
PLURALSIGHT
salesforce

Introduction to VSCode

Visual Studio Code Benefits

- Frictionless builds
- Intellisense completion
- Easy Customization
- Immense Community of Extensions

Visual Studio Architecture

- Built on Electron
- Uses web technologies such as JavaScript and Node.js
- Operates at the speed and flexibility of native apps
- VS Code uses a tools service architecture that enables it to integrate with many of the same technologies that power Visual Studio

Online Environments

Gitpod.io

- Create VSCode Environments Online
- Integrated with Github, Gitlab, Bitbucket, or other repositories
- Based on Cloud Development Environments (CDEs), which are on-demand development environments pre-configured with all the necessary tools, libraries, and dependencies for writing and reviewing code.

Github Codespaces

- Create VSCode Environments Online, same as Gitpod.io
- Integrated directly with Github, as opposed to gitpod.io which can use other platforms
- Seamless integration with Github
- Has templates that you can get started on immediately including Jupyter Notebooks

Trying out the Environments

- In this lab we will try out vscode-training-maven project in various environments
  - Github's Codespaces
  - gitpod.io

Language Servers

Language Servers

- Language Server is a special kind of Visual Studio Code extension that powers the editing experience for many programming languages.
- Solves the common problem with implementing different languages in an IDE
  - Language Servers are usually implemented in their native programming languages. VSCode is a Node.js runtime
  - Language features can be resource intensive. VSCode wanted to ensure that VS Code's performance remains unaffected
  - Integrating multiple language toolings with multiple code editors could involve significant effort. From language toolings' perspective, they need to adapt to code editors with different APIs. This causes an M x N issue. M languages in N code editors

Language Server Protocol

- Microsoft specified Language Server Protocol, which standardizes the communication between language tooling and code editor.
- Language Servers can be implemented in any language and run in their own process to avoid performance cost, as they communicate with the code editor through the Language Server Protocol.
- Any LSP-compliant language toolings can integrate with multiple LSP-compliant code editors, and any LSP-compliant code editors can easily pick up multiple LSP-compliant language toolings.

View the Language Server Website on how to implement a Language Server

Opening and Managing Projects

Starting VS Code from the Terminal

```
> code .
```

- Ensure that you are in the root directory of your project
- This directory will typically have the build file, or at the minimum, where the project files are located
- If you need to open another project, run the above from a different folder. Yes, you will have multiple VSCode windows for different projects, that is normal.

Other VS Code Terminal Options

Open the current directory in the most recently used code window

```
> code -r .
```

Create a new window

```
> code -n
```

Change the language

```
> code --locale=es
```

Other VS Code Terminal Options

Open a diff editor. Perfect for git

```
> code --diff <file1> <file2>
```

Open file at specific line and column

```
> code --goto <file:line[:character]>
> code --goto package.json:10:5
```

See Help Option

```
> code --help
```

Disable all extensions

```
> code --disable-extensions .
```

Workspaces

Workspaces

- A Visual Studio Code "workspace" is the collection of one or more folders that are opened in a VS Code window (instance)
- In most cases, you will have a single folder opened as the workspace.
- You can include more than one folder, using an advanced configuration called *Multi-root workspaces*

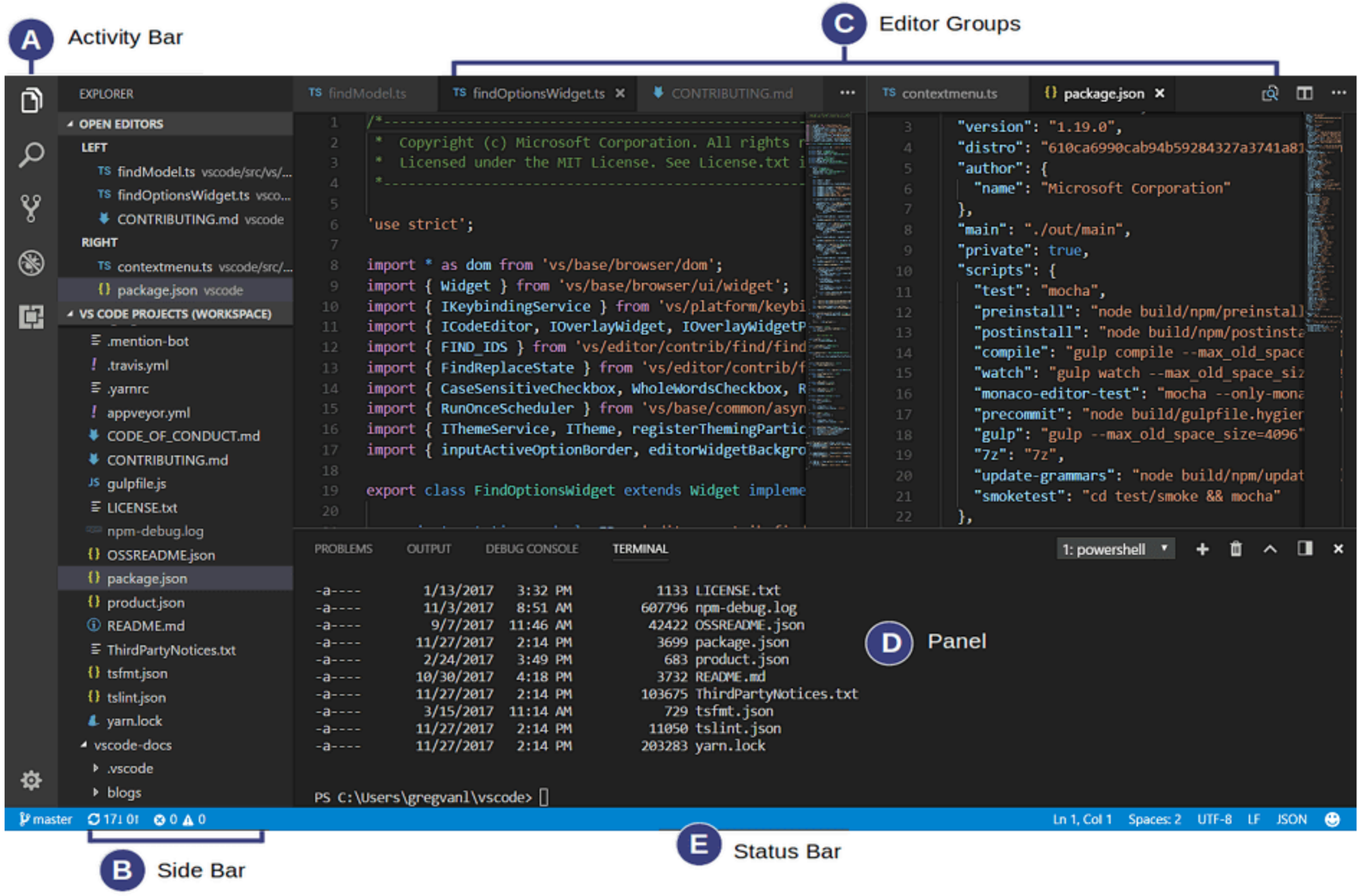
Workspace Concepts

The concept of a workspace enables VS Code to:

- Configure settings that only apply to a specific folder or folders but not others.
- Persist task and debugger launch configurations that are only valid in the context of that workspace.
- Store and restore UI state associated with that workspace (for example, the files that are opened).
- Selectively enable or disable extensions only for that workspace.

User Interface

VSCode User Interface



Basic Layout

- **Editor** - The main area to edit your files. You can open as many editors as you like side by side vertically and horizontally.
- **Primary Side Bar** - Contains different views like the Explorer to assist you while working on your project.
- **Status Bar** - Information about the opened project and the files you edit.
- **Activity Bar** - Located on the far left-hand side, this lets you switch between views and gives you additional context-specific indicators, like the number of outgoing changes when Git is enabled.
- **Panel** - An additional space for views below the editor region. By default, it houses output, debug information, errors and warnings, and an integrated terminal. Panel can also be moved to the left or right for more vertical space.
- A Secondary Side Bar is also available to display views opposite the Primary Side Bar. ⌥⌘B.

Splitting Editor Panes

- OPTION(⌥) + CLICK Open file to open in split pane
- COMMAND(⌘) + \ Split an active editor into two
- CTRL(^) + ENTER from the Explorer context menu on a file
- Click the Split Editor Button  on the Upper Right of the Editor
- Drag and drop a file to any side of the editor region.
- COMMAND(⌘) + ENTER in the Quick Open List (COMMAND(⌘) + P)

Minimap

- A Minimap (code outline) gives you a high-level overview of your source code, which is useful for quick navigation and code understanding.
- A file's minimap is shown on the right side of the editor.
- You can click or drag the shaded area to quickly jump to different sections of your file.
- You can move the minimap to the left hand side or disable it completely by respectively setting `"editor.minimap.side": "left"` or `"editor.minimap.enabled": false` in your user or workspace settings.

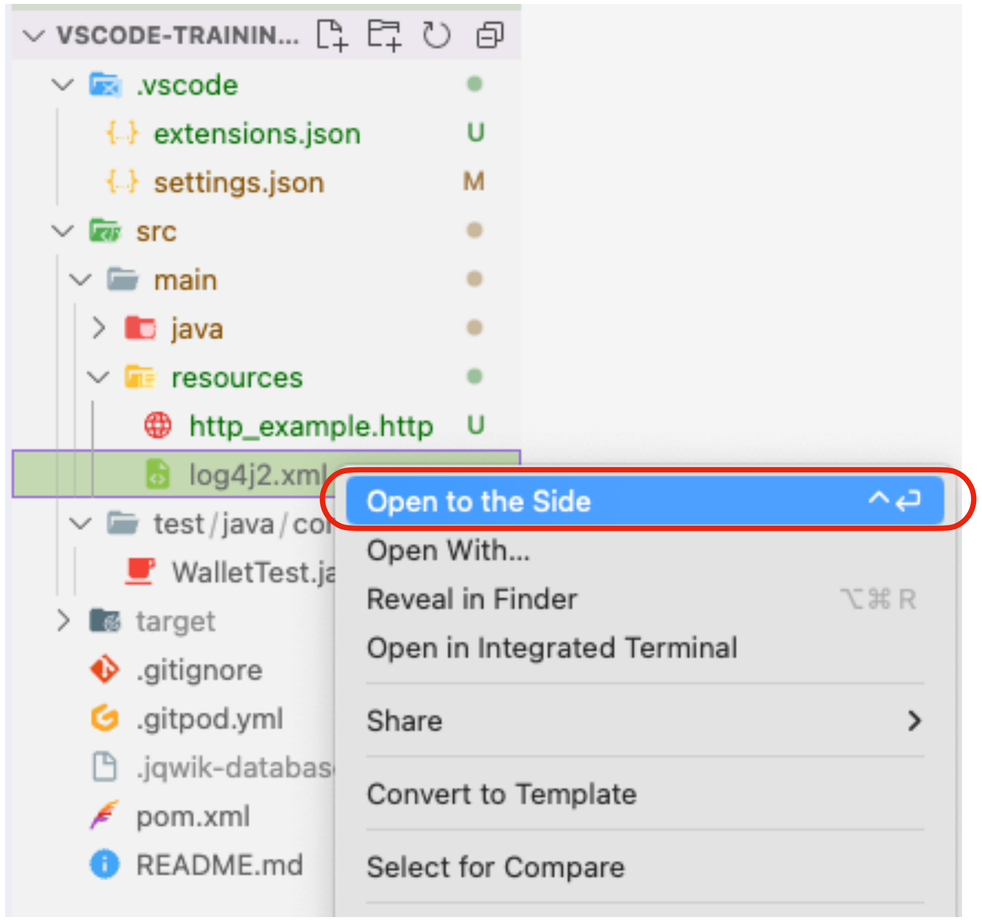
Indent Guides

- Indent Guides are light, typically grey, line that can help you match indentation levels
- If you would like to disable indent guides, you can set "editor.guides.indentation": false in your user or workspace settings.

Breadcrumbs

- The editor has a navigation bar above its contents called Breadcrumbs.
- It shows the current location and allows you to quickly navigate between folders, files, and symbols.
- Breadcrumbs always show the file path and if the current file type has language support for symbols, the symbol path up to the cursor position.
- You can disable breadcrumbs with the View > Show Breadcrumbs toggle command.

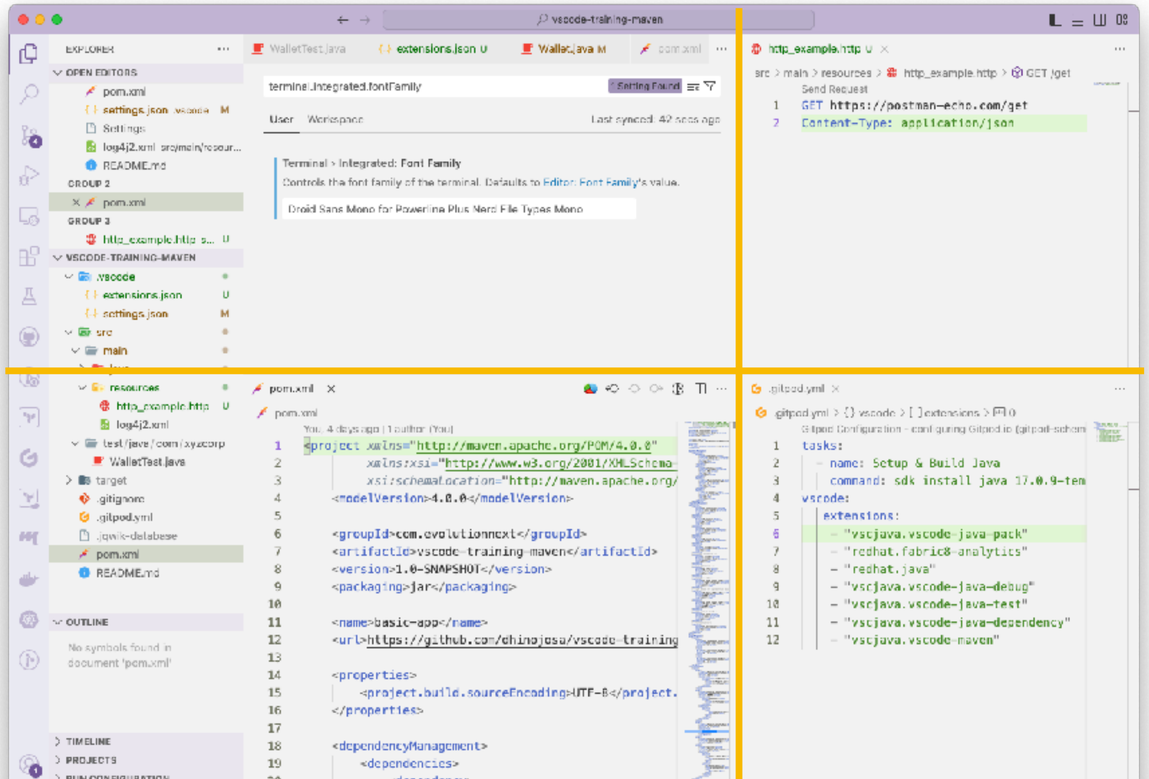
Editor Groups



- When you split an editor (using the **Split Editor** or **Open to the Side** commands), a new editor region is created which can hold a group of items.
- You can open as many editor regions as you like side by side vertically and horizontally.
- You can Drag and Drop editor groups on the workbench, move individual Tabs between groups and quickly close entire groups (Close All).

Grid Editor Layout

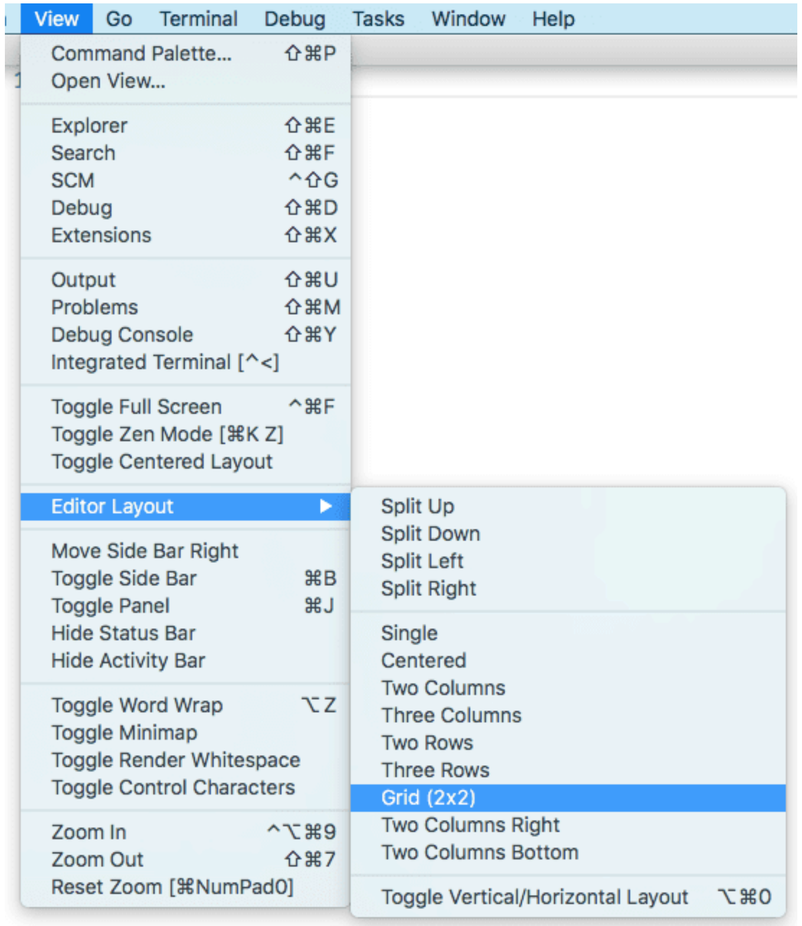
- By default, editor groups are laid out in vertical columns (for example when you split an editor to open it to the side).
- You can easily arrange editor groups in any layout you like, both vertically and horizontally



Holding the Option Key

You can hold the Alt or Option (⌥) Key and open a new terminal in what format you would like

Predefined Editor Layouts



There are a predefined set of editor layouts in the new **View > Editor Layout** menu

Extensions

Extensions

- The features that Visual Studio Code includes out-of-the-box are just the start. VS Code extensions let you add languages, debuggers, and tools to your installation to support your development workflow
- VS Code's rich extensibility model lets extension authors plug directly into the VS Code UI and contribute functionality through the same APIs used by VS Code.
- You can go to the Extensions by going to the Extensions view (⇧⌘X)

Finding Extensions

Find Extensions:

- In the VS Code Marketplace.
- Search inside VS Code in the Extensions view.
- View extension recommendations
- Community curated extension lists, such as awesome-vscode.

Using VSIX Files

- You can manually install a VS Code extension packaged in a .vsix file.
- Using the Install from VSIX command in the Extensions view command dropdown, or the Extensions:
  - Install from VSIX command in the Command Palette, point to the .vsix file.
- You can also install using the VS Code `--install-extension` command-line switch providing the path to the .vsix file.

```
> code --install-extension myextension.vsix
```

- You can include multiple `--install-extension` tags as needed

Where are Extensions installed?

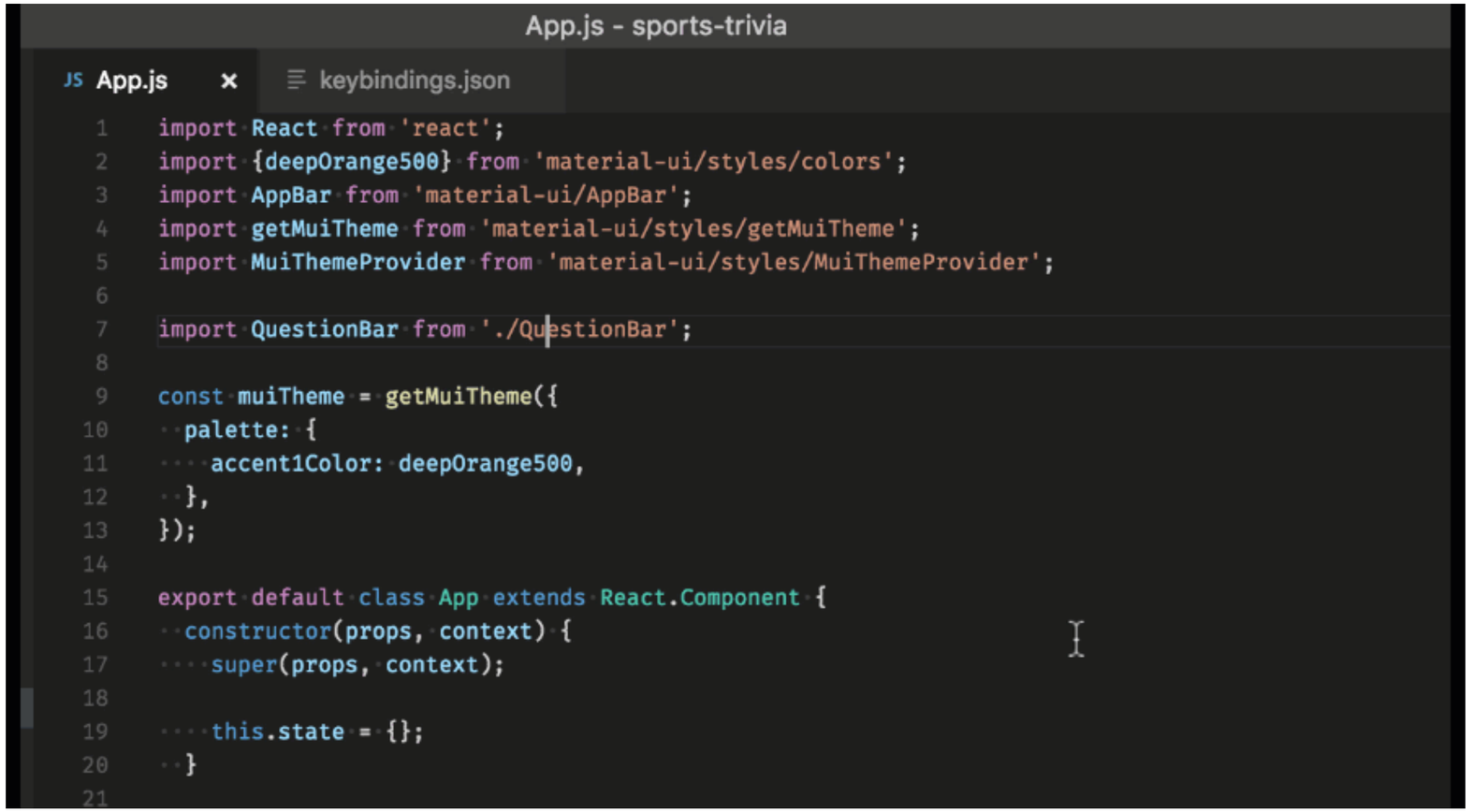
- Extensions are installed in a per user extensions folder. Depending on your platform, the location is in the following folder:
  - Windows: `%USERPROFILE%\.vscode\extensions`
  - MacOSX: `~/.vscode/extensions`
  - Linux: `~/.vscode/extensions`
- You can change the location by launching VS Code with the `--extensions-dir <dir>` command-line option.

Creating your own extensions

- View the Extension API Documentation
- View the Contribution Point Documentation
  - Contribution Points are how your extensions will interact with Visual Studio Code
  - Contribution points are placed in the package.json of your Extension Manifest

Basic Usages

Command Palette



The Command Palette (⇧⌘P) (CTRL+SHIFT+P) or F1 is your all-around import key command, it brings up all key combinations in case you didn't remember

Quick Open

- Quick Opening of a File - ⌘P
- Once in the view; you can select ? to view command suggestions
- Repeat the Quick Open keyboard shortcut to cycle quickly between recently opened files.
- You can open multiple files from **Quick Open** by **pressing the Right arrow key**. This will open the currently selected file in the background and you can continue selecting files from Quick Open.
- Open **Recent command** or ^R - Displays a Quick Pick dropdown with the list from **File > Open Recent** with recently opened folders and workspaces followed by files.

Other Navigation Options

- ⌘P will let you navigate to any file or symbol by typing its name
- ^Tab will cycle you through the last set of files opened
- ⇧⌘P will bring you directly to the editor commands
- ⇧⌘O will let you navigate to a specific symbol in a file
- ^G will let you navigate to a specific line in a file

Zen Mode

- Zen Mode lets you focus on your code by hiding all UI except the editor (no Activity Bar, Status Bar, Side Bar and Panel), going to full screen and centering the editor layout
- Zen mode can be toggled using the **View** menu, **Command Palette** or by the shortcut ⌘K Z.
- Double Esc exits Zen Mode.

Key Bindings

Accessing Cheatsheets

- Always have cheatsheets for your applicable operating system handy
- Windows, MacOSX, and Linux
- You can also find the keyboard shortcuts by going to the Command Palette (⇧⌘P), and selecting **Help: Keyboard Shortcuts Reference** or (⌘K + ⌘R)
- These key commands are the default key combinations, they can also be customized to your liking

Keyboard Shortcuts Editor

- Visual Studio Code provides a rich and easy keyboard shortcuts editing experience using **Keyboard Shortcuts** editor.
- It lists all available commands with and without keybindings and you can easily change / remove / reset their keybindings using the available actions.
- It also has a search box on the top that helps you in finding commands or keybindings.
- Keyboard layouts are set based on your Keyboard layout
- **Code > Settings > Keyboard Shortcuts**.

Migrating Keymaps

- Keyboard shortcuts are vital to productivity and changing keyboarding habits can be tough.
- To help with this, **Code** > **Settings** > **Migrate Keyboard Shortcuts from...** shows you a list of popular Keymap extensions
- These extensions modify the VS Code shortcuts to match those of other editors so you don't need to learn new keyboard shortcuts.
- There is also a Keymaps category of extensions in the Marketplace.

Detecting Conflicts

- If you have many extensions installed or you have customized your keyboard shortcuts, you can sometimes have keybinding conflicts where the same keyboard shortcut is mapped to several commands.
- The **Keyboard Shortcuts** editor has a context menu command **Show Same Keybindings**, which will filter the keybindings based on a keyboard shortcut to display conflicts.

Troubleshooting Keybindings

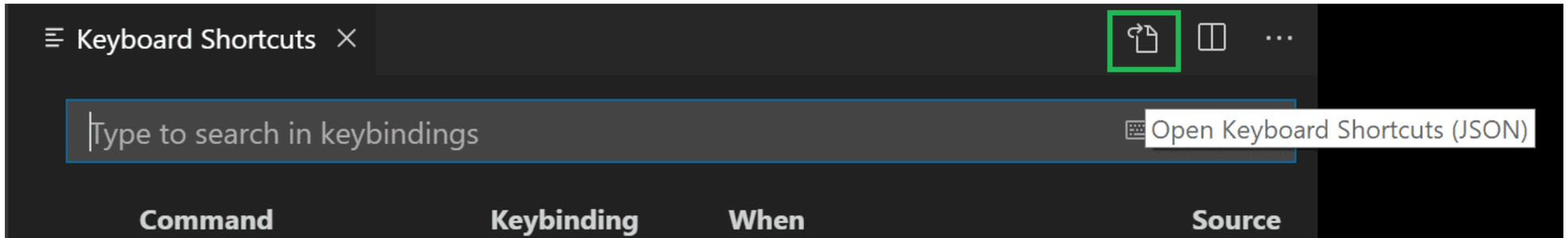
- To troubleshoot keybindings problems, you can execute the command **Developer: Toggle Keyboard Shortcuts Troubleshooting**.
- This will activate logging of dispatched keyboard shortcuts and will open an output panel with the corresponding log file.
- You can then press your desired keybinding and check what keyboard shortcut VS Code detects and what command is invoked.

Viewing Modified Keybindings

- You can view any user modified keyboard shortcuts in VS Code in the **Keyboard Shortcuts** editor with the **Show User Keybindings** command in the **More Actions** (**...**) menu.
- This applies the `@source:user` filter to the **Keyboard Shortcuts** editor (**Source** is 'User')

Advanced Editing of Keyboard Shortcuts

- All keyboard shortcuts in VS Code can be customized via the **keybindings.json** file.
- To configure keyboard shortcuts through the JSON file, open **Keyboard Shortcuts** editor and select the **Open Keyboard Shortcuts (JSON)** button on the right of the editor title bar. Or from Command Palette (⇧⌘P) with the Preferences: **Open Keyboard Shortcuts (JSON) command.**
- This will open your **keybindings.json** file where you can overwrite the Default Keyboard Shortcuts.



Keyboard Rules

- Each Rule Consists of:
  - a *key* that describes the pressed keys.
  - a *command* containing the identifier of the command to execute.
  - an *optional* when clause containing a boolean expression that will be evaluated depending on the current context.
- Chords (two separate keypress actions) are described by separating the two keypresses with a space. For example, Ctrl+K Ctrl+C.

When a Key is Pressed

When a key is pressed:

- The rules are evaluated from bottom to top.
- The first rule that matches, both the key and in terms of when, is accepted.
- No more rules are processed.
- If a rule is found and has a command set, the command is executed.

Additional Rules

- The additional **keybindings.json** rules are appended at runtime to the bottom of the default rules, thus allowing them to overwrite the default rules.
- The **keybindings.json** file is watched by VS Code so editing it while VS Code is running will update the rules at runtime.

Platform Accepted Keys

Platform	Modifiers
macOS	`Ctrl+`, `Shift+`, `Alt+`, `Cmd+`
Windows	`Ctrl+`, `Shift+`, `Alt+`, `Win+`
Linux	`Ctrl+`, `Shift+`, `Alt+`, `Meta+`

General Accepted Keys

- `f1-f19`, `a-z`, `0-9`
- `` ` ``, `-`, `=`, `[`, `]`, `\`, `;`, `'`, `,`, `.`, `/`
- `left`, `up`, `right`, `down`, `pageup`, `pagedown`, `end`, `home`
- `tab`, `enter`, `escape`, `space`, `backspace`, `delete`
- `pausebreak`, `capslock`, `insert`
- `numpad0-numpad9`, `numpad_multiply`,
- `numpad_add`, `numpad_separator`
- `numpad_subtract`, `numpad_decimal`, `numpad_divide`

Format of Action

```
{
  "key": "enter",
  "command": "type",
  "args": { "text": "Hello World" },
  "when": "editorTextFocus"
}
```

References for Crafting

- Built in Commands
- When Contexts
- Remember to view all the possible commands use **Preferences: Default Keyboard Shortcuts (JSON)** for the complete listing

Customizing VSCode

Themes

Changing your Theme and Icons

- Change your theme using `⌘K ⌘T`
- You can install more themes from the VS Code extension Marketplace.
- You can also install icon themes which changes icon looks and feels
- You can install more icon themes from the VS Code extension Marketplace
  - Filter the list of extensions using: `tag:icon-theme`

Adding your themes

- Do what makes you happy
- Change icons and themes to your liking

Settings

User and Workspace

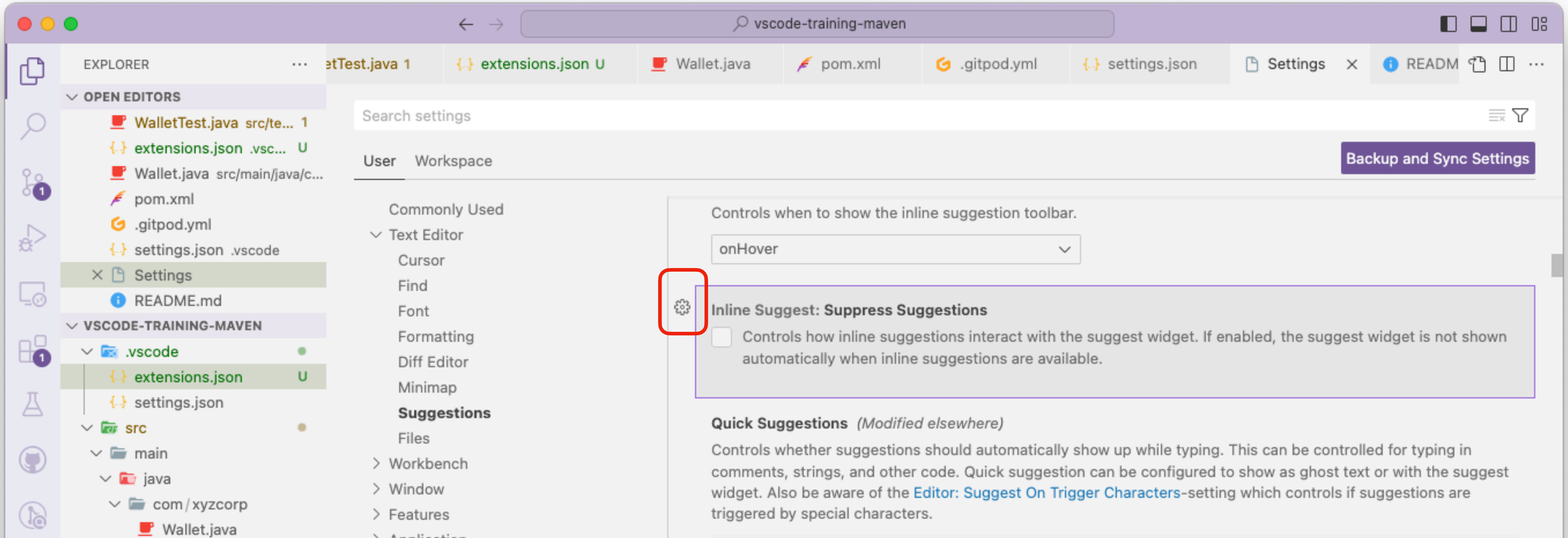
- Nearly every part of VS Code's editor, user interface, and functional behavior has options you can modify.
- VS Code provides several different scopes for settings. When you open a workspace, you will see at least the following two scopes:
  - **User Settings** - Settings that apply globally to any instance of VS Code you open.
  - **Workspace Settings** - Settings stored inside your workspace and only apply when the workspace is opened.

Settings Editor

- **Code > Settings > Settings**
- Command Pallete (⇧⌘P) with **Preferences: Open Settings**
- **Use the Standard (⌘,) to go into your Settings**
  - **User Settings** - Settings that apply globally to any instance of VS Code you open.
  - **Workspace Settings** - Settings stored inside your workspace and only apply when the workspace is opened.

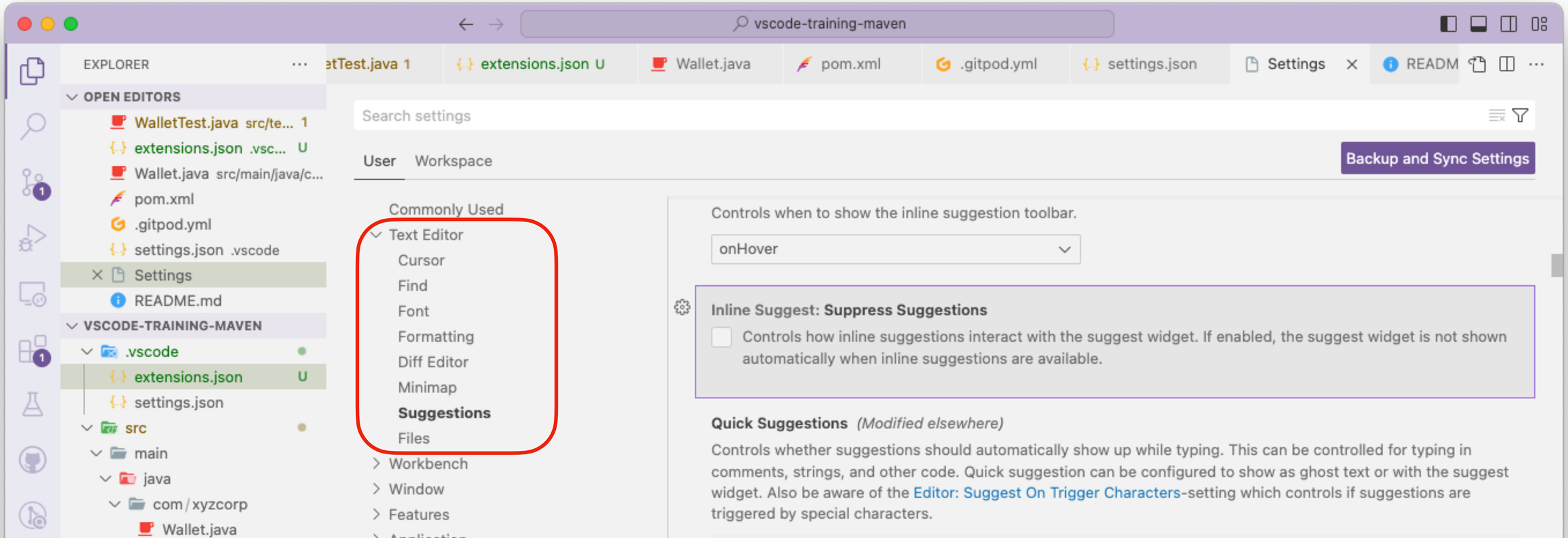
Exploring Settings

- You will have a selection line when a particular setting is active
- Each selection will also have a gear icon to view more information on your particular setting
- Every setting is either a checkbox, input or dropdown



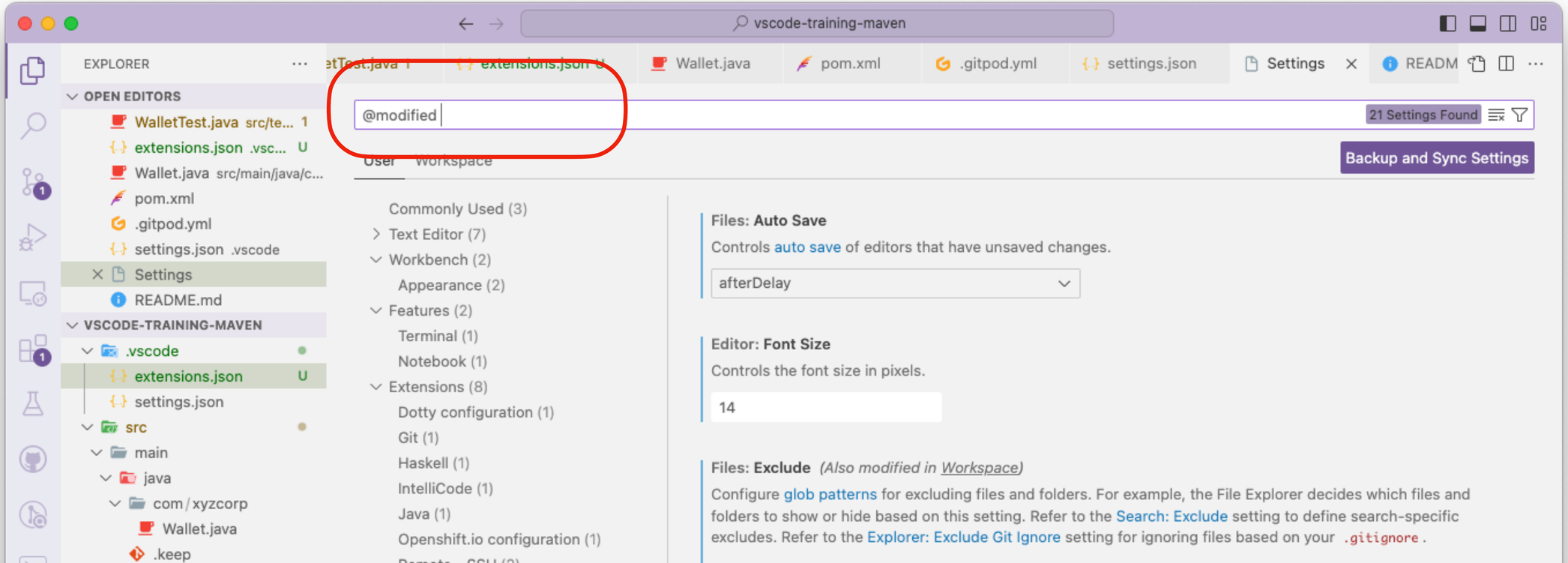
Setting Groups

- Settings are represented in groups so that you can navigate them easily.
- There is a Commonly Used group at the top, which shows popular customizations.



Filtering Settings

- Settings editor Search bar has several filters to make it easier to manage your settings.
- To the right of the Search bar is a filter button with a funnel icon that provides some options to easily add a filter to the Search bar
- You can also filter settings with keyword that begin with an @



Example Settings

- `@ext` - Settings specific to an extension. You provide the extension ID such as @ext:ms-python.python.
- `@feature` - Settings specific to a Features subgroup. For example, `@feature:explorer` shows settings of the File Explorer.
- `@id` - Find a setting based on the setting ID. For example, `@id:workbench.activityBar.visible`.
- `@lang` - Apply a language filter based on a language ID. For example, `@lang:typescript`. See Language-specific editor settings for more details.
- `@tag` - Settings specific to a system of VS Code. For example, `@tag:workspaceTrust` for settings related to Workspace Trust, or `@tag:accessibility` for settings related to accessibility.

Tuning your Settings

- You can also open from your command palette (⇧⌘P) and finding **Open User Settings (JSON) command**
- You can also change your default settings editor with the `workbench.settings.editor` setting in your settings (⌘,). Use “json” to force changes to settings to always take place in your `settings.json` file.
- Settings can be:
  - Per user (depending on operating system)
  - Per workspace (`.vscode/settings`)
- Your settings.json file has intellisense and smart completions with error highlighting

settings.json Example

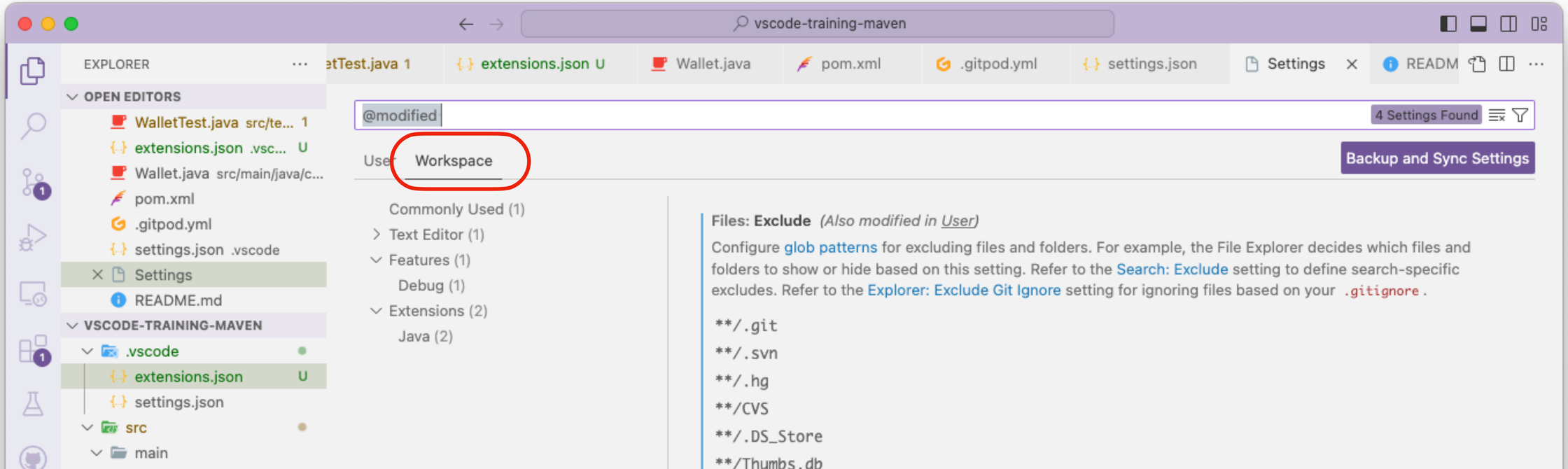
```
// Main editor
"editor.fontSize": 18,
// Terminal panel
"terminal.integrated.fontSize": 14,
// Output panel
"[Log]": {
    "editor.fontSize": 15
}
```

User Settings

- Depending on the platform that you are using, you can find your user settings in the following locations
  - **Windows** `%APPDATA%\Code\User\settings.json`
  - **MacOSX** `$HOME/Library/Application\ Support/Code/User/settings.json`
  - **Linux** `$HOME/.config/Code/User/settings.json`

Workspace Settings

- Workspace settings are specific to a project and can be shared across developers on a project.
- **Workspace settings override user settings.**



Workspace Settings

- Workspaces are just your project root folder
- Workspace settings as well as debugging and task configurations are stored at the root in a `.vscode` folder.
- All features of the Settings editor such as settings groups, search, and filtering behave the same for Workspace settings.
- Not all User settings are available as Workspace settings.
- For example, application-wide settings related to updates and security can not be overridden by Workspace settings.
- For a Multi-root Workspace, workspace settings are located inside the workspace configuration file.

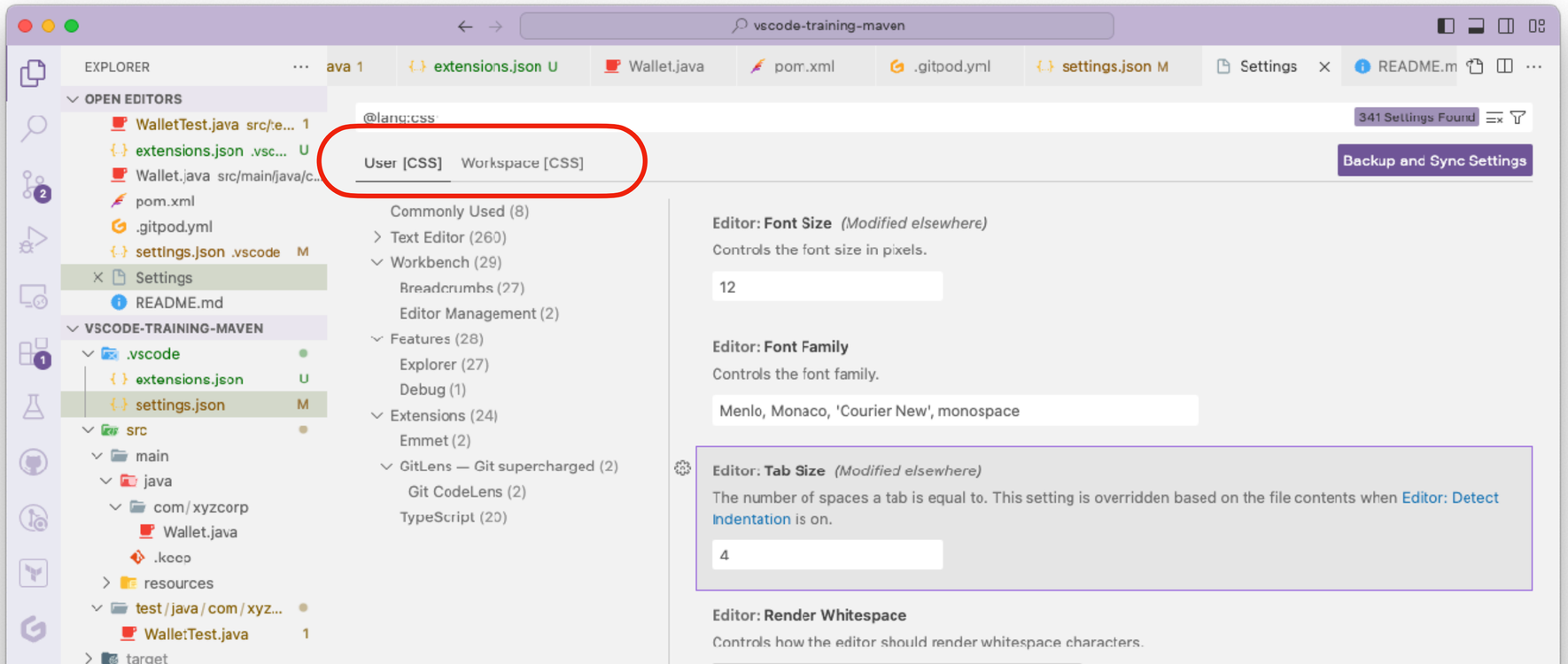
Language Specific Settings

Language Specific Settings

- One way to customize language-specific settings is by opening the Settings editor language option to add a language filter.
- Alternatively, one can directly type a language filter of the form `@lang:languageId` into the search widget.
- The settings that show up will be configurable for that specific language, and will show the setting value specific to that language, if applicable.

Language Specific Settings

- Settings, once filtered, will be only applied to that language
- You can also review the changes in the your `settings.json` file

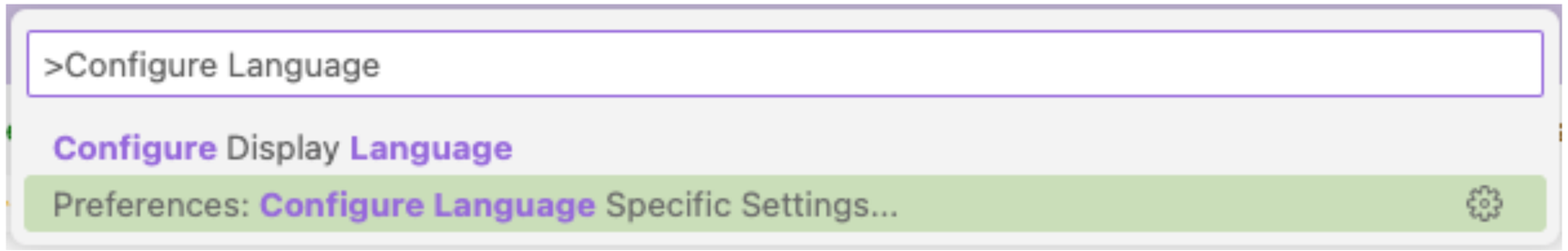


Language Specific Settings

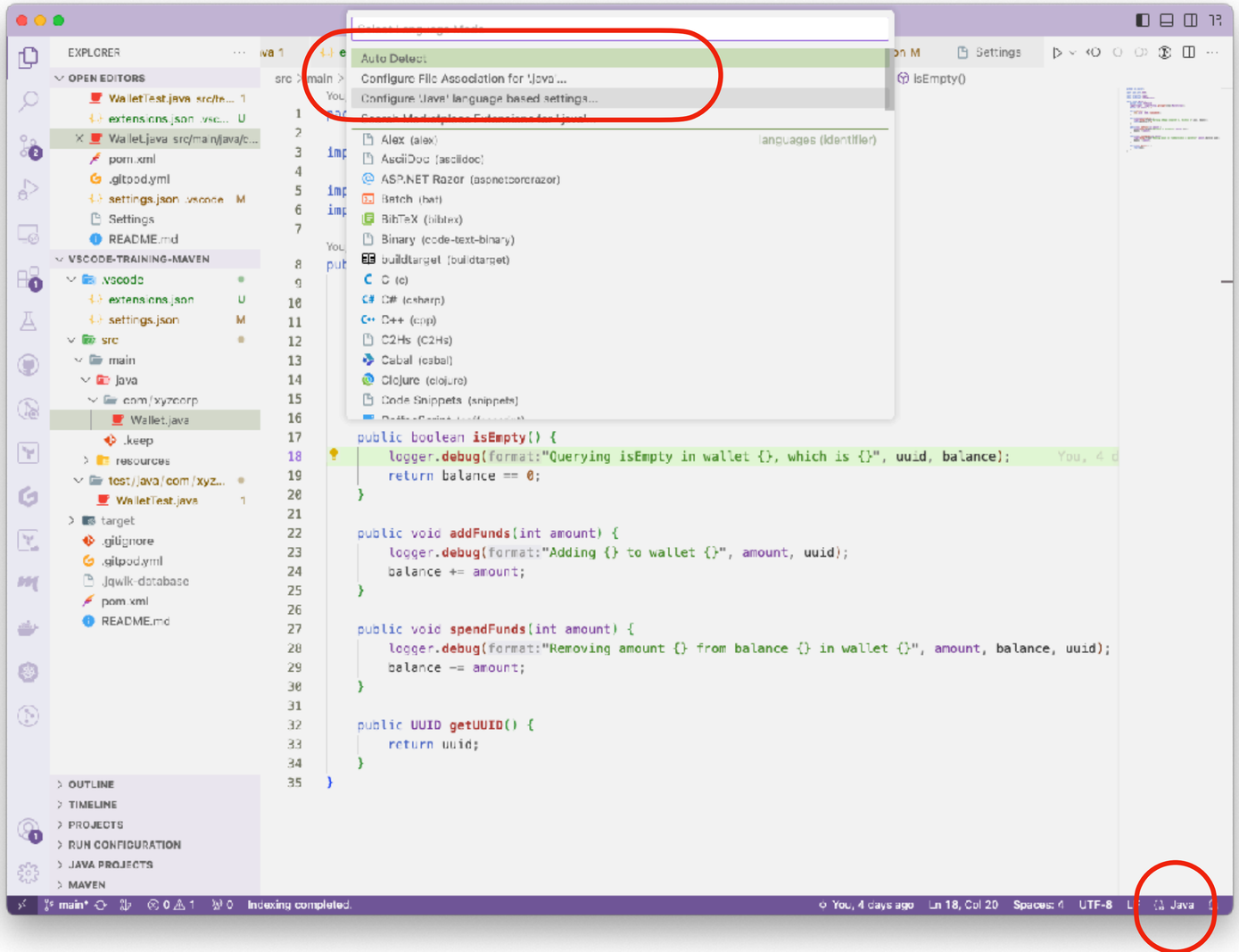
- Settings, once filtered, will be only applied to that language
- You can also review the changes in the your `settings.json` file

Language Specific Settings

- You can also set specific settings per language by the global command **Preferences: Configure Language Specific Settings** (command ID: `workbench.action.configureLanguageBasedSettings`) from the Command Palette (⇧⌘P) which opens the language picker
- Select the language you want.
- Then, the Settings editor opens with a language filter for the selected language, which allows you to modify language-specific settings for that language.
- Though, if you have the `workbench.settings.editor` setting set to json, then the settings.json file opens with a new language entry where you can add applicable settings.



Language Settings in Editor



- If you have a file open and you want to customize the editor for this file type, select the Language Mode in the Status Bar to the bottom-right of the VS Code window.

- This opens the Language Mode picker with an option **Configure 'language_name'** language based settings.

- Selecting this opens your user `settings.json` with the language entry where you can add applicable settings.

Language Precedence

- Language-specific editor settings always override non-language-specific editor settings, even if the non-language-specific setting has a narrower scope.
- For example, language-specific user settings override non-language-specific workspace settings.
- You can scope language-specific settings to the workspace by placing them in the workspace settings just like other settings.
- **If you have settings defined for the same language in both user and workspace scopes, then they are merged by giving precedence to the ones defined in the workspace.**
- View More in the VS Code Language Precendence documentation

Multilanguage Settings

```
{
  "[typescript]": {
    "editor.formatOnSave": true,
    "editor.formatOnPaste": true
  },
  "[markdown]": {
    "editor.formatOnSave": true,
    "editor.wordWrap": "on",
    "editor.renderWhitespace": "all",
    "editor.acceptSuggestionOnEnter": "off"
  }
}
```

NOTE: You can review default language-specific settings already set in `defaultSettings.json` by running the **Preferences: Open Default Settings** command.

Merging Multilanguage Settings

```
"[javascript][typescript]": {
  "editor.maxTokenizationLineLength": 2500
}
```

Syncing your Settings

- You can share your user settings across your VS Code instances with the Settings Sync feature.
- This feature lets you share settings, keyboard shortcuts, and installed extensions across your VS Code installs on various machines.
- You can enable Settings Sync via the **Turn on Settings Sync** command on the right of the Settings editor or on the **Accounts Activity Bar** context menu.

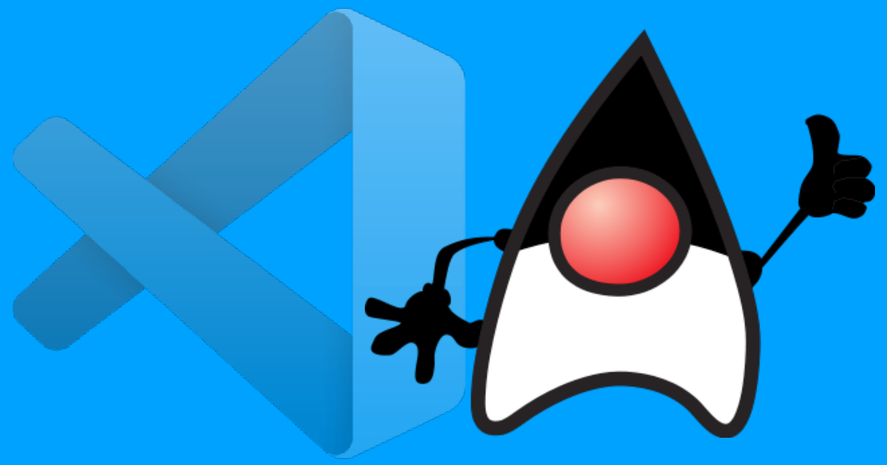
Configure Your Settings

- In this lab let’s configure your settings just how you like it
- Change language specific settings

Projects

Salesforce Projects

- Salesforce internally has “Workspaces”, not be confused with VSCode Workspaces
- Workspaces allows to select a code repository and bring that in as a VSCode Session
  - This includes an online version, much like gitpod.io and Codespaces
- Code Genie is the Salesforce AI Engine for Developer.
- All of these are internal tools that are available.



Java

Java and VSCode

- VS Code provides essential language features such as code completion, refactoring, linting, formatting, and code snippets along with convenient debugging and unit test support.
- VS Code also integrates with tooling and frameworks such as Maven, Tomcat, Jetty, and Spring Boot.
- Leveraging the power of Visual Studio Code, Java developers get an excellent tool for both quick code editing and also the full debugging and testing cycle.
- Underneath VSCode Uses an Eclipse Engine

Java Coding Pack

- To help you set up quickly, there is a **Coding Pack for Java**, which is the bundle of VS Code, the Java Development Kit (JDK), and a collection of suggested extensions by Microsoft.
- You can also just use your own JDK, which you have installed either from Brew, SDKMan, or direct download and configured.

Recommended Plugins

- If you have already installed VS Code and want to add Java support to it, we recommend using the Extension Pack for Java, a collection of extensions suggested by Microsoft:
  - Language Support for Java™ by Red Hat
  - Debugger for Java
  - Test Runner for Java
  - Maven for Java
  - Project Manager for Java
  - Visual Studio IntelliCode
- You can also install the Java Extension Pack

VS Code Workspaces

- You can have:
  - Folder Workspace - when you open a filesystem folder (directory) in VS Code
  - Multiroot Workspaces - can refer to multiple folders (directories) from disparate parts of the file system and VS Code displays the contents of the folder(s) of the workspace together in the File Explorer.
  - Single Java File Editing - if you need to quickly enter an manipulate a single Java file

VS Code Modes

- VS Code for Java supports two modes, **lightweight** and **standard**
- With **lightweight mode**, only source files and JDK are resolved by the language server.
  - Great for quick-start and lightweight environment to work with your source files, for example, reading source code, navigating among source code and JDK, viewing outline and Javadoc, and detecting and fixing syntax errors.
- With **standard mode**, imported dependencies are resolved and the project is built by the language server.
  - Great for full development experience: running, debugging, refactoring, linting, or detecting semantic errors

VS Setting Code Modes

- You can control which mode to launch with by configuring `java.server.launchMode` with the options below:

- `Hybrid` (default) - Firstly, a workspace is opened with lightweight mode. You will be asked whether to switch to standard mode if your workspace contains unresolved Java projects. If you choose Later, it will stay in lightweight mode. You can click the language status item on the Status bar to manually switch to standard mode.

- `Standard` - A workspace is opened with standard mode.

- `LightWeight` - A workspace is opened with lightweight mode. You can click the language status item on the Status bar to manually switch to standard mode.

JDK Settings

- You can control which mode to launch with by configuring `java.server.launchMode` with the options below:

- `Hybrid` (default) - Firstly, a workspace is opened with lightweight mode. You will be asked whether to switch to standard mode if your workspace contains unresolved Java projects. If you choose Later, it will stay in lightweight mode. You can click the language status item on the Status bar to manually switch to standard mode.

- `Standard` - A workspace is opened with standard mode.

- `LightWeight` - A workspace is opened with lightweight mode. You can click the language status item on the Status bar to manually switch to standard mode.

Configuring Java Runtimes

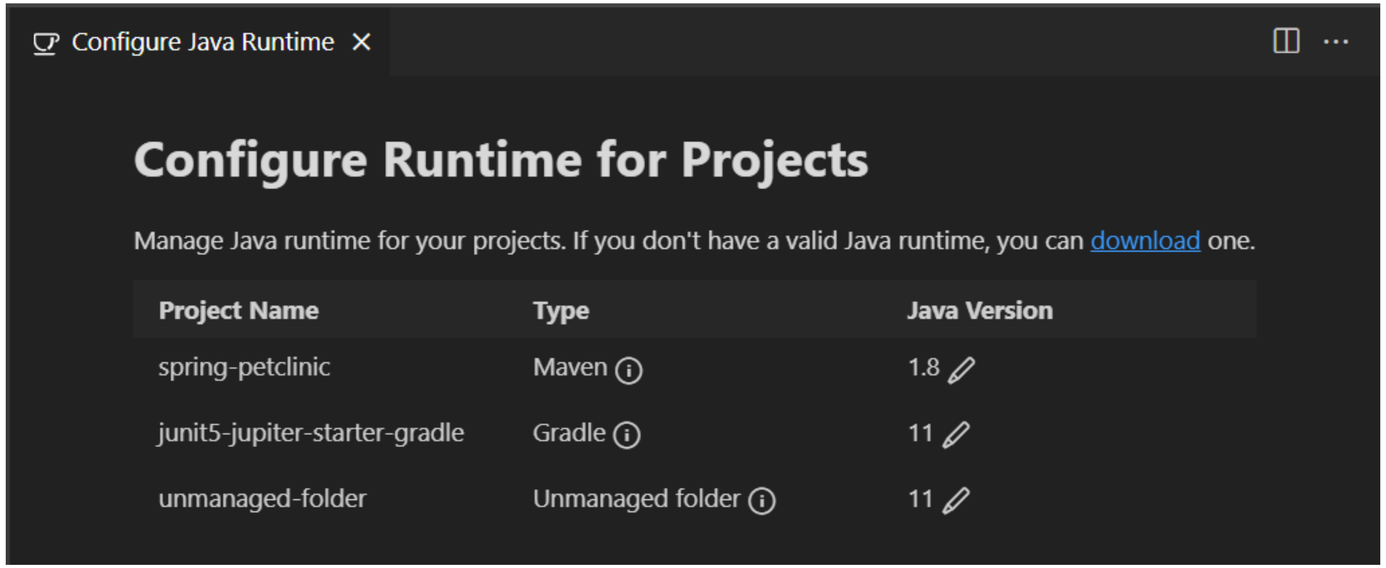
- As Java evolves, it's common that developers work with multiple versions of JDK.
- You can map them to your local installation paths via the setting: `java.configuration.runtimes`.
- You can also set the default runtime to `"default": true`

Configuring Runtimes

```
"java.configuration.runtimes": [
  {
    "name": "JavaSE-1.8",
    "path": "/usr/local/jdk1.8.0_201"
  },
  {
    "name": "JavaSE-11",
    "path": "/usr/local/jdk-11.0.3",
    "sources" : "/usr/local/jdk-11.0.3/lib/src.zip",
    "javadoc" : "https://docs.oracle.com/en/java/javase/11/docs/api",
    "default":  true
   },
   {
    "name": "JavaSE-12",
    "path": "/usr/local/jdk-12.0.2"
   },
   {
    "name": "JavaSE-13",
    "path": "/usr/local/jdk-13"
   }
]
```

Selecting your Runtime

- To see which JDKs are used for your projects, you can trigger the command Java:
  - **Configure Java Runtime** in **Command Palette** (⇧⌘P).
- This command opens a view displaying the runtime information for your projects:



Run Dependency Plugin

- If you are using Maven, and dependencies are not resolved you can try the following

```
> mvn dependency:sources
```

```
> mvn dependency:resolve -Dclassifier=javadoc
```

- Combining both the above commands into one

```
> mvn dependency:sources dependency:resolve -Dclassifier=javadoc
```

Opening Maven Projects

Maven in VSCode

- Maven is a software tool that helps you manage Java projects and automate application builds.
- The Maven for Java extension for Visual Studio Code provides fully integrated Maven support, allowing you to explore Maven projects, execute Maven commands, and perform the goals of build lifecycle and plugins.
- It is recommended to install the Extension Pack for Java, which includes Maven support and other important Java development features.

Resolving the Artifact

- The Maven extension also supports searching Maven Central to resolve unknown types in your source code.
- You can do this by selecting the **Resolve unknown type** link shown on hover over the code

More Maven Features

- The Maven extension also supports searching Maven Central to resolve unknown types in your source code.
- You can do this by selecting the **Resolve unknown type** link shown on hover over the code
- You can also add a dependency using the **Maven: Add a Dependency** (or `maven.project.addDependency`) command
- Autocompletion is available where you can enter the dependencies that you exactly require.
- You can right click on the maven tool window and select “Show Effective POM” to view the Effective POM.

Using Maven in VSCode

- In this lab, let's run the vscode-training-maven project, again
- Review the contents
- Understand the folder relationships
- Run a build

Opening Gradle Projects

Gradle in VSCode

- VS Code supports Gradle Java project (not including Android) via the Gradle for Java extension.
- The extension provides a visual interface for your Gradle build, you can use this interface to view Gradle Tasks and Project dependencies, or run Gradle Tasks as VS Code Tasks.
- The extension also offers a better Gradle build file authoring experience including syntax highlighting, error reporting, and auto-completion.
- Be sure to run the Extension “Gradle for Java”

Working with Gradle Tasks

- When you open a Gradle project in VSCode, you can find some useful Gradle views by clicking the Gradle Side Bar item.
- **Gradle Projects** view lists all the Gradle projects found in the workspace.
- You can view, run, or debug Gradle tasks here.
- When there are many Gradle tasks in the workspace, it might be hard to find a specific task.
- The extension offers a Pinned Tasks view to help you pin your favorite tasks so that you can easily find them in a separate view.
- You can also see recently executed tasks in the Recent Tasks view.

Managing Dependencies

- In the **Gradle Projects** view, you can find a Dependencies item under each Gradle project item.
- It includes all the dependencies in your specified configuration, you can easily check the dependency status of your project.

Managing Gradle Daemons

- The **Gradle Daemons** view shows the daemon status of the current workspace.
- It lists all the running Gradle daemons in the same version as the workspace.
- You can choose to stop a specific one or all the daemons in this view.

More Gradle Features

- Extensions provides syntax highlight and auto completions for Gradle build files
- Gradle build file analysis
- In the **Outline view,** the extension provides the document symbols of the opened Gradle file, which can help you to navigate to any part of the file easily.
- If there is any syntax error (missing characters, type not found, etc.) in the opened Gradle file, you can find them in the **Problems view**.
- You can declare new dependencies, and it offer dependency candidate

Using Gradle in VSCode

- In this lab, let's run the vscode-training-gradle project
- Review the contents
- Understand the folder relationships
- Run a build

Opening Bazel Projects

Bazel in VSCode

- Bazel is a Google based build tool for varying languages
- Bazel build files use Starlark, a python based language used for configuration and runs on a JDK
- Incremental based and Modular

Workspaces

- Before you can build a project, you need to set up its workspace.
- A workspace is a directory that holds your project's source files and Bazel's build outputs.
- It also contains files that Bazel recognizes as special
- The WORKSPACE file, which identifies the directory and its contents as a Bazel workspace and lives at the root of the project's directory structure
- To designate a directory as a Bazel workspace, create an empty file named WORKSPACE in that directory

Build Files

- One or more BUILD files, which tells Bazel how to build different parts of the project.
- A directory within the workspace that contains a BUILD file is a package.
- This provides the modularity of your builds

Running Bazel Commands

- One or more BUILD files, which tells Bazel how to build different parts of the project.
- A directory within the workspace that contains a BUILD file is a package.
- This provides the modularity of your builds

Salesforce Bazel Extension

- Salesforce leads in development of a Bazel Extension
- Integration with VSCode and works much like the Maven and Gradle equivalents
- Uses the Redhat Java Extension and is a dependency
- A new version will be release in December 2023, but also check for new updates as they become available.
- Ensure that you use the pre-release version
- This is Salesforce invested project and you are welcome to become involved.

Using Bazel in VSCode

- In this lab, let's run the vscode-training-bazel project
- Review the contents
- Understand the relationships between BUILD and WORKSPACE
- Add modules through `.bazelproject`
- Run an application within VSCode in both the editor and the terminal

Programming Maneuvers

Java Navigation

Java Navigation

- With the **Outline** view, you can conveniently navigate the members within the current file.
- Projects view also provide a great overview of your project.
- As a Java editor, it also supports Call Hierarchy, Type Hierarchy, Definition Navigation, Search Types in Workspace, etc.

Search for Workspace Symbols

- To search for a symbol in the current workspace, start by pressing ⌘T, then enter the name of the symbol.
- A list of potential matches will appear as before. If you choose a match that was found in a file that's not already open, the file will be opened before navigating to the match's location.
- Alternatively, you can also use Quick Open (⌘P) then enter the '#' command to search the current workspace. ⌘T is just the shortcut for the '#' commands, so everything works the same.

Search for Current File Symbols

- To search for a symbol in the current file, use Quick Open (⌘P) then enter the '@' command
- Enter the name of the symbol you're looking for.
- A list of potential matches will appear and be filtered as you type. Choose from the list of matches to navigate to its location.
- You can also go to a symbol in a file by performing (⇧⌘O)

Definition Commands

- Peek Definition (⌥F12)
- Goto Definition (F12)
- Super Implementation (Click and Hover on Class)
- Goto References (⇧F12)
- Find All References (⇧⌥F12)

Hierarchy Commands

- A Call Hierarchy view shows all calls from or to a function and allows you to drill into callers of callers and call of calls. Right-click on a function and select Peek > Peek Call Hierarchy. You can also right-click in a function body and pick **Show Call Hierarchy**.
- A Type Hierarchy view shows the inheritance relationships between Java Objects. You can right-click on a type and pick **Show Type Hierarchy**.

Other Navigation Commands

- Select current line (⌘L)
- Navigate to beginning and end of file (⌘↑) and (⌘↓)

IntelliSense

IntelliSense

- IntelliSense is a suggestions widgets meant to help you code
- ^Space to trigger the Suggestions widget.

Errors and Warning

Errors and Warnings

- Show Problems (⇧⌘M)
- Cycle through Problems (⇧F8) (F8)

Formatting and Linting

Java Formatting

- Language Support for Java™ by Red Hat also provides formatting settings.
- You can export an Eclipse formatter file and then use it for your project in VS Code.
- You can also use Checkstyle for Java and SonarLint extensions

Java Formatting

- You can use Format Document command to format a Java file. If you didn't specify a formatter profile before, the Java file will be formatted using default settings.
- You can also apply other styles to your liking; like GoogleStyle
- You can open the editor with the command **Java: Open Java Formatter Settings with Preview**. In the editor, you can change the formatter settings and preview the effects. After saving the current editor, the changes will be saved to the formatter profile.

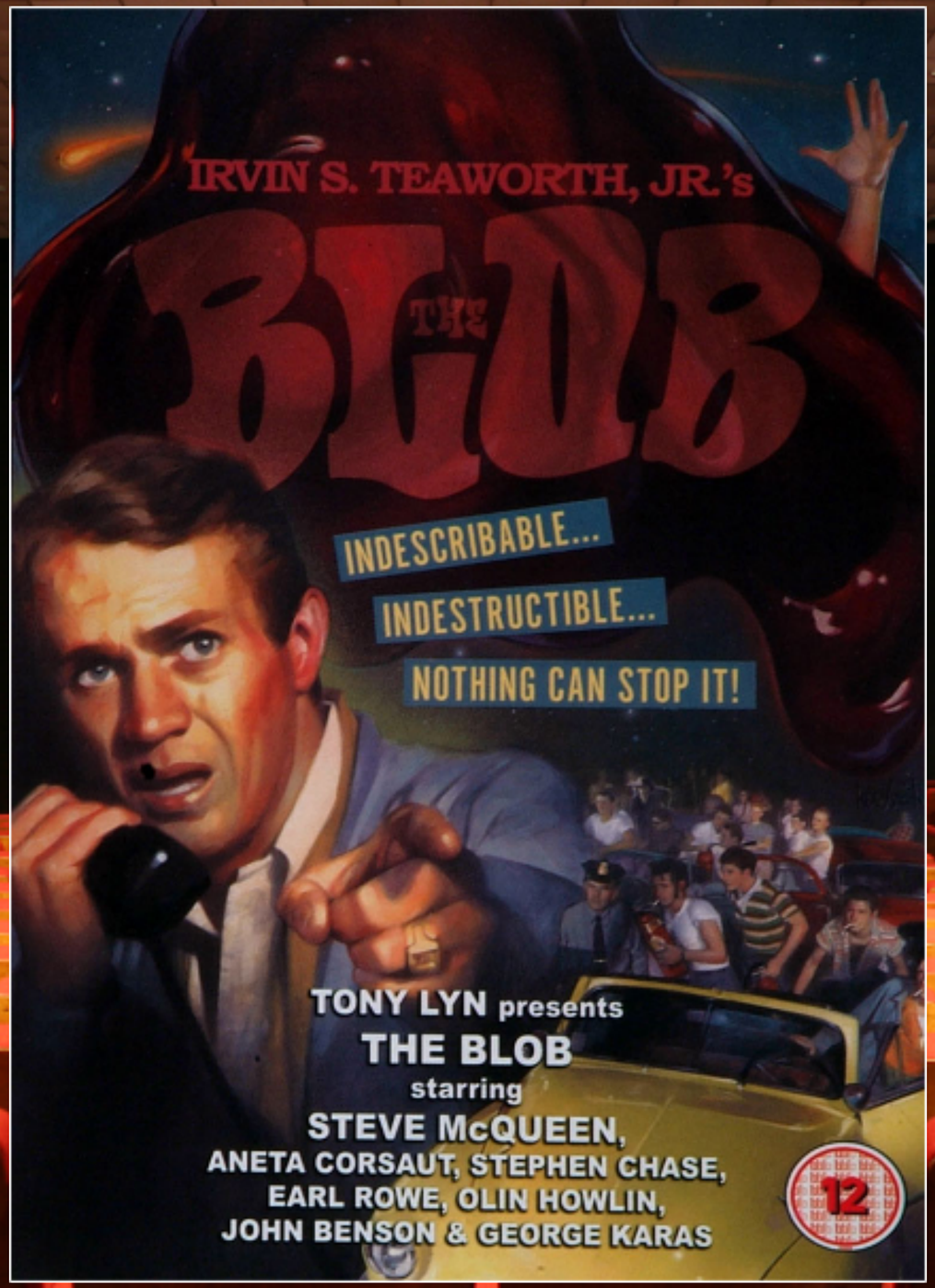
SolarLint

- SonarLint is an easy-to-use extension that helps you find and fix bugs and security issues as you code.
- The extension runs in the background and, just like a spell checker, highlights source code issues that pose a quality or security concern.
- The extension not only tells you what the issue is but also provides in-context guidance on why it's harmful and how to fix it, with examples.
- The extension supports over 500+ Java rules and includes several Quick Fixes to automatically fix certain quality issues.

Checkstyle

- With the Checkstyle for Java extension, you can use either existing checkstyle configurations (Google's or Sun's Check) or your own customized files for your project.
- When editing a Java file, the extension will check the file format and provide Quick Fixes if possible on the fly.
- Set Checkstyle configuration file using the **Checkstyle: Set the Checkstyle Configuration File** command and selecting the **Checkstyle file** from the dropdown.

Increase + Decrease Selections


IRVIN S. TEAWORTH, JR.'s
THE BLOB
INDESCRIBABLE...
INDESTRUCTIBLE...
NOTHING CAN STOP IT!
TONY LYN presents
THE BLOB
starring
STEVE McQUEEN,
ANETA CORSAUT, STEPHEN CHASE,
EARL ROWE, OLIN HOWLIN,
JOHN BENSON & GEORGE KARAS
12

Increase and Decrease Selections

- Increase Selection (^⇧⌘←)
- Decrease Selection (^⇧⌘→)

Semantic Highlighting

Semantic Highlighting

- Semantic highlighting enriches the syntax coloring based on symbol information from a language service that has the full understanding of the project.
- Based on this understanding each identifier gets colored & styled with the color of the symbol it resolves to.
- Built-in themes show semantic highlighting. Other themes need to opt-in to semantic highlighting by a new property in the theme file

```
"semanticHighlighting": true
```

Overriding Semantic Highlighting

Users can override that setting in the user settings

```
"editor.semanticTokenColorCustomizations": {
    "[Atom One Dark]": {
        "enabled": true
    }
}
```

Code Formatting

Code Formatting

- Currently selected source code only (⌘K ⌘F)
- Whole document format: ⇧⌥F

Code Folding

Code Folding

- Keyboard Shortcut: (⌥⌘[) and (⌥⌘])
- You can also fold/unfold all regions in the editor with Fold All (⌘K ⌘0) and Unfold All (⌘K ⌘J).
- You can fold all block comments with Fold All Block Comments (⌘K ⌘/).

Refactoring

Refactoring in VSCode

- Visual Studio Code provides many options to refactor your source code as well as Source Actions to generate code and fix issues while you're coding.
- To access them, click on the light bulb 💡 whenever you see it.
- Or right-click the editor view and pick **Source Action....**

Supported Code Actions

- Assign to variable
- Convert anonymous to nested class
- Convert to anonymous class creation
- Convert to enhanced for loop
- Convert to lambda expression
- Convert to static import
- Extract to constant
- Extract to field
- Extract to method
- Extract to local variable
- Inline constant
- Inline local variable
- Inline method

Supported Code Actions

- Invert conditions
- Invert local variable
- Move
- Rename (F2)
- Change resolved type to var type
- Change var type to resolved type
- Generate constructors
- Generate delegate methods
- Override/implement methods
- Organize imports
- Generate getters and setters
- Generate hashCode() and equals()
- Generate toString()
- Change modifiers to final where possible

Supported Code Actions

- Fix non-accessible reference
- Create non-existing package
- Create unresolved types
- Remove the final modifier
- Remove unnecessary cast
- Remove redundant interfaces
- Add missing case labels in switch statements
- Jump to definition on break/ continue
- Correct access to static elements

Refactoring

- In this lab, let’s try refactoring
- Open Ted Young’s blackjack game and let’s try some refactoring
- Create methods, move methods, etc.

Find and Replace

Find and Replace

- Besides searching and replacing expressions, you can also search and reuse parts of what was matched, using regular expressions with capturing groups.
- Enable regular expressions in the search box by clicking the **Use Regular Expression** (.*) button (⌥⌘R)
- You can then write a regular expression and use parenthesis to define groups.
- You can then reuse the content matched in each group by using $1, $2, etc. in the **Replace field**.

Snippets & Postfix

Code Snippets

- Visual Studio Code supports a wide range of popular Java code snippets to make you more productive, such as class/interface, syserr, sysout, if/else, try/catch, static main method.
- Using information from Java language server, it also provides a preview of the code snippet during the selection.
- For example, typing "`sout`" or "`sysout`" will produce a code snippet for `System.out.println()`.
- Similarly, typing "`main`" or "`psvm`" will generate a code snippet for `public static void main(String[] args) {}`.
- Here is full list of code snippets

Creating Code Snippets

- You can easily define your own snippets without any extension.
- To create or edit your own snippets, select Configure User Snippets under **Code > Settings**, and then select the language (by language identifier) for which the snippets should appear, or the **New Global Snippets** file option if they should appear for all languages.
- VS Code manages the creation and refreshing of the underlying snippets file(s) for you.

Custom Snippet Example

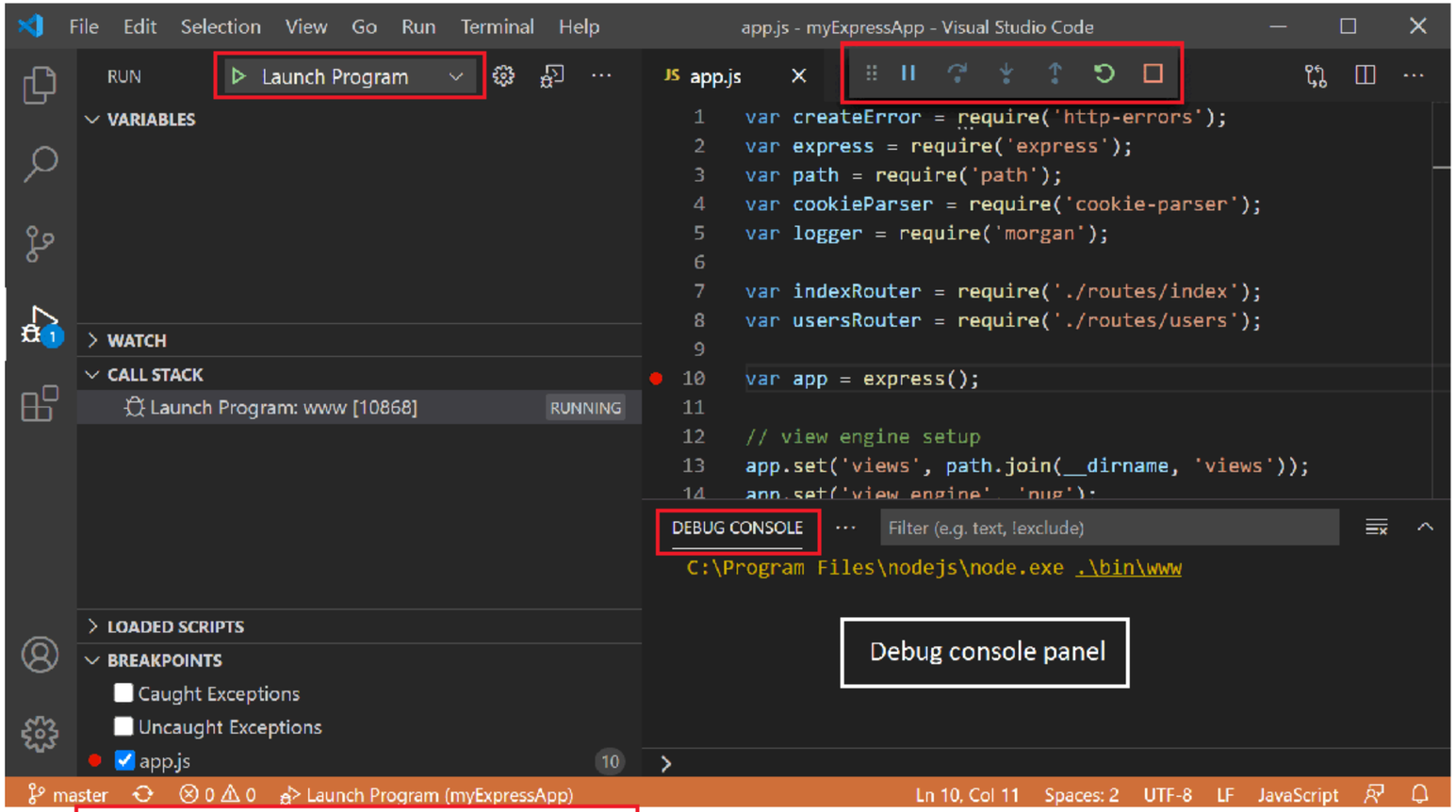
```
// in file 'Code/User/snippets/javascript.json'
{
  "For Loop": {
    "prefix": ["for", "for-const"],
    "body": ["for (const ${2:element} of ${1:array}) {", "\t$0", "}"],
    "description": "A for loop."
  }
}
```

Debugging

Debugging

Start debugging

Pause, step over, step in/out, restart, stop



Run and Debug View

- To bring up the **Run and Debug** view, select the **Run and Debug** icon in the Activity Bar on the side of VS Code. You can also use the keyboard shortcut ⇧⌘D.
- If running and debugging is not yet configured (no launch.json has been created), VS Code shows the Run start view.
- The top-level Run menu has the most common run and debug commands

Launch Configurations

- To run or debug a simple app in VS Code, select **Run and Debug** on the Debug start view or press F5 and VS Code will try to run your currently active file.
- However, for most debugging scenarios, creating a launch configuration file is beneficial because it allows you to configure and save debugging setup details.
- VS Code keeps debugging configuration information in a launch.json file located in a .vscode folder in your workspace (project root folder) or in your user settings or workspace settings.
- To create a launch.json file, click the create a launch.json file link in the **Run** start view.

Debugging Keymap

- F9 Toggle breakpoint
- F5 Start/Continue
- F11 / ⇧F11 Step into/ out
- F10 Step over
- ⇧F5 Stop
- ⌘K ⌘I Show hover

Run a debugger

- In this lab we will try out running a debugger
  - Create a break point at the constructor of Wallet
  - Create a launch.json
  - Step in/Step out

Testing

Testing

- Install the Test Runner for Java extension
- This will generate shortcuts (the green play button) on the left side of the class and method definition.
- To run the target test cases, select the green play button. You can also right-click on it to see more options.

Testing Explorer

- The Testing Explorer is a tree view to show all the test cases in your workspace.
- You can select the beaker button on the left-side Activity bar of Visual Studio Code to open it.
- You can also run/debug your test cases and view their test results from there.

View Test Results

- After running/debugging the test cases, the state of the related test items will be updated in both editor decorations and the Testing Explorer.
- You can trigger the command Test: Peek Output to peek the results view. You can select the links in the stack trace to navigate to the source location.

Generating Tests

- The extension provides features to help you scaffold test cases. You can find the entry in the editor context menu. Select **Source Action**... and then choose **Generate Tests**....
- If you trigger this source action from your main source code (test subject), you will be asked the test class's fully qualified name and the methods you want to test.
- The extension will then generate the test code for you
- If you trigger the source action from your test source code, you will be asked which kinds of test methods you want to add. Including the lifecycle methods and the test method

Test Navigation

- The extension provides features to help you navigate between your tests and test subjects.
- If your source code is contained in `src/main/java` or `src/test/java`, you can find the entry named **Go to Test** or **Go to Test Subject** in the editor context menu
- You can also find the command in the Command Palette (⇧⌘P) by searching for **Java: Go to Test**.
- There are other testing commands (for example, **Run Tests in Current File**) that can be found by searching for '**Test:**' in the Command Palette (⇧⌘P).

Running Tests

- In this lab we will try out Test Driven Development by adding a test for our Wallet.
- We we create a balance method that will return the balance of the wallet
- View the reports if successful

Multicursors

Multicursor Support

- To add cursors at arbitrary positions, select a position with your mouse and use Alt+Click (⌥+Click on macOS).
- To set cursors above or below the current position use: Keyboard Shortcut: ⌥⌘↑ or ⌥⌘↓
- You can add additional cursors to all occurrences of the current selection with ⇧⌘L.
- To select one occurance at a time you can use ⌘D instead
- You can select blocks of text by holding Shift+Alt (⇧+⌥ on macOS) while you drag your mouse. A separate cursor will be added to the end of each selected line.

Spring and Spring Boot

Spring Boot in VSCode

- Visual Studio Code is an ideal lightweight development environment for Spring Boot application developers and there are several useful VS Code extensions including:
  - Spring Boot Tools
  - Spring Initializr
  - Spring Boot Dashboard
- Recommended to use the Spring Boot Extension Pack that includes all of the extensions above.

Creating a Spring Boot Project

- To install, launch VS Code and from the Extensions view (⇧⌘X), search for vscode-spring-initializr.
- Once you have the extension installed, open the Command Palette (⇧⌘P) and type Spring Initializr to start generating a Maven or Gradle project and then follow the wizard.

Editing a Spring Boot Project

- The Spring Initializr extension allows you to add dependencies after generating a new Spring Boot project.
- Navigate to your pom.xml file and right-click to select **Add starters....**
- A dropdown will show the dependencies you already have beginning with a √.
- You can search for other dependencies you want to add to your project. Or you can click on the existing dependencies to remove them.

Developing a Spring Boot Project

- The Spring Boot Tools extension includes rich language support for working with Spring Boot application.properties, application.yml, and .java files.
- The extension supports the following features:
  - Quickly navigate to a Spring element in your workspace
  - Smart code completion for Spring specific components
  - Quick access to running Spring apps
  - Live application information
  - Code templates
- Similar code completion and validation features are also available for .properties and .yml files.

Running a Spring Boot Project

- In addition to using F5 to run your application, there's the Spring Boot Dashboard extension
- Spring Boot Dashboard lets you view and manage all available Spring Boot projects in your workspace as well as quickly start, stop, or debug your project.

Opening PetClinic in VSCode

- In this lab, let’s open the Petclinic Application in VSCode
- Review the contents
- Make some changes to the code

JavaScript Editing

JavaScript in VSCode

- JavaScript Support includes IntelliSense and other common features in VSCode
- Node.js Support included
- While IntelliSense should just work for most JavaScript projects without any configuration, you can make IntelliSense even more useful with JSDoc or by configuring a jsconfig.json project.

JSDocs

- When type inference does not provide the desired information, type information may be provided explicitly with JSDoc annotations.
- This document describes the JSDoc annotations currently supported.

XML Editing

XML Editing on VSCode

- Depending on the Extension used, XML editing might be maintained by that particular extension
- If you require more power then consider either RedHat's XML or VSCode-XML

Emmet

- Emmet helps you expand HTML/XML and at times CSS tags using a concise abbreviation
- VSCode has Emmet support built in
- Use the cheatsheet for examples on using Emmet for efficient editing

HTTP Editing with RestClient

HTTP Editing with Rest Client

- You don’t always have to use Postman. Reasons include:
  - You HTTP calls are not in your project
  - It’s not configuration as code
- Go to Extensions and use the REST Client Extension by Huachao Mao
- Create a file with an .http extension
- Has a huge amount of features including variable interpolation, security, syntax highlighting, multiple language support, and more.

Sending a Request

- Send your you requests by either:
  - Click the **Send Request** link above the request. This link will appear automatically if the file's language mode is set to HTTP.
  - You can also use the shortcut Ctrl+Alt+R(⌘⌥R for macOS)
  - You can right-click in the editor and select Send Request from the context menu
  - Open the Command Palette (⇧⌘P) and select/type **Rest Client: Send Request**.
- The response will be previewed in a separate webview panel inside Visual Studio Code.
- If you prefer to use the full power of searching, selecting, or manipulating in Visual Studio Code, you can preview the response in an untitled document by setting `rest-client.previewResponseInUntitledDocument` to `true`.

Using HTTP Editing in VSCode

- In this lab, let's create an http file and run it calling the service https://postman-echo.com
- Review the contents
- Try other calls like GET, POST, PUT if time remaining

Terminals

Integrated Terminals

- Visual Studio Code includes a full featured integrated terminal that starts at the root of your workspace.
- It provides integration with the editor to support features like links and error detection.
- The integrated terminal can run commands such as `mkdir` and `git` just like a standalone terminal.
- Some other information on the terminal settings: https://www.growingwiththeweb.com/2017/03/mastering-vscodes-terminal.html

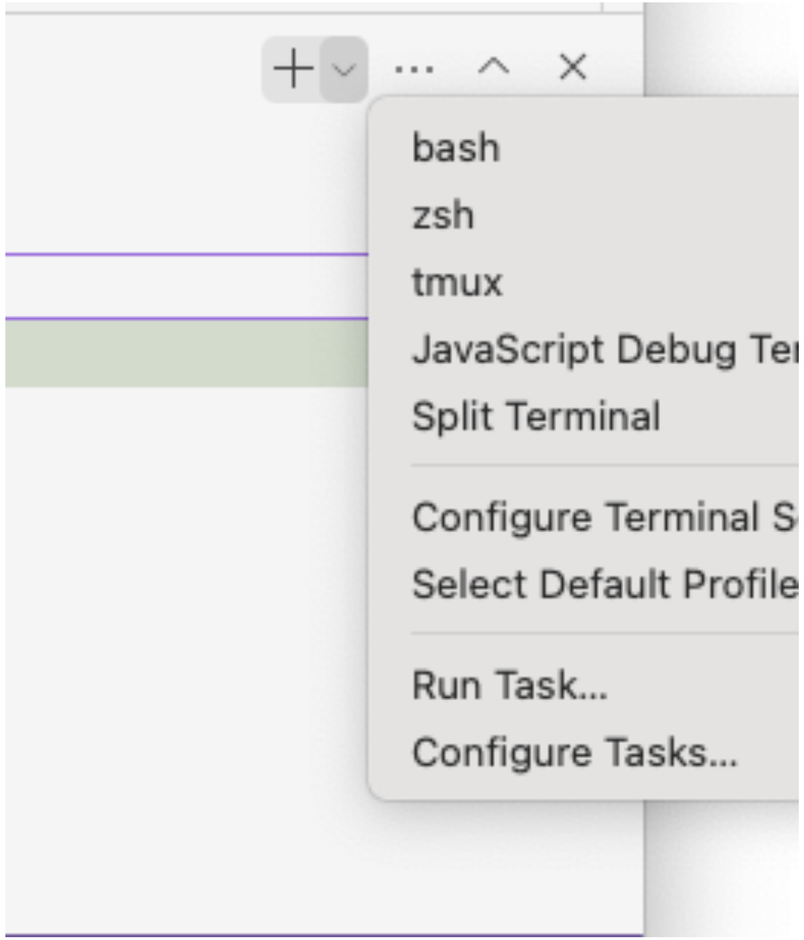
Opening the Terminals

You can open the terminals in the following ways:

- From the menu, use the **Terminal > New Terminal** or **View > Terminal** menu commands.
- From the **Command Palette** (⇧⌘P), use the **View: Toggle Terminal** command.
- In the Explorer, you can use the **Open in Integrated Terminal** context menu command to open a new terminal from a folder.
- To toggle the terminal panel, use the (^`) keyboard shortcut.
- To create a new terminal, use the (^⇧`) keyboard shortcut.
- If you prefer to work outside VS Code, open an external terminal with the (⇧⌘C) keyboard shortcut

Viewing Status of Terminal Commands

Various Terminal Shells



- The integrated terminal can use various shells installed on your machine, with the default being pulled from your system defaults.
- Shells are detected and presented in the terminal profiles dropdown.

Adding Terminals

- The terminal tabs UI is on the right side of the terminal view. Each terminal has an entry with its name, icon, color, and group decoration (if any).
- Add terminal instances by selecting the **+** icon on the top-right of the **TERMINAL** panel, selecting a profile from the terminal dropdown, or by triggering the `^⇧`` command.
- This action creates another entry in the tab list associated with that terminal.
- Icons may appear to the right of the terminal title on the tab label when a terminal's status changes. Some examples are a bell (macOS) and for tasks, displaying a check mark when there are no errors and an X otherwise.
- Hover the icon to read status information, which may contain actions.

Removing Terminals

Remove terminal instances by:

- Hovering a tab and selecting the **Trash Can** button
- Selecting a tab item and pressing Delete
- Using **Terminal: Kill the Active Terminal Instance** command
- Via the right-click context menu.

Terminal Groups

Place multiple terminals side-by-side and create a group by splitting a terminal:

- Hover over a entry in the list of terminals on the right and select the inline split button.
- Right-click the context menu and selecting the Split menu option.
- Alt and click on a tab, the + button, or the single tab on the terminal panel.
- Trigger the ⌘\ command.

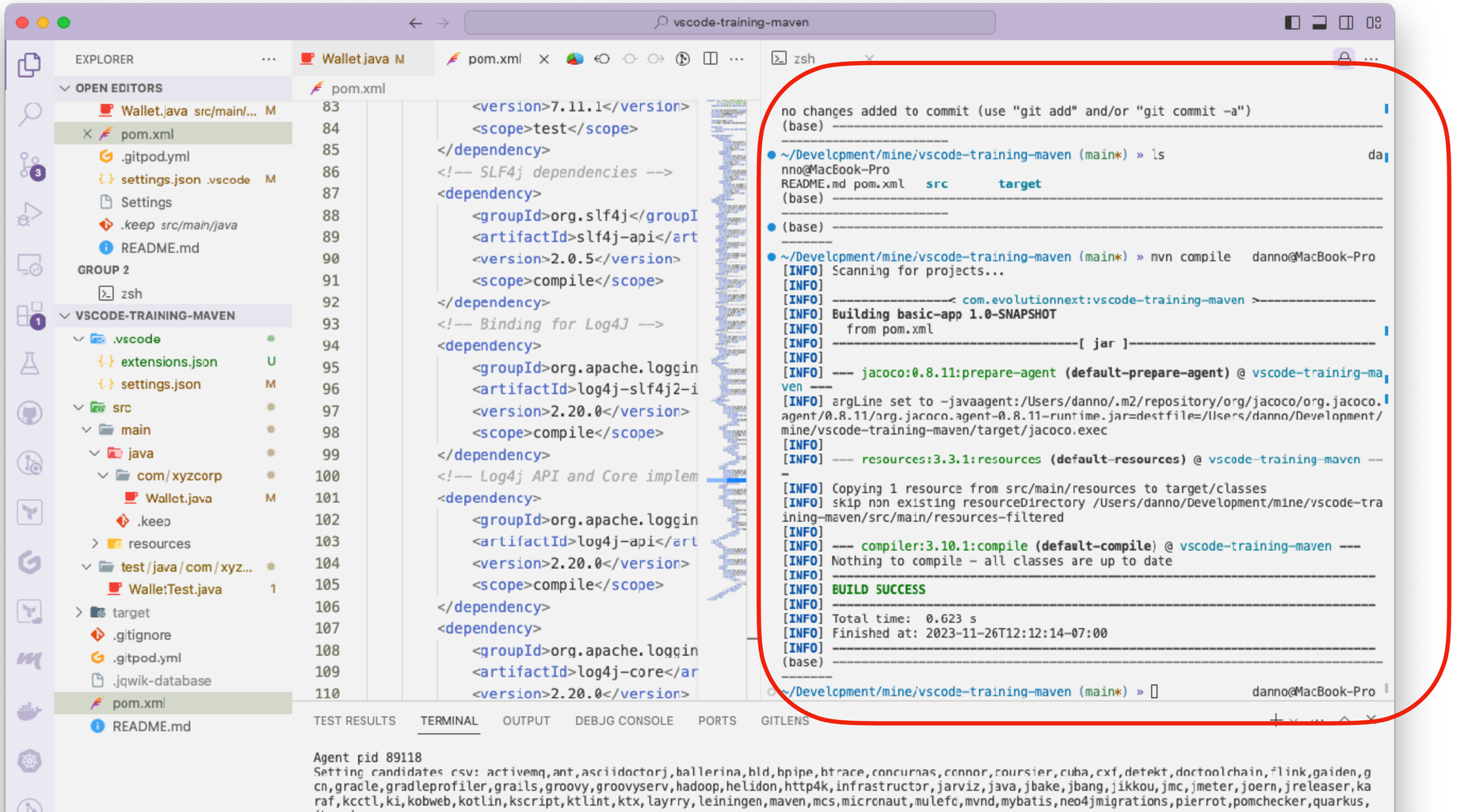
Navigating Terminal Groups

- Navigate between terminal groups using focus next ⇧⌘] and focus previous ⇧⌘[.
- Navigate between terminals in a group by focusing the previous pane, ⌥⌘←, or the next pane, ⌥⌘→
- Dragging and dropping tabs in the list rearranges them. Dragging a tab into the main terminal area allows moving a terminal from one group to another.
- Moving a terminal into its own group can be done with the **Terminal: Unsplit Terminal command** through the Command Palette or in the right-click context menu.

Editor Area Terminals

- You can open terminals in the editor area (terminal editors) with the
  - **Terminal: Create New Terminal in Editor Area** command
  - **Terminal: Create New Terminal in Editor Area to the Side** command
- Dragging a terminal from the terminal view into the editor area.
- Terminal editors are presented like regular editor tabs

Editor Area Terminals



Navigating the Buffer

- The content in the terminal is called the buffer, with the section right above the bottom viewport being called "scrollback".
- The amount of scrollback kept is determined by the `terminal.integrated.scrollback` setting and defaults to 1000 lines.
- There are various commands available to navigate around the terminal buffer:
  - Scroll up a line - ⌥⌘PageUp
  - Scroll down a line - ⌥⌘PageDown
  - Scroll up a page - PageUp
  - Scroll down a page - PageDown
  - Scroll to the top - ⌘Home
  - Scroll to the bottom - ⌘End

Scrolling Previous Commands

- Command navigation is also available:
  - Scroll to the previous command - ⌘↑
  - Scroll to the next command - ⌘↓
- Scrolling will happen instantaneously, but can be configured to animate over a short duration with the `terminal.integrated.smoothScrolling` setting.

Other Features

- Various Link Handlers are available for URLs, Files, Folders, and Words. You can hover over a link and perform (⌘+Click)
- You can perform the **Open Detected Link** command (⇧⌘O) can be used to access links via the keyboard
- You can find text in your terminal using (⌘F)
- You can drag a file into the terminal and it will input the path.
- You can automate terminals with tasks in the `.vscode/tasks.json` file, which will be a part of your project workspace and shared as configuration as code.
- On local systems, you can change the fonts and style on your terminal as well

Docker

Docker in VSCode

- The Docker extension makes it easy to build, manage, and deploy containerized applications in Visual Studio Code.
- Ensure that Docker is installed
- Install the Docker extension

Features in Docker Files

- You can get IntelliSense by clicking `^Space` when editing your `Dockerfile` and `docker-compose.yml` files, with completions and syntax help for common commands.
- In addition, you can use the Problems panel (⇧⌘M) to view common errors for `Dockerfile` and `docker-compose.yml` files.

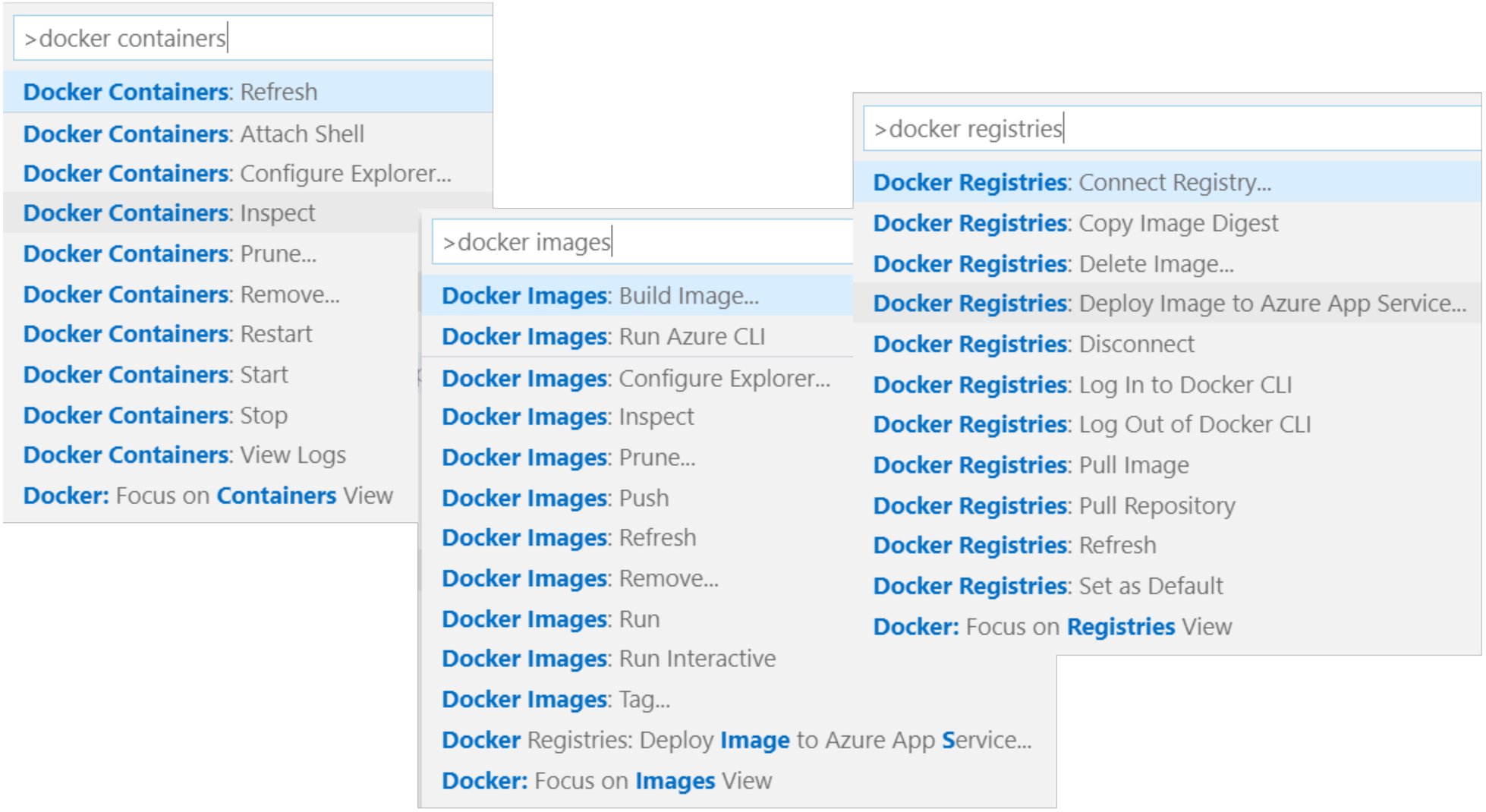
Generating Docker Files

- You can add Docker files to your workspace by opening the Command Palette (⇧⌘P) and using Docker: Add Docker Files to Workspace command.
- The command will generate Dockerfile and .dockerignore files and add them to your workspace.
- The command will also ask you if you want to add Docker Compose files as well, but this is optional.
- The extension can scaffold Docker files for most popular development languages (C#, Node.js, Python, Ruby, Go, and Java) and customizes the generated Docker files accordingly.
- When these files are created, it creates the necessary artifacts to provide debugging support for Node.js, Python, and .NET (C#).

Docker Explorer

- The Docker extension contributes a Docker Explorer view to VS Code.
- The Docker Explorer lets you examine and manage Docker assets: containers, images, volumes, networks, and container registries.
- You can rearrange the Docker Explorer panes by dragging them up or down with a mouse and use the context menu to hide or show them.

Docker Commands Available



Docker Compose

- Docker Compose lets you define and run multi-container applications with Docker.
- IntelliSense and tab completions when authoring `docker-compose.yml` files.
  Press `^Space` to see a list of valid Compose directives.
- Tooltips are provided when hovered over certain element.
- You can use `Compose Up` allows you to run all of your services at once
- You can use `Compose Up - Select Services` lets you select any combination of the services you want to run.
- You can use `Compose Down` to bring down various containers launch by Docker Compose
- When run docker images can run in specific ports and exposed through gitpod.io or Codespaces

Docker Registries

- You can display the content and push, pull, or delete images from Azure Container Registry, Docker Hub, GitLab, and more
- You can pull images directly from docker registries

Using Docker in VSCode

- In this lab, we will run Docker in VSCode
  - Running and Pulling Images
  - Programming against a service
  - Opening Ports to the location

SQL Editing

SQLTools in VSCode

- SQLTools provides connections to many of the most commonly used databases, making it easier to work with your data.
- Connects to MySQL, PostgreSQL, Microsoft SQL Server and many more...
  - Beautifier and formatter for SQL code
  - Query runner, history and bookmarks
  - Connection explorer
  - Generator for INSERT queries
  - Pluggable driver architecture
- To install **Click the Extensions** view (in the left bar), then search for @tag:sqltools-driver.
- This lists all the drivers available for SQLTools, choose the appropriate one for your use.

Using SQL Tools

- Click the SQLTools icon (in the left bar)
- Create a connection to your database. To do this, hover over **CONNECTIONS** in the SQLTools pane.
- Click the **"Add New Connection"** icon and choose the driver and enter the connection parameters.

Trying SQL in VSCode

- Let’s use the Sakila Database within VSCode after we load it up with Docker inside of VSCode
- Run some examples using SQLTools

Git

Git in VSCode

- Easily manage your source code and collaborate with others
- Supports common Git actions like pushing and pulling code, creating and merging branches, and committing code changes
- Actions are straight from the editor

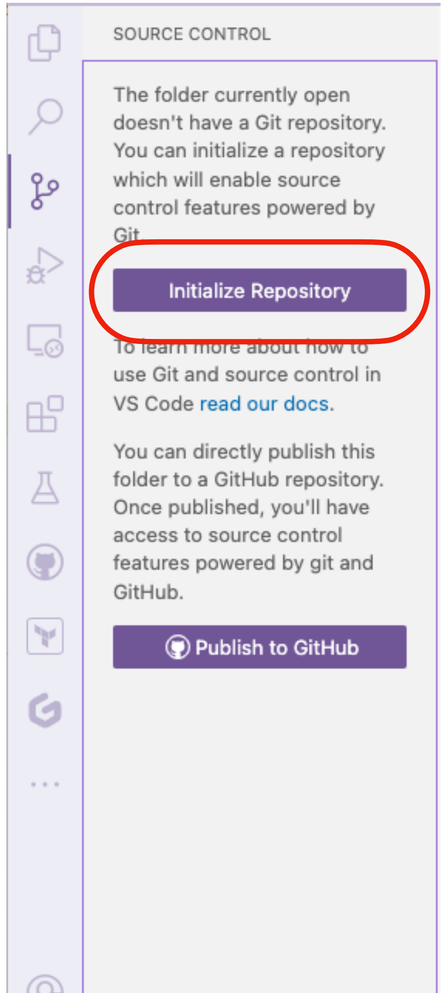
Git Requirements

- To use Git and GitHub in VS Code, first make sure you have Git installed on your computer.
- If Git is missing, the Source Control view shows instructions on how to install it. Make sure to restart VS Code afterwards.
- Additionally you can sign into VS Code with your GitHub account in the Accounts menu in the lower right of the Activity bar to enables additional features like Settings Sync, but also cloning and publishing repositories from GitHub.

Cloning a Repository

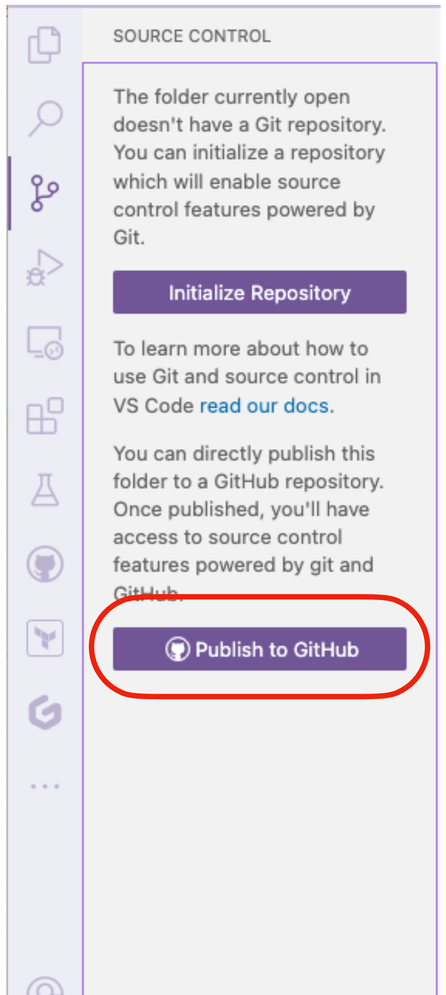
- To clone a repository from GitHub, execute the **Git: Clone** command or select the Clone Repository button in the Source Control view.
- If you clone from GitHub, VS Code will prompt you to authenticate with GitHub. This allows you to search all available repositories and clone private repositories.
- For other Git providers, enter the repository URL and select Clone and pick a folder.
- VS Code opens the folder once the repository is cloned on your local machine.

Initialize a Local Folder



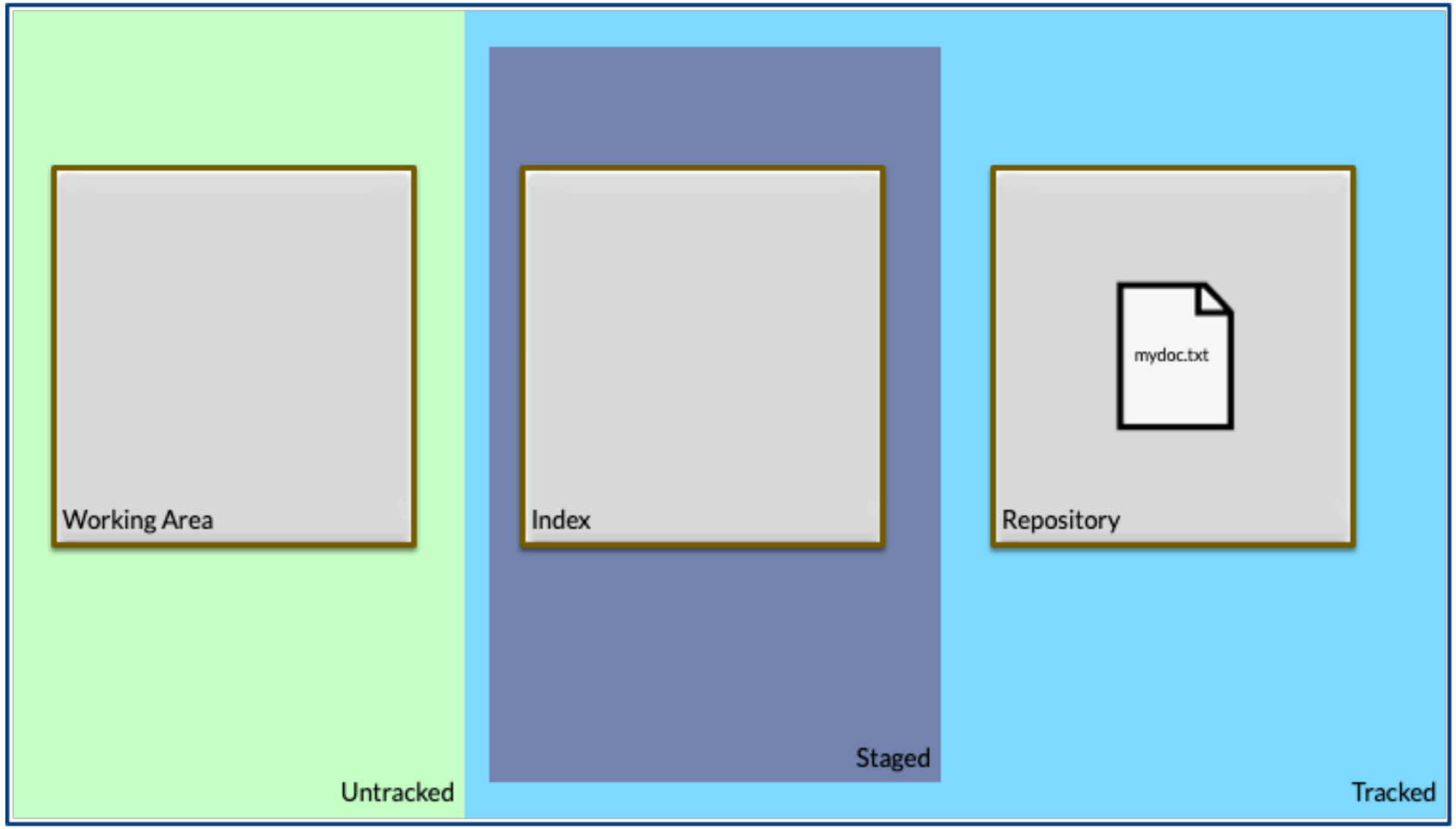
- To initialize a new local repository, pick an existing or new folder on your computer and open it in VS Code.
- In the Source Control view, select the Initialize Repository button.
- This creates a new Git repository in the current folder, allowing you to start tracking code changes.

Publish Local to Github



- Once you have a local Git repository set up, you can publish it to GitHub.
- This will create a new repository on your GitHub account, and push your local code to the remote repository.
- Use the Publish to GitHub command button in the Source Control view. You can then choose a name and description for the repository, and whether to make it public or private. Once the repository has been created, VS Code will push your local code to the remote repository.

Git Workflow Reminder



Staging and Committing Code Changes

- To stage a file, select the + (plus) icon next to the file in the **Source Control** view (^⇧G).
- This will add the file to the **Staged Changes** section, indicating that it will be included in the next commit.
- Staged changes can also be discarded by selecting the – (minus) icon next to the file.
- To commit your staged changes, type a commit message in the upper text box and select the Commit button.
- This saves your changes to the local Git repository, allowing you to revert to previous versions of your code if needed.
- You can navigate through and review all local file changes and commits in the **Timeline view** available in the bottom of the Explorer.

Pushing and Pulling

- Once you have made commits to your local Git repository, you can push them to the remote repository.
- The Sync Changes button indicates how many commits are going to be pushed and pulled.
- Selecting the Sync Changes button downloads (pull) any new remote commits and uploads (push) new local commits to the remote repository.
- You can enable the **Git: Autofetch** setting to always get an up-to-date remote commit indicator.

Using Branches

- In Git, branches allow you to work on multiple versions of your codebase simultaneously. This is useful for experimenting with new features or making large code changes without affecting the main codebase.
- The branch indicator in the Status bar shows the current branch and lets you switch to new and existing branches.
- To create a new branch, select the branch indicator and choose to create it from the current branch or another local one
- Type a name for the new branch, and confirm. VS Code creates a new branch and switches to it, allowing you to make changes to your code without affecting the main branch.
- To push the branch to the remote repository, select **Publish Branch in the Source Control view**. This will create a new branch on the remote repository, allowing you to collaborate with others in that branch.

Using VSCode for Git Merge & Git Diff

```
$ git config --global diff.tool vscode
$ git config --global difftool.vscode.cmd 'code --wait
--diff $LOCAL $REMOTE'
```

```
$ git config --global merge.tool vscode
$ git config --global mergetool.vscode.cmd 'code --wait
$MERGED'
```

Using Version Control in VSCode

- In this lab we will try out managing Git repositories
  - Committing
  - Pushing & Pulling
  - Conflict Resolution

Conclusion