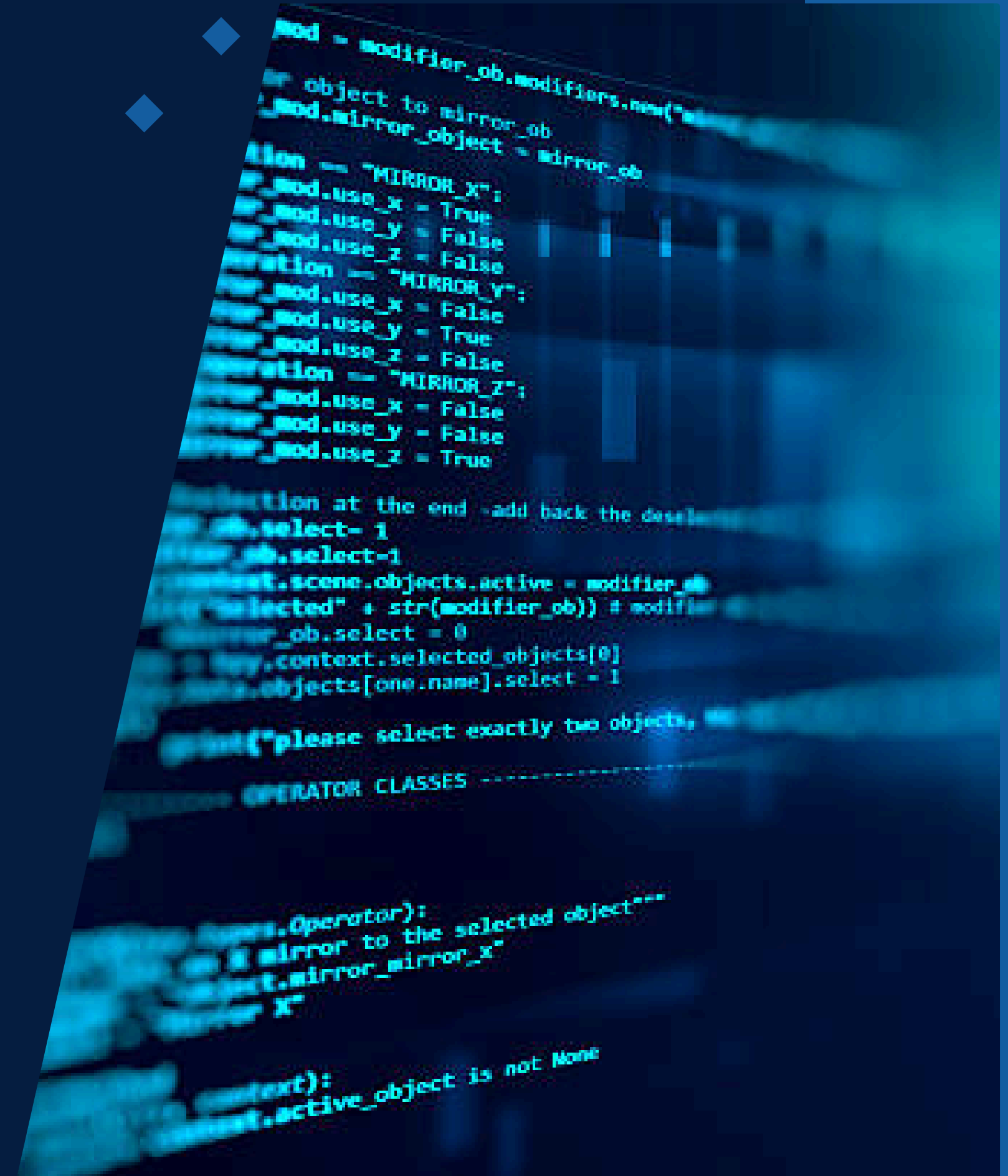


THE COMPLETE FRAMEWORK FOR ASYNCHRONOUS OPERATIONS

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INTRODUCTION

- Asynchronous operations are crucial in modern software.
- Existing methods (callbacks, promises) often lead to complexity and errors.
- The Completer Framework aims to simplify asynchronous development.

PROBLEM STATEMENT

- Managing asynchronous tasks, coordination, and error handling can be very complex.
- Existing approaches are not well-suited for intricate scenarios.

RESEARCH QUESTIONS

- Can we create a unified framework to streamline asynchronous development?
- How do we design the framework to be robust and error-resistant?
- How can we ensure adaptability across different platforms and environments?

RESEARCH OBJECTIVES

- Create "The Completer Framework"
- Simplify development compared to existing methods
- Incorporate robust error handling
- Design for cross-platform adaptability

THE COMPLETER FRAMEWORK: DESIGN

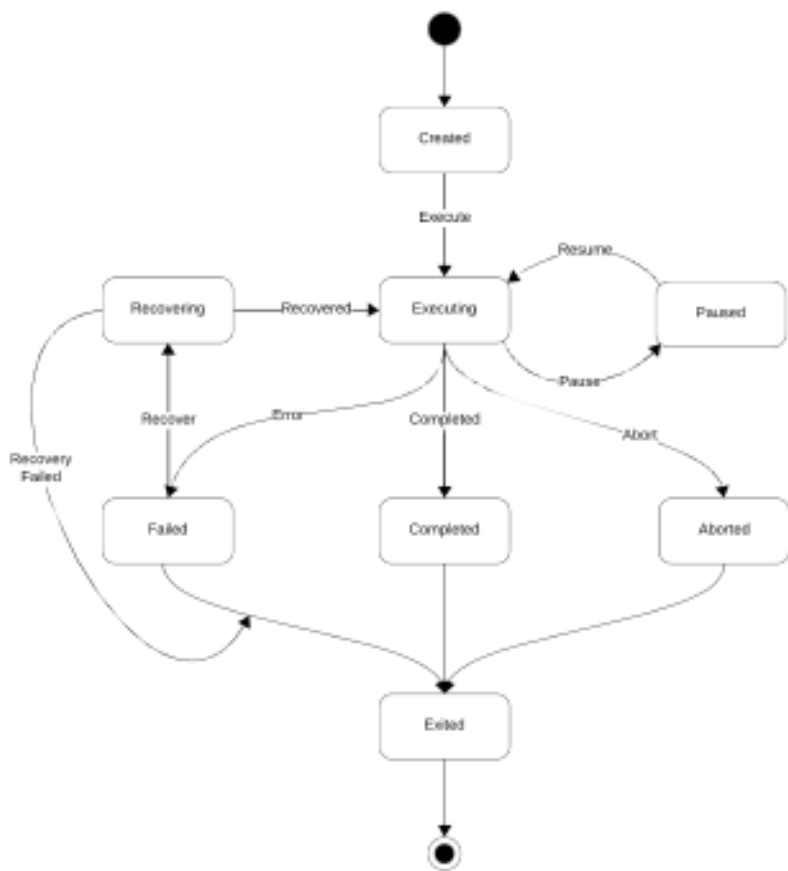


Figure 3: State Diagram

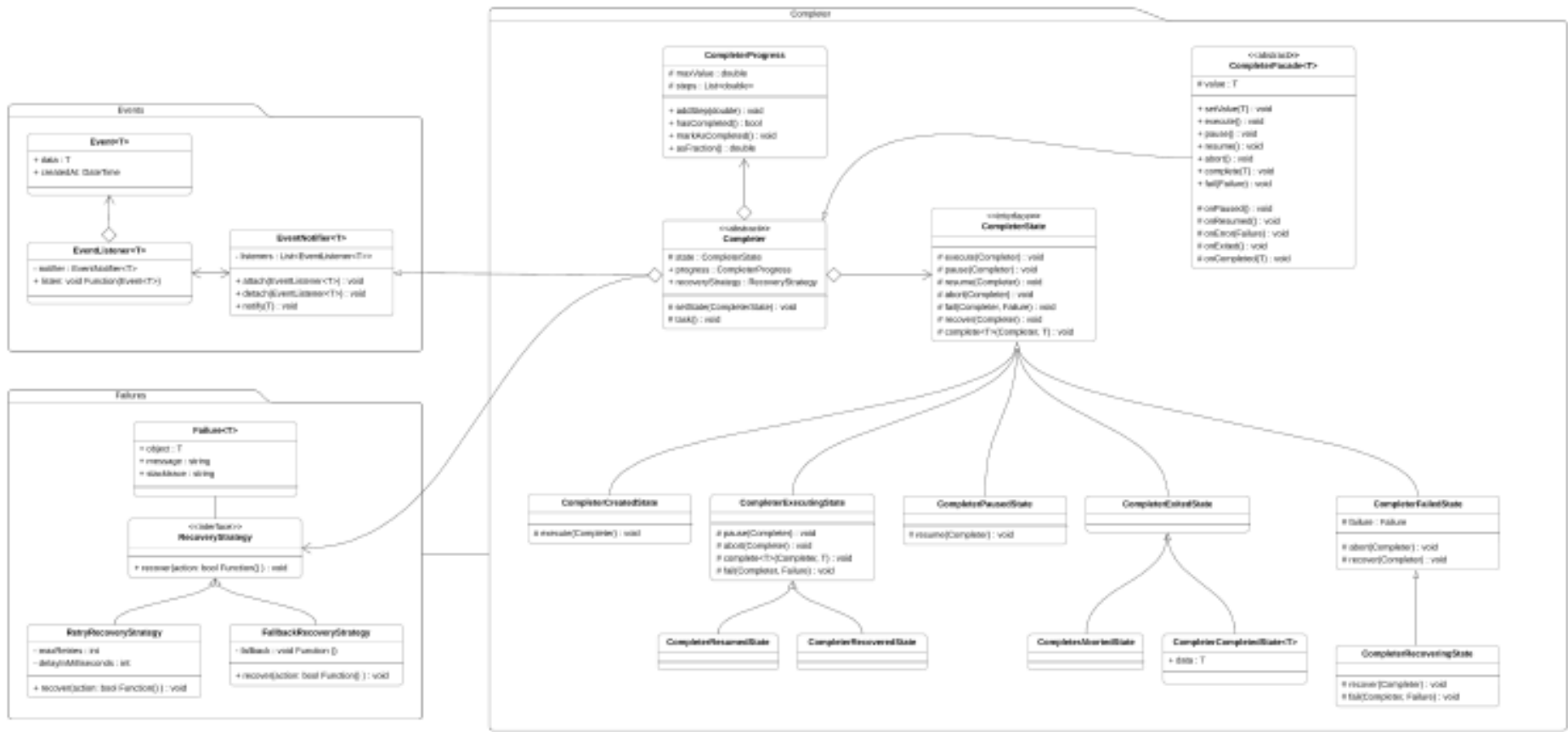


Figure 4: Class Diagram

THE COMPLETER FRAMEWORK: DESIGN PATTERNS USED

- **STATE DESIGN PATTERN**
- **OBSERVER PATTERN**
- **COMMAND PATTERN**
- **FACADE PATTERN**

CASE STUDIES

- **E-commerce Order Processing**
 - The Completer Framework can be integrated into the order processing system to manage the asynchronous tasks associated with order fulfillment. Each order's lifecycle can be represented by different states within the framework
- **Data Pipeline for Analytics Platform**
 - The Completer Framework serves as the backbone of the data pipeline, managing the asynchronous tasks involved in data ingestion, processing, transformation, and analysis. Each stage of the data pipeline is represented as a state within the framework.

CONCLUSION

- The Completer Framework leverages design patterns for effective asynchronous task management
- The framework simplifies development, enhances robustness, and provides adaptability
- It has the potential to streamline the development of modern software applications