

Personal Budget Planner

04 Gaurav Ambavle.
10 Rohit Chavan.
16 Parth Dubal.
47 Omkar Patil.

Project Guide: Aruna Khubalkar.

TIME SERIES ALGORITHM



Example



$$a = \bar{y} - b\bar{x}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

| Year | Q1 | Q2 | Q3 | Q4 |
|----------------|--------|--------|---------|---------|
| 2008 | 75.40% | 91.28% | 98.11% | 133.70% |
| 2009 | 75.40% | 91.28% | 103.77% | 129.34% |
| 2010 | 75.40% | 91.28% | 103.77% | 129.34% |
| Mean | 77.25% | 92.01% | 100.94% | 131.52% |
| KADJ FACTOR | 0.9945 | 0.9945 | 0.9945 | 0.9945 |
| SEASONAL INDEX | 77.30% | 91.51% | 100.19% | 130.10% |

Requirements



Comparison

| Feature | Personal Budget Planner | Excel | Word |
|--------------------------|-------------------------|-------|------|
| Calculation | Yes | Yes | No |
| Graphical Representation | Yes | Yes | No |
| Data Storage | Yes | Yes | No |
| Report Generation | Yes | Yes | No |
| Customization | Yes | Yes | No |
| Integration | Yes | Yes | No |
| Security | Yes | Yes | No |
| Portability | Yes | Yes | No |
| Flexibility | Yes | Yes | No |
| Scalability | Yes | Yes | No |
| Interoperability | Yes | Yes | No |
| Reliability | Yes | Yes | No |
| Availability | Yes | Yes | No |
| Performance | Yes | Yes | No |
| Efficiency | Yes | Yes | No |
| Effectiveness | Yes | Yes | No |
| Productivity | Yes | Yes | No |
| Quality | Yes | Yes | No |
| Value | Yes | Yes | No |
| Impact | Yes | Yes | No |
| Contribution | Yes | Yes | No |
| Significance | Yes | Yes | No |
| Importance | Yes | Yes | No |
| Relevance | Yes | Yes | No |
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TIME SERIES ALGORITHM

Why Time Series
Because it helps in analyzing the data which changes over time.

Components
- Trend
- Seasonal
- Cyclical
- Random

Stationarity
The data series must be stationary to use the time series models.

Models
- Autoregressive (AR)
- Moving Average (MA)
- ARIMA

Example



$$a = \bar{y} - b\bar{x}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

| Year | Q1 | Q2 | Q3 | Q4 |
|----------------|---------|---------|---------|---------|
| 2018 | 98.11% | 101.11% | 103.11% | 105.11% |
| 2019 | 99.11% | 102.11% | 104.11% | 106.11% |
| 2020 | 100.11% | 103.11% | 105.11% | 107.11% |
| MEAN | 99.11% | 102.11% | 104.11% | 106.11% |
| SEASONAL INDEX | 99.11% | 102.11% | 104.11% | 106.11% |

Requirements

Hardware
- Laptop/PC
- Internet Access

Software
- Python
- Jupyter Notebook

Comparison

| Model | Accuracy | Complexity | Interpretability |
|-------|----------|------------|------------------|
| ARIMA | High | High | Low |
| AR | Medium | Low | High |
| MA | Medium | Low | High |
| ARMA | High | Medium | Medium |
| ARIMA | High | High | Low |

Current Scenario

- Create Graphical report of monthly expenses.
- Maintain log of daily expenses.
- Can modify and delete records that you have created.
- Can export data for other uses.

Introduction

The application is designed to organize your income and expenses. Provide monthly analysis and prediction of expenses. Help to maintain daily expenses.

Problem Statement

This application is designed to organize your income and expenses by predicting your monthly expenditures.

Block Diagram



Need of Proposed System

- Cost Estimation.
- Expense Graph.

Scope of Project

- Estimation
- Expense Analysis
- Data Export
- Expense Log

Introduction

This application is designed to organize your income and expenses.

Provide monthly analysis and prediction of expenses.

Helps to maintain daily expenditure

Problem Statement

This application is designed to organize your income and expenses by predicting your monthly expenditure.

Scope of Project

- Estimation
- Expense Analysis
- Data Export
- Expense Log

Need of Proposed System

- Cost Estimation.
- Expense Graph.

Current Scenario

- Creates Graphical report of monthly expenses.
- Maintains log of daily expenses.
- Can modify and delete records that you have created.
- Can export data for other uses.

Comparison

| Features | Daily Expenses 3 | My Budget Book | Andro money | Money View | Proposed System |
|----------------------|------------------|----------------|-------------|------------|-----------------|
| Expense Log | Yes | Yes | Yes | Yes | Yes |
| Monthly Analysis | Yes | Yes | Yes | Yes | Yes |
| Cloud Storage | No | No | Yes | No | No |
| User Account Support | Yes | Yes | Yes | Yes | Yes |
| Alerts and Reminders | No | Yes | No | Yes | Yes |
| Expense Prediction | No | No | No | No | Yes |
| Free/Paid | Free | Paid | Free | Free | Free |

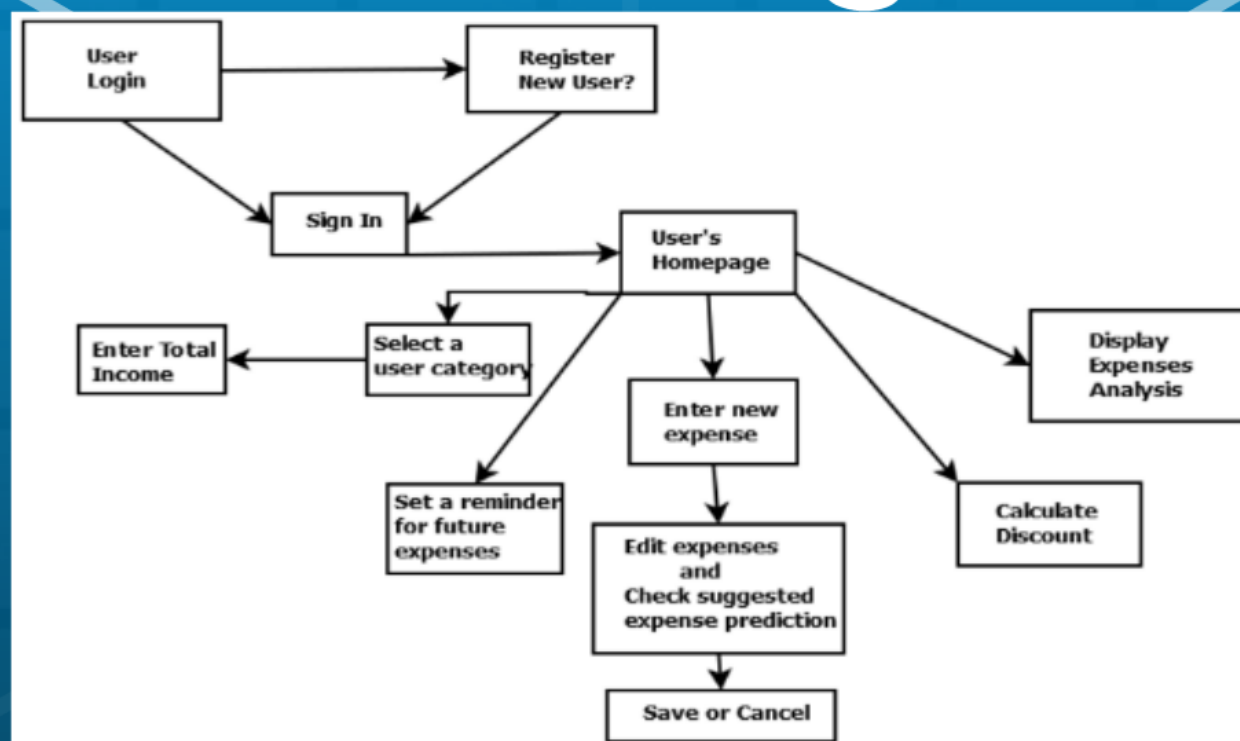
Exclusion

- Payment mode.
- Notification for Splitting Bills.

| Andro money | Money View | Proposed System |
|-------------|------------|-----------------|
| Yes | Yes | Yes |
| Yes | Yes | Yes |
| Yes | No | No |
| Yes | Yes | Yes |
| No | Yes | Yes |
| No | No | Yes |
| Free | Free | Free |

This application is designed to manage income and expenses by monthly expenditure.

Block Diagram



Exclusion

- Payment mode.
- Notification for Splitting Bills.

Scope of

- Estimation
- Expense Analysis
- Data Export
- Expense Log

Scenario

port of monthly expenses.
expenses.
records that you have created.
her uses.

Introduction

This application is designed to organize your income and expenses.
Provide monthly analysis and prediction of expenses.
Helps to maintain daily expenditure

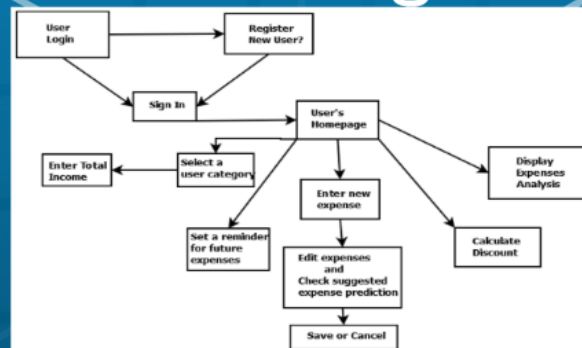
Comparison

| Feature | Other Expenses | My Budget | Analysis | User View | Expense Tracker |
|-----------------------|----------------|-----------|----------|-----------|-----------------|
| Expense Log | Yes | Yes | Yes | Yes | Yes |
| Monthly Summary | Yes | Yes | Yes | Yes | Yes |
| Visual Graphs | No | No | Yes | No | No |
| Expense Prediction | No | No | No | No | No |
| Financial Forecasting | No | No | No | No | No |
| Expense Forecasting | No | No | No | No | No |
| Expense Prediction | No | No | No | No | No |

Problem Statement

This application is designed to organize your income and expenses by predicting your monthly expenditure.

Block Diagram



Exclusion
Payment
Notification for Spending limit

Scope of Project

- Estimation
- Expense Analysis
- Data Export
- Expense Log

Need of Proposed System

- Cost Estimation.
- Expense Graph.

Current Scenario

- Creates Graphical report of monthly expenses.
- Maintains log of daily expenses.
- Can modify and delete records that you have created.
- Can export data for other uses.

Requirements

Software

- Front End: Android Studio
- Back End: Spring
- Database: MySQL

Project Guide: Aruna Khubalkar.

TIME SERIES ALGORITHM

Why Time Series

- Univariate.
- Data can be collected as weekly, monthly, annually.
- Based on historical pattern you can extrapolate future data.

Components

- Trend
- Seasonal
- Cyclical
- Random

Stationarity

- Mean of the series should be the same.
- Variance of the series should be the same
- Differencing.
- Seasonality.

Identification

- Autocorrelation function.
- Partial Autocorrelation function

Models

- AutoRegressive model(ARM)
- Moving Average model(MA).
- ARIMA



Prezi

Example

Why Time Series

- Univariate.
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- Partial Autocorrelation function.

Models

- **AutoRegressive model(ARM)**
- **Moving Average model(MA).**
- **ARIMA**

Example

| | Q1 | Q2 | Q3 | Q4 |
|------|----|----|----|----|
| 2008 | 25 | 25 | 25 | 30 |
| 2009 | 40 | 50 | 60 | 65 |
| 2010 | 50 | 55 | 65 | 70 |

What is seasonally adjusted trend estimate for the 4th quarter of 2010?

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$a = \bar{y} - b\bar{x}$$

| Year | Q1 | Q2 | Q3 | Q4 | |
|----------------|--------|--------|---------|---------|---------|
| 2008 | | | 98.11% | 133.70% | |
| 2009 | 79.40% | 91.28% | 103.77% | 129.34% | |
| 2010 | 76.05% | 92.75% | | | |
| MEAN | 77.73% | 92.01% | 100.94% | 131.52% | 402.20% |
| X ADJ FACTOR | 0.9945 | 0.9945 | 0.9945 | 0.9945 | 0.9945 |
| SEASONAL INDEX | 77.30% | 91.51% | 100.39% | 130.80% | 400.00% |

| | Q1 | Q2 | Q3 | Q4 |
|------|----|----|----|----|
| 2008 | 20 | 30 | 39 | 60 |
| 2009 | 40 | 51 | 62 | 81 |
| 2010 | 50 | 64 | 74 | 95 |

Obtain a seasonally adjusted trend estimate for the 4th quarter of 2011?

| Year | Q1 | Q2 | Q3 | Q4 | |
|----------------|--------|--------|---------|---------|---------|
| 2008 | | | 98.11% | 133.70% | |
| 2009 | 79.40% | 91.28% | 103.77% | 129.34% | |
| 2010 | 76.05% | 92.75% | | | |
| MEAN | 77.73% | 92.01% | 100.94% | 131.52% | 402.20% |
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$$a = \bar{y} - b\bar{x}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

Requirements

Hardware

- Microsoft® Windows® 8/7/Vista/2003 (32 or 64-bit).
- 2 GB RAM minimum, 4 GB RAM recommended.
- 400 MB hard disk space + at least 1 G for Android SDK, emulator system images, and caches.
- 1280 x 800 minimum screen resolution.
- Java Development Kit (JDK) 7.

Software

- Front End: Andriod Studio.
- Back End: SQLite.
- Android Studio.(jdk).

Hardware

- Microsoft® Windows® 8/7/Vista/2003 (32 or 64-bit).
- 2 GB RAM minimum, 4 GB RAM recommended.
- 400 MB hard disk space + at least 1 G for Android SDK, emulator system images, and caches.
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Software

- Front End: Andriod Studio.
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- Android Studio.(jdk).

Future Scope

- **SMS Retrieval**
- **Alerts and Reminders.**
- **User Account Support**

THANK YOU