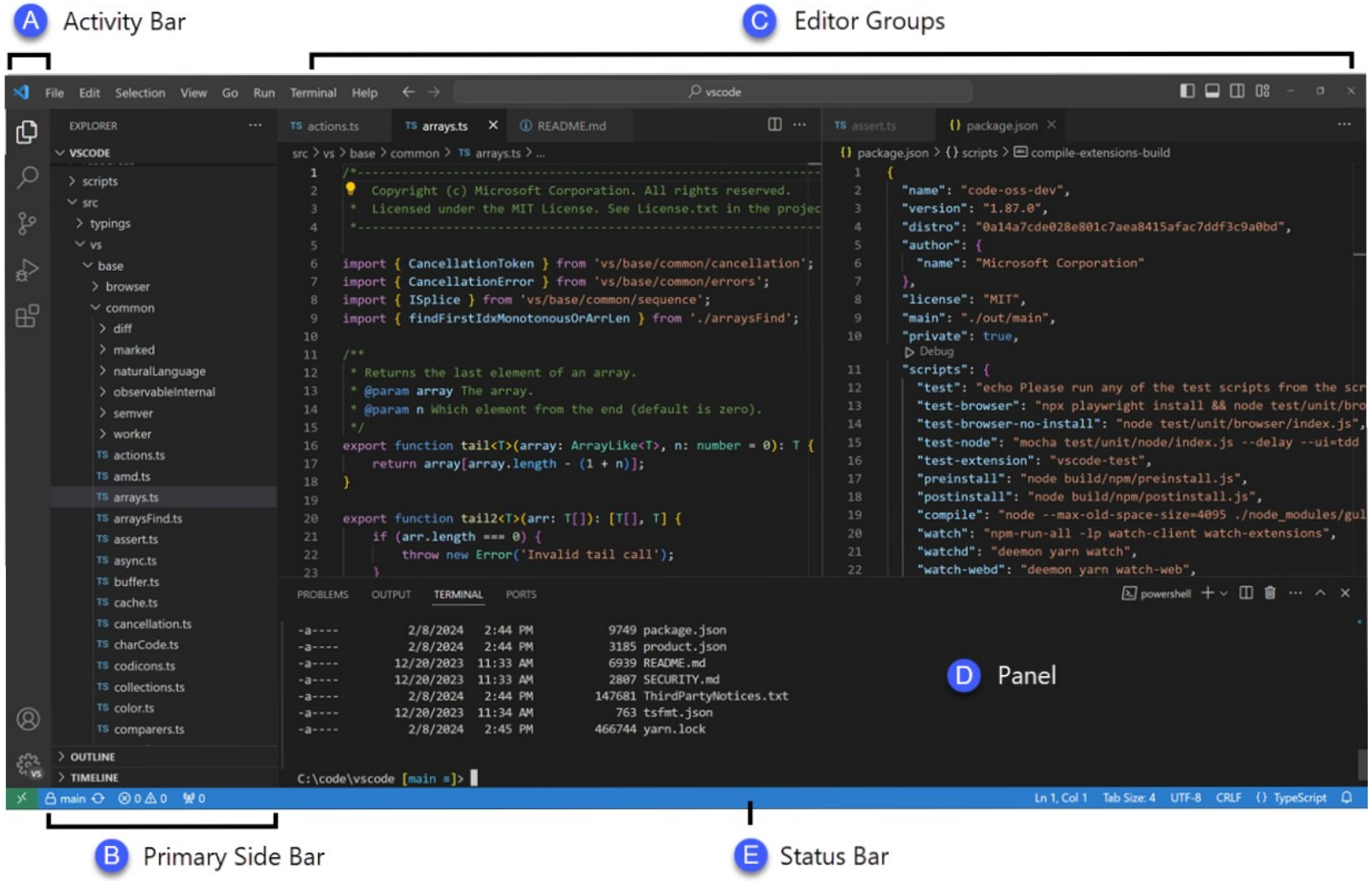
# DVT IDE for VS Code

## My First e Language Project

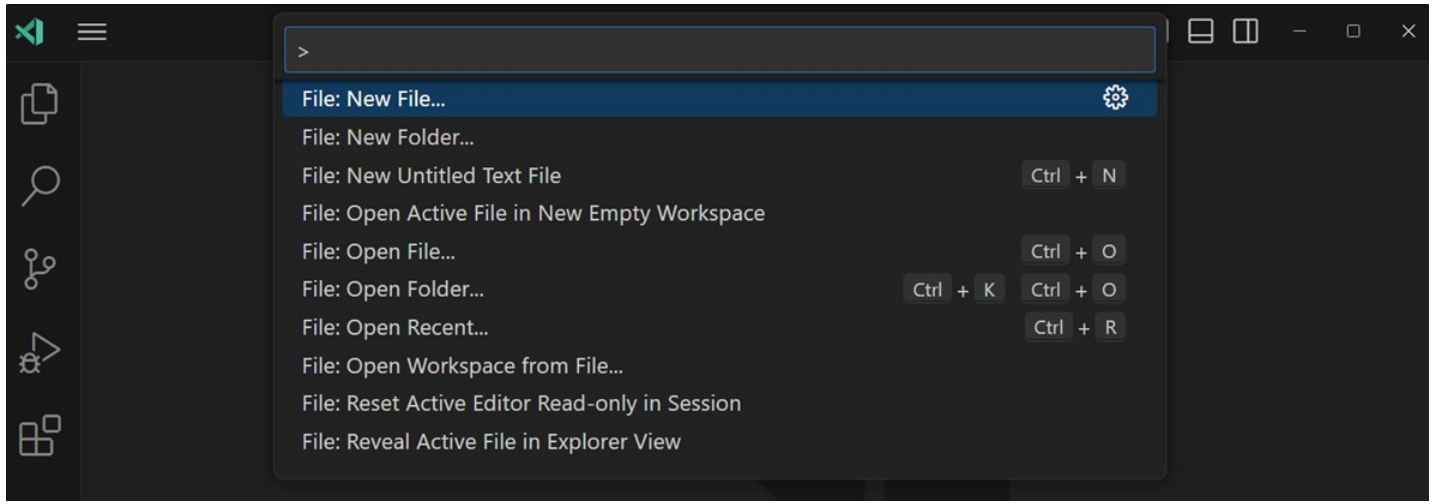
# VS Code Layout




*Source: https://code.visualstudio.com/docs/getstarted/userinterface#_basic-layout*

# Command Palette

One of the most essential features of VS Code is the **Command Palette**, which allows you to find and access all functionalities, including keyboard shortcuts for common operations.




*Source: https://code.visualstudio.com/docs/getstarted/userinterface#_command-palette*

*Use **View → Command Palette...** or the **Ctrl+Shift+P** keybinding to open the Command Palette.*

# The Project Location

- You typically create a project in a folder that contains the source code files.

> *It is not mandatory to create a project where the source files are.*
> *All "outside the project" sources will be presented in the **Compiled Files** and **Compile Order** views from the DVT Activity.*

- DVT creates a **.dvt** directory within the project's root folder, containing various DVT specific project settings.

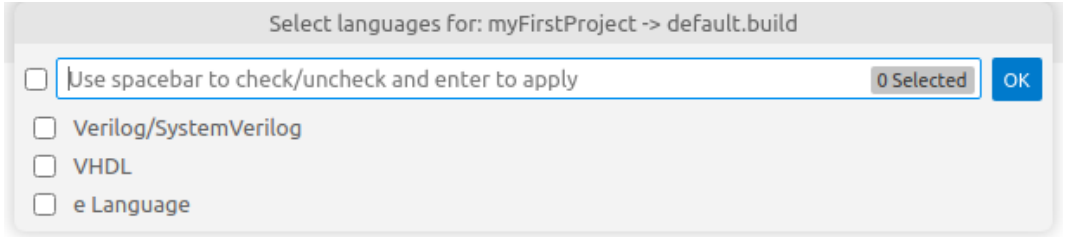
```
my_vip/
    e/
        core/
        examples/
```

→

```
my_vip/
    .dvt
    e/
        core/
        examples/
```

# Creating a new DVT Project

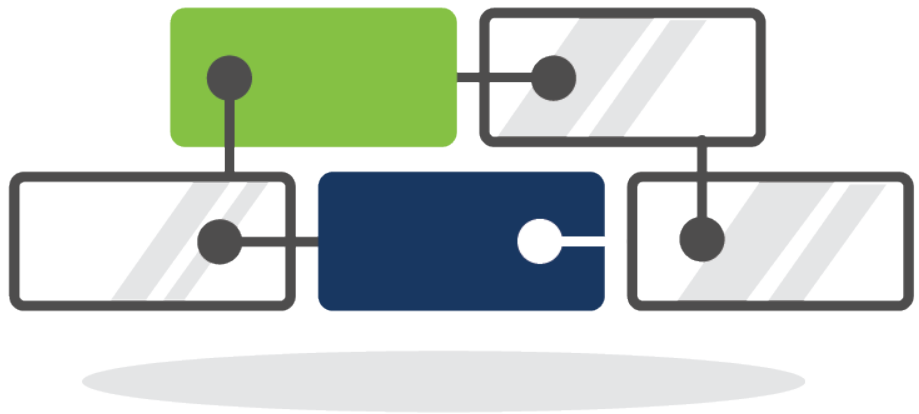
- From Command Palette, invoke the *DVT: Create a Project...* command
- Specify the project location
- Specify the project nature. (This step is necessary only if the project was not already configured ⟺ **.dvt** directory doesn't exists)




*Use the **DVT: Open a Predefined Project...** command to open one of the **Predefined Projects**, if you want to see how an example project is configured.*

# Build Configurations

- In order to provide advanced functionalities (like error signaling, hyperlinks, autocomplete, UVM components hierarchy, etc.) DVT analyzes the source code files in your project. This analysis process is called **build**.
- In order to build, DVT uses the compilation arguments that you specify in a build file.
  The default build file is **.dvt/default.build**.
- By default, DVT scans the project folder and automatically detects how to compile the source code files.
  This is specified by the **+dvt_init_auto** directive used by default in the build file.



# The .build File Syntax

- In a **.build file** you can specify:
  - Absolute paths or project root relative paths
  - System variables like *$var*, *${var}* or *%var%*
  - *+dvt_setenv+SPECMAN_PATH=<path>* directives to configure the SPECMAN_PATH
  - *+define+<DEFINE>=<replacement>* or *-define <DEFINE>=<replacement>* directives
  - *-f <path>* or *-F <path>* to include a file containing more arguments

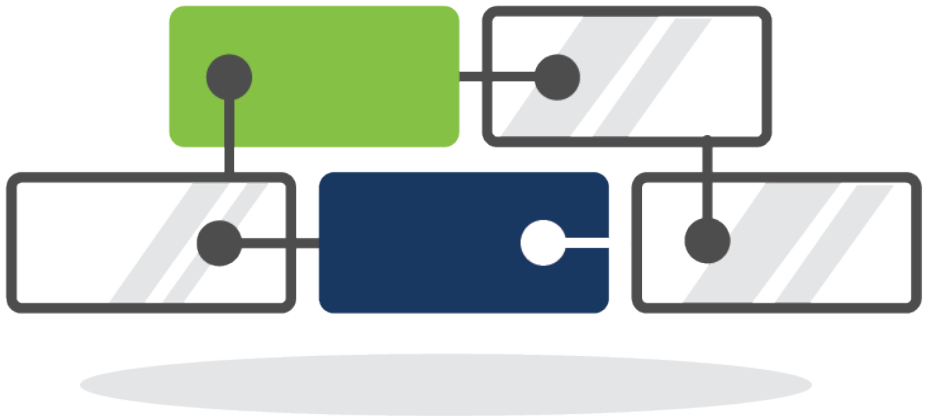
- For more options see:
  **https://eda.amiq.com/documentation/vscode/elang/toc/build-config/index.html**

# Build the Project

Building a project means compiling and indexing all the source files in order to provide hyperlinks, autocomplete, types browsing ...

> ***Full Build*** *or* ***Rebuild*** *= compile all using directives from the current build file.*
> ***Rebuild Tests*** *= compile only test files; faster than full build when adding / removing tests.*
> ***Incremental Build*** *= compile changes; as you edit files, DVT incrementally builds the project.*

**After changing *.dvt/*.build*, you have to Rebuild the project using the *DVT: Build...* command from Command Palette or by using the button.**



# Check the Build

- The **Compile Order** and the **Compiled Files** views show all the compiled files

> *You can open the views using the following commands from the Command Palette:*
>
> - ***DVT: Focus on Compile Order View***
> - ***DVT: Focus on Compiled Files View***
>
> *Both are typically located on the left side of the Editor, in the Primary Side Bar → DVT Activity.*

- The **Problems View** shows all the errors and warnings in your project
- It is recommended to walk through the errors in the following order:

> ***Build Config Errors*** *→ file not found, imported file not found ...*
>
> ***Syntax Errors*** *→ unexpected action “whie” instead of “while” ...*
>
> ***Semantic Errors*** *→ duplicate declarations, extending non existing types ...*
>
> *You can open the Problems View from menu View → Problems.*
>
> *It is typically located below the Editor, in the Panels area.*

# Features Overview [1]

- **Hyperlinks:** in the editor, place the cursor over any struct names, method names, and in general any identifier. Use *Ctrl + Click* / *Go to Definition* to go to the definition. In addition to this hyperlink, you can find more hyperlinks in the Context Menu or in the Command Palette (eg: type definition, show first implementation, show when subtype, etc.)
- **Show Usages/Readers/Writers:** in the editor, place the cursor over an identifier, next invoke the *Find All References...* / *Show Readers* / *Show Writers* commands to see all places where a variable, function, struct, macro etc. is used / read / written.
- **Autocomplete:** in the editor *Ctrl + Space* / *Trigger Suggest* command triggers autocomplete. For example *driver.<Ctrl+Space here>* will show driver API.
- **Quick Fixes:** in the editor, on a line with errors, invoke the *Quick Fix...* command to correct typos, to declare missing variables etc.
- **Rename Refactoring:** place the cursor over an identifier and invoke the *Rename Symbol* command to rename and update all usages across the entire project.

# Features Overview [2]

- **Type Hierarchy:** place the cursor over a struct name and use *Types: Show Type Hierarchy* command see the OOP inheritance.
- **Verification Hierarchy:** place the cursor over a unit name and use *DVT: Show Verification Hierarchy* to see the unit instance tree
- **Layers:** place the cursor over a struct / unit / method / event and use *DVT: Show Layers* to see all its extensions

- **All Structs / Units / Enums /...:**
  *Go to Symbol in Workspace...* command / # in the Palette

- **To quickly find a struct, unit, macro or compiled file:** #<query> in Palette
  You can find here the list of available queries:
  https://eda.amiq.com/documentation/vscode/elang/toc/workspace-symbols/index.html

- **To quickly open a file:** *Go to File...* command / No prefix in Palette

# Features Overview [3]

- **Diagrams:** use *DVT: Show Diagram...* command
  - on a struct to get the UML diagrams
  - other diagrams available from dedicated contexts: unit instance diagram / Bitfield for vr_ad registers
- **Code Formatting:** use *Format Document* or *Format Selection* commands to format the whole editor or selection
- **Toggle Comment:** *Toggle Line Comment* or *Toggle Block Comment* for current line or selection
- **Matching Begin – End:** *DVT: Jump to Matching Pair* / *DVT: Select to Matching Pair* on any curly bracket or parentheses

- **All Shortcuts:** use *Preferences: Open Keyboard Shortcuts* to see the list of all shortcuts

**And many more, please contact support@amiq.com for a demo.**

# More Information

- Demo Movies:
  **https://eda.amiq.com/tutorials**
  - *Verification features demo:* https://eda.amiq.com/tutorials/accelerating-hardware-verification-using-dvt-ide-for-visual-studio-code
  - *Getting started with DVT in VS Code:* https://eda.amiq.com/tutorials/getting-started-with-dvt-ide-for-visual-studio-code
  - *Integrating DVT with Remote-SSH:* https://eda.amiq.com/tutorials/remote-development-using-dvt-ide-for-vs-code-over-ssh

- Cheatsheet for commonly used keyboard shortcuts:
  **https://eda.amiq.com/cheatsheets/DVT_IDE_for_VS_Code_Keyboard_Shortcuts_and_Commands.pdf**

- Step by step basic tutorial:
  **https://eda.amiq.com/getting-started/My_First_e_Language_Project_with_the_DVT_for_VSCode.pdf**
  Please contact us for more training materials

- Features with snapshots:
  **https://eda.amiq.com/documentation/vscode-readme-changelog/latest/**

- User Guide:
  **https://eda.amiq.com/documentation/vscode/elang/index.html**

- Datasheet:
  **https://eda.amiq.com/datasheets/amiq_dvt_ide_datasheet.pdf**

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