



ALGO-MATE

A Design Pattern Insertion Extension for Visual
Studio Code

PROBLEM

- A “Software Design Pattern” is a general, reusable solution to a commonly occurring problem
- Hard to find helpful information on
- Many programmers never learned them
- Easy to find misinformation and distractions online.

WHAT IS ALGO-MATE? - METHODOLOGY

- Algo-Mate is an extension for VSCode which allows users to quickly search for, and insert commonly used design patterns into their code without leaving their IDE.
- The chosen design pattern is added to the file in the proper language based on file extension
- Algo-Mate then assists the user to quickly fill in variable names or insert values into the algorithm through helpful comments and variable grouping.
- If the user needs more information on a design pattern, they can follow our built in help menu to a reputable website.

TECHNOLOGY

- VSCode and VSCode Extension API
- JSON
- The programming languages we're supporting are C++, Java, JavaScript, and Python

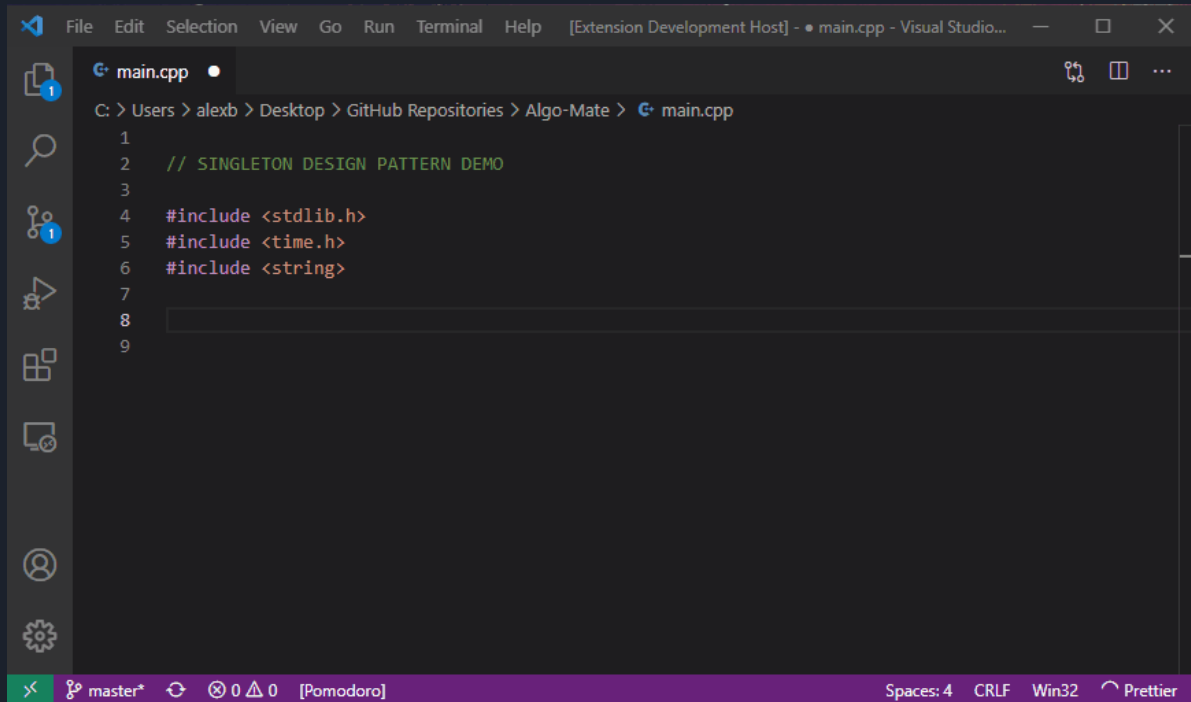
WHY ALGO-MATE?

- Design pattern snippets across multiple programming languages is a novel idea.
- Algo-Mate is helpful for users who are attempting to implement common design patterns into their code.
- Reduces the need for finding forum-based coding solutions or design pattern documentation, which can quickly draw the user's attention off of their current project.

The Design Patterns

- Creational
 - Singleton
 - Builder or Factory
- Structural
 - Adapter or Facade
- Behavioral
 - Observer

ALGO-MATE UI MOCKUP

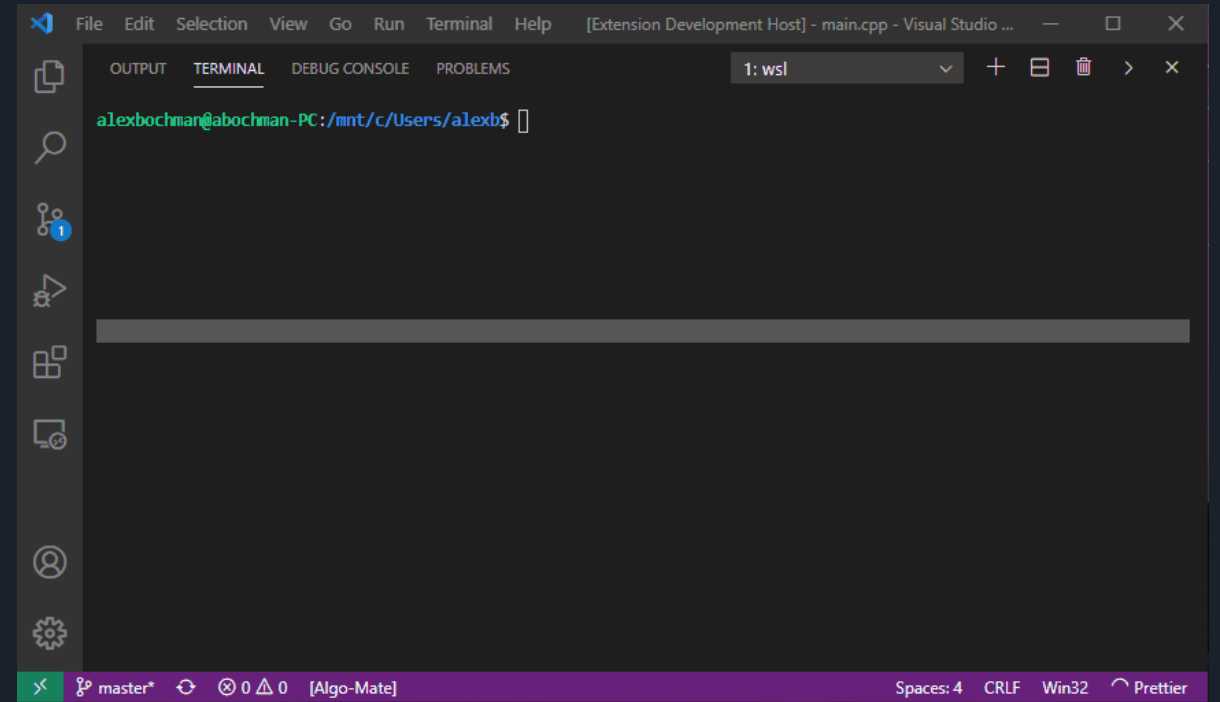


A screenshot of the Visual Studio Code editor interface. The main editor window displays a C++ file named 'main.cpp'. The code is as follows:

```
1
2 // SINGLETON DESIGN PATTERN DEMO
3
4 #include <stdlib.h>
5 #include <time.h>
6 #include <string>
7
8
9
```

The status bar at the bottom indicates the current configuration: 'master*' (with a refresh icon), '0 0' (with a refresh icon), '[Pomodoro]', 'Spaces: 4', 'CRLF', 'Win32', and 'Prettier'.

Design Pattern Auto-Completion



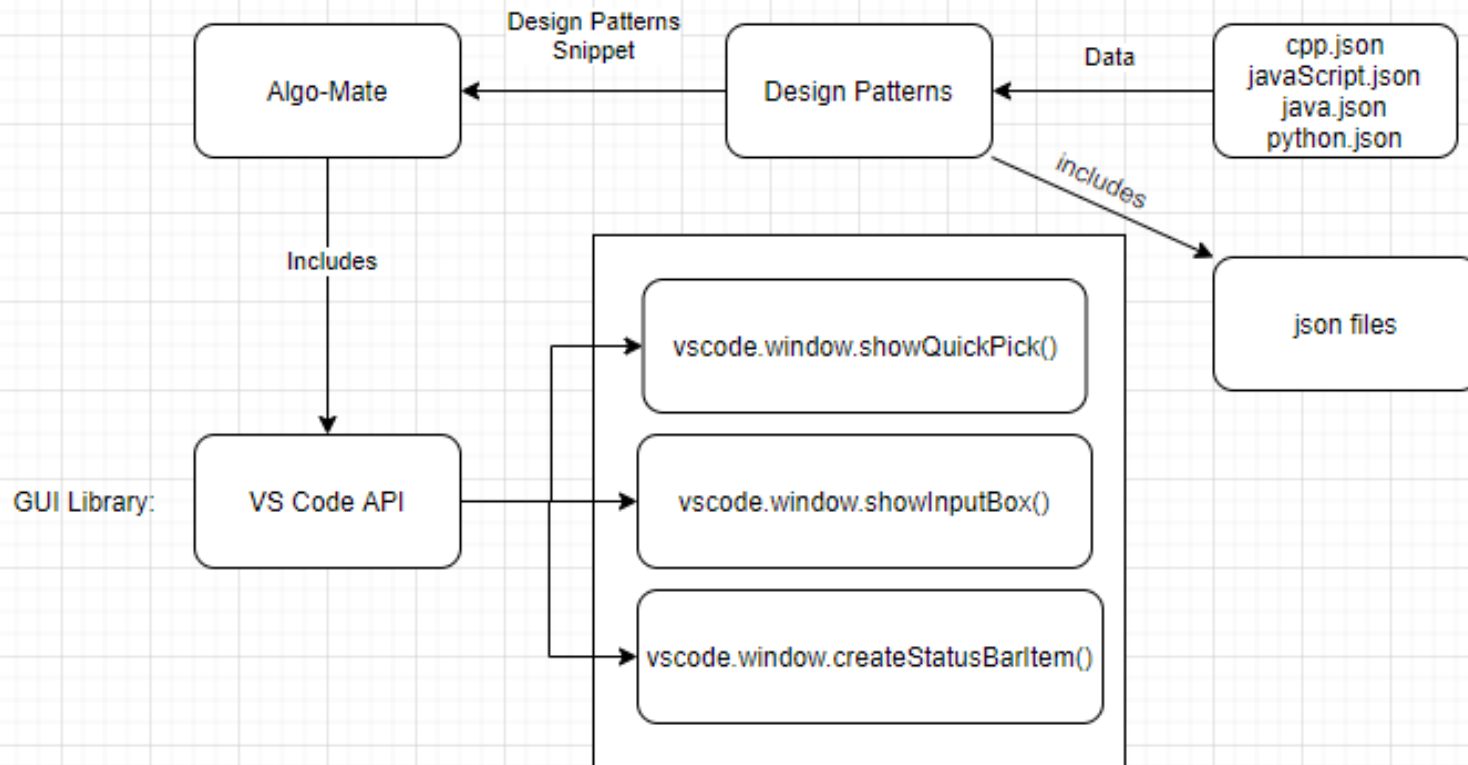
A screenshot of the Visual Studio Code terminal interface. The terminal shows a shell prompt:

```
alexbochman@abochman-PC:/mnt/c/Users/alexbo$
```

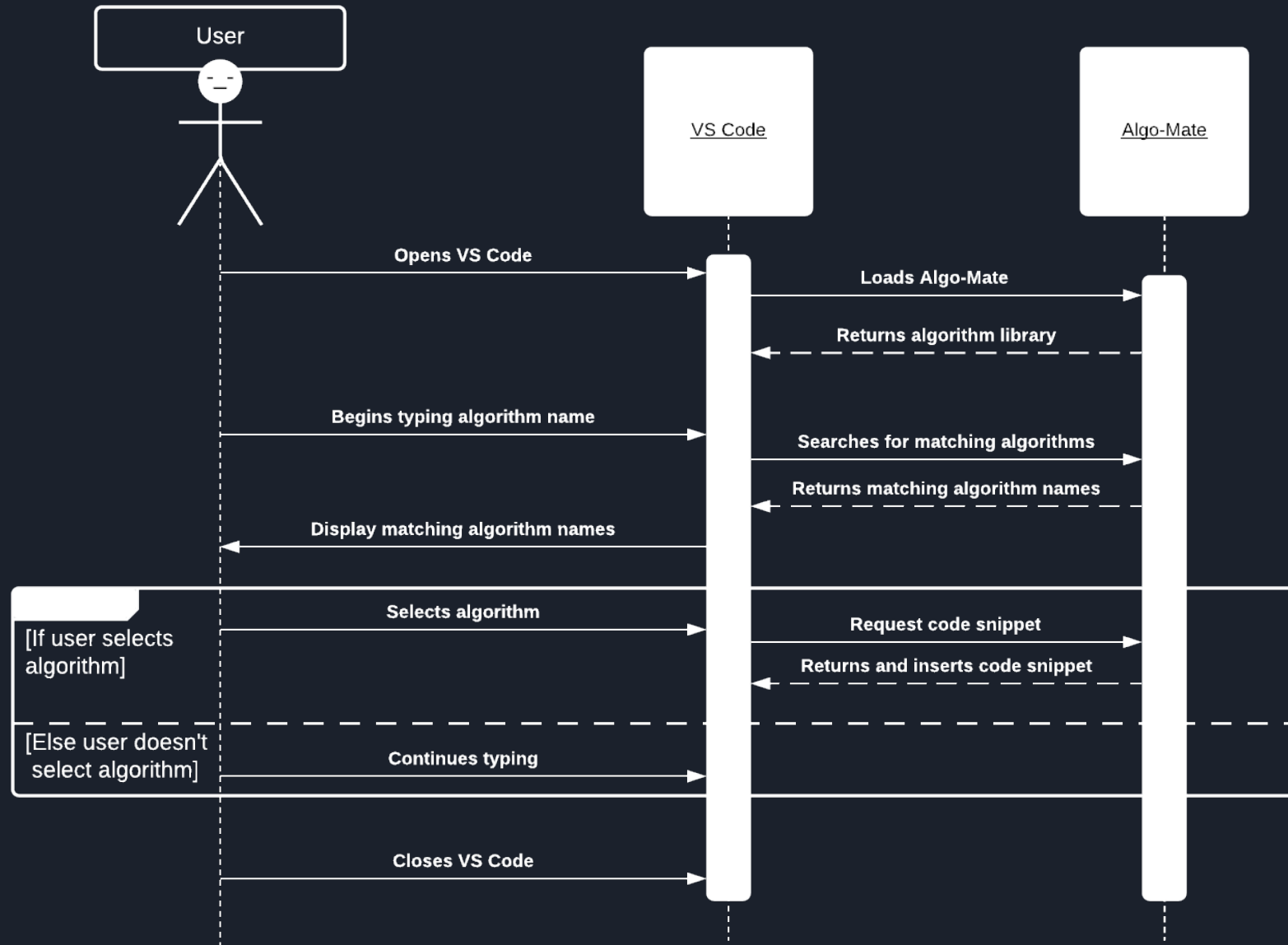
The status bar at the bottom indicates the current configuration: 'master*' (with a refresh icon), '0 0' (with a refresh icon), '[Algo-Mate]', 'Spaces: 4', 'CRLF', 'Win32', and 'Prettier'.

Graphical User Interface

Architecture



User Interaction



Progress & What's Left?

March 17, 2021	<ul style="list-style-type: none">• Presentation• Build and test
March 26, 2021	<ul style="list-style-type: none">• Finish UI
April 12, 2021	<ul style="list-style-type: none">• Finish auto-completion of four design patterns in C++:• JavaScript, Java, and Python
April 19, 2021	<ul style="list-style-type: none">• Finish auto-completion of four design patterns in each of our four languages:• C++, JavaScript, Java, and Python
April 26, 2021	<ul style="list-style-type: none">• Completion of project and the webpage
April 30, 2021 (Final week)	<ul style="list-style-type: none">• Publish completed extension on Visual Studio Marketplace• Complete and submit final reports and demonstration video.• Present completed project to the class during this week.