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# *Macedonian Stock Exchange*

## *Web Application*

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Software Requirements Specification

ENISA HEBIBI & ECE MICAITI & AYSUN SULEYMANTURK

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# 1 PROJECT DESCRIPTION

## 1.1 Introduction

Our project aims to build a web application that provides historical analysis of stock market data from the Macedonian Stock Exchange. Utilizing the Pipe and Filter architecture, the application will automate the downloading and processing of daily stock data from the past ten years for all available issuers, focusing on transforming and structuring this data for further analysis.

## 1.2 Objective

This project will focus on extracting essential information to support real-time data analysis, pattern recognition, and investment decision support for end users. By streamlining data handling, we ensure that users can access up-to-date and clean data efficiently.

# 2 FUNCTIONAL REQUIREMENTS

- 1) Stock Data-The web application should have stock market data for each issuer on the Macedonian Stock Exchange site.
- 2) The web application must do the market analysis of the Macedonian Stock Exchange site.
- 3) The Web application must involve historical daily stock market data for all available issuers on the Macedonian Stock Exchange site.
- 4) Data Range-The web application must cover at least last 10 years data on daily basis.
- 5) Data Verification-The web application should verify last date of available data for each issuer.
- 6) If any data is missing in the historical data, the system should fill the gaps.
- 7) Timer-A timer should be implemented to measure how long does the application take to fetch the data.

### 3 NON FUNCTIONAL REQUIREMENTS

- 1) **Performance** - processing speed should be 60 seconds per issuer for data retrieval, transformation and storage.
- 2) **Data Update Frequency**-New data updates should not exceed 50 seconds per issuer.
- 3) The system should support adding new issuers
- 4) **Data Handling**-The system must handle large datasets.
- 5) Each filter in pipe and filter architecture should be independent module which can handle one issuer's data at a time.
- 6) Each filter should handle its own logic without depending on other filters.
- 7) Data retrieval should be formatted based on macedonian formatting before it is stored in the database.
- 8) Sates should be standardized in dd/mm/yyyy format.
- 9) Prices should use periods as thousand separators and commas as decimal points.
- 10) Each entry should have a unique identifier based on the date and issuer's name.
- 11) Database access should be restricted, which we will ensure that only authorized users can modify the data.
- 12) **Data Security**-Https should be used to secure the data in transit.

### 4 USER SCENARIOS

**1. Daily Data Update:** The user logs in to download the latest stock data for a weekly report. The application automatically fetches, cleans, and formats the data, saving time on preparation.

**2. Historical Trend Analysis:** The user wants to analyze 10 years of stock trends. They select a timeframe, and the application quickly provides organized data for easy analysis.

**3. Custom Data Filtering:** The user sets custom filters for specific companies and dates, and the application delivers a tailored dataset, ready for focused analysis.

### 5 PERSONAS

## 5.1 Financial Analyst

- Background:** This persona is a financial analyst with several years of experience in the stock market, focusing on the Macedonian Stock Exchange.
- Goals:** They aim to provide detailed stock analysis and investment recommendations based on historical data, seeking accurate and up-to-date information to support their analyses.
- **Needs:** Requires a user-friendly application that allows quick access to historical data, reliable data processing, and robust filtering options to streamline research.

## 5.2 Novice Investor

- **Background:** This persona is a recent university graduate interested in investing, but with limited experience in stock market analysis. They are eager to learn and make informed investment decisions.
- **Goals:** Aims to understand stock performance trends and identify potential investment opportunities, valuing educational resources and simplified data presentation.
- **Needs:** Desires an intuitive interface that presents data in an easily digestible format, along with guides or tutorials to help interpret the data effectively.

# 6 DESCRIPTIVE NARRATIVE

In a busy financial office, an experienced analyst opens the stock market analysis application to access ten years of data from the Macedonian Stock Exchange. They easily navigate through the app, input their desired timeframe, and quickly see organized charts and graphs. By filtering the data for specific companies, the analyst uncovers valuable insights, ensuring everything is accurate before their presentation. User Benefits-Both the analyst and the novice investor benefit from the application, turning complex data into clear insights and boosting their confidence in the stock market.