage Classification → Recommendation → Autopay → Data Visualization → Transaction Storage

IV. METHODOLOGY

The methodology of the Smart Subscription & Billing Management System explains how the system collects data, processes it, and provides useful outputs to the user. The system follows a step-by-step approach to manage subscriptions and optimize expenses.

1. Data Collection
• Subscription data is collected including platform name, cost, usage, and discount
• Data can be pre-defined or entered by the user
• This data forms the base for all further processing

2. Data Processing
• The collected data is organized using Pandas DataFrames
• Data is cleaned and structured for analysis
• Efficient processing helps in quick calculations and updates

3. Usage Classification
• Subscriptions are classified based on usage value
• Usage ≤ 3 → Passive
• Usage 4–7 → Semi-Active
• Usage ≥ 8 → Active
• Helps identify which services are underused or frequently used

4. Plan Recommendation
• Based on usage, suitable plans are suggested
• Low usage → Monthly Plan
• Medium usage → 6-Month Plan
• High usage → Yearly Plan
• Helps users choose cost-effective options

5. Autopay and Billing
• Users can add balance to the system
• Autopay automatically deducts subscription costs

• Checks if sufficient balance is available
• Records all transactions for tracking

6. Data Visualization
• Uses charts like bar graphs and pie charts
• Shows monthly spending and usage distribution
• Helps users easily understand their data

7. Cancellation Recommendation
• Calculates Cancel Score = Cost / Usage
• High score indicates low-value subscription
• Suggests subscriptions that can be cancelled

V. ACKNOWLEDGMENT

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VI. CONCLUSION

The Smart Subscription & Billing Management System helps users manage their subscriptions efficiently and reduce unnecessary expenses. It provides useful insights into usage and spending patterns through a simple dashboard. The system is easy to use and improves financial awareness. Future improvements can make it more advanced and scalable.

VII. REFERENCES

[1] [W. McKinney, *Python for Data Analysis*, 2nd ed. Sebastopol, CA, USA: O'Reilly Media, 2017.
[2] J. VanderPlas, *Python Data Science Handbook*. Sebastopol, CA, USA: O'Reilly Media, 2016.
[3] Streamlit Inc., "Streamlit: The fastest way to build data apps," [Online]. Available: https://docs.streamlit.io/
[4] Plotly Technologies Inc., "Plotly Python Graphing Library," [Online]. Available: https://plotly.com/python/
[5] The Pandas Development Team, "Pandas Documentation," [Online]. Available: https://pandas.pydata.org/docs/
[6] Python Software Foundation, "Python Documentation," [Online]. Available: https://docs.python.org/3/
[7] T. Grus, *Data Science from Scratch*, 2nd ed. Sebastopol, CA, USA: O'Reilly Media, 2019.
[8] A. Géron, *Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow*. Sebastopol, CA, USA: O'Reilly Media, 2019.

