VS Code and You

Why You Should Make Your Computer Work for You (and How!)

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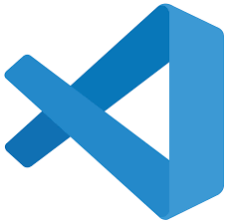
What is an IDE?

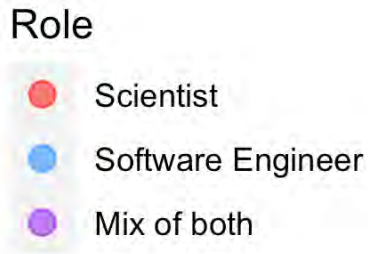
- Integrated Development Environment
- Helps programmers in code development process

- Combines software editing, building, testing
- Speeds up day-to-day tasks





IDE Usage within CGD



No really, what's an IDE?

Text editor, no syntax highlighting

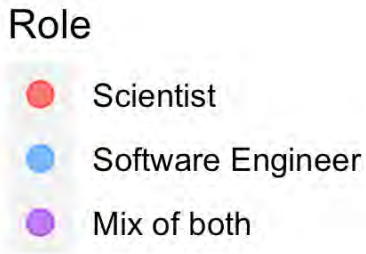
Text editor, syntax highlighting

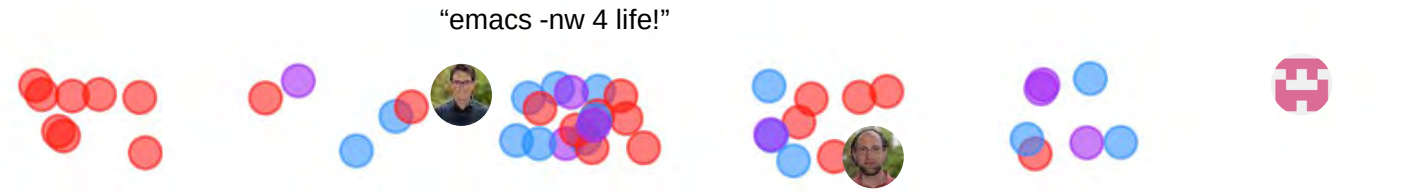
Some IDE usage

Moderate IDE usage

Heavy IDE usage

IDE Usage within CGD





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Pop quiz

What is 5,772,127 ÷ 4,513 ?

Pop quiz

What is 5,772,127 ÷ 4,513 ?

Scenario

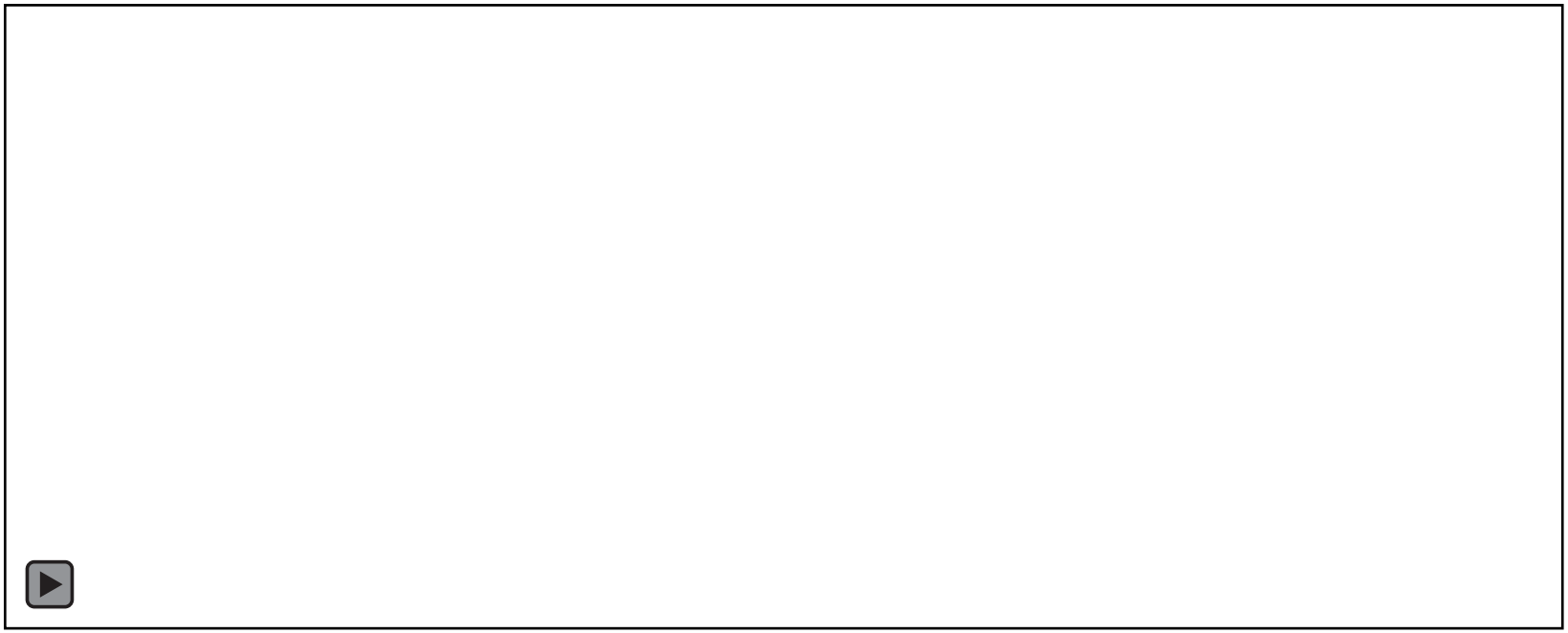
We'd like to rename an defined type

```
! FATES COHORT TYPE
jessica needham, 5 months ago | 3 authors (You and others)
type, public :: fates_cohort_type
    You, 11 months ago • move cohort type into its own modul
  ! POINTERS
  type (fates_cohort_type), pointer :: taller   => null() !
  type (fates_cohort_type), pointer :: shorter  => null() !
```

```
~/Documents/ncar/CTSM/src/fates ± main
❯ grep -o "fates_cohort_type" -r * | wc -l
     196
```

Scenario

We’d like to rename an defined type



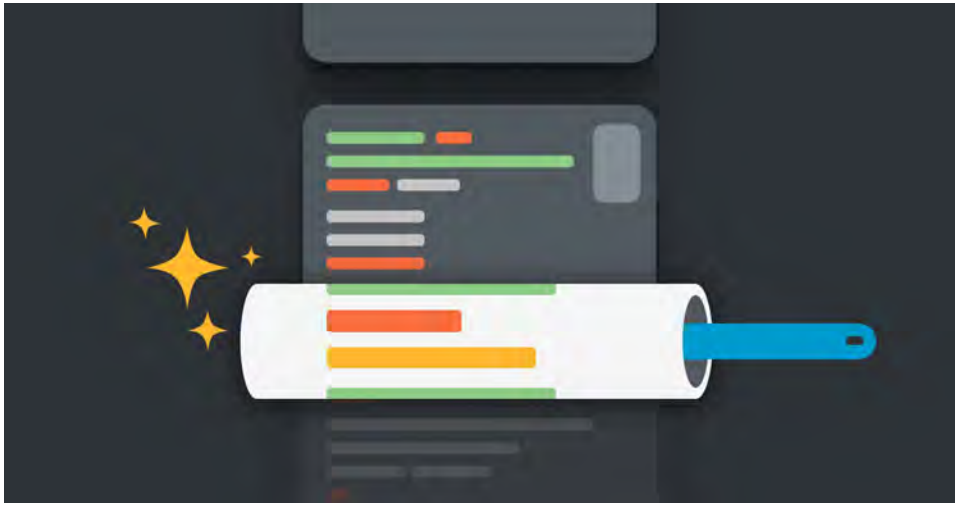
What can IDEs do?

- Syntax highlighting
- Code autocompletion
- Refactoring
- Code navigation
- Build, execution, and debugging tools
- Source control GUI

Linter

Tool to analyze code

- knows language syntax
- can help optimize code
- find typos & syntax errors
- warn about unused variables
- conform to language (or source code) standards



Syntax highlighting

```fortran
! fortran
a = (/1, 2, 5, 6, 7/)
n = size(a)
b = n + 1
```

```python
# python
a = [1, 2, 5, 6, 7]
n = len(a)
b = n + 1
```

```java
// Java
int[] a = {1, 2, 5, 6, 7};
int n = a.length;
int b = n + 1;
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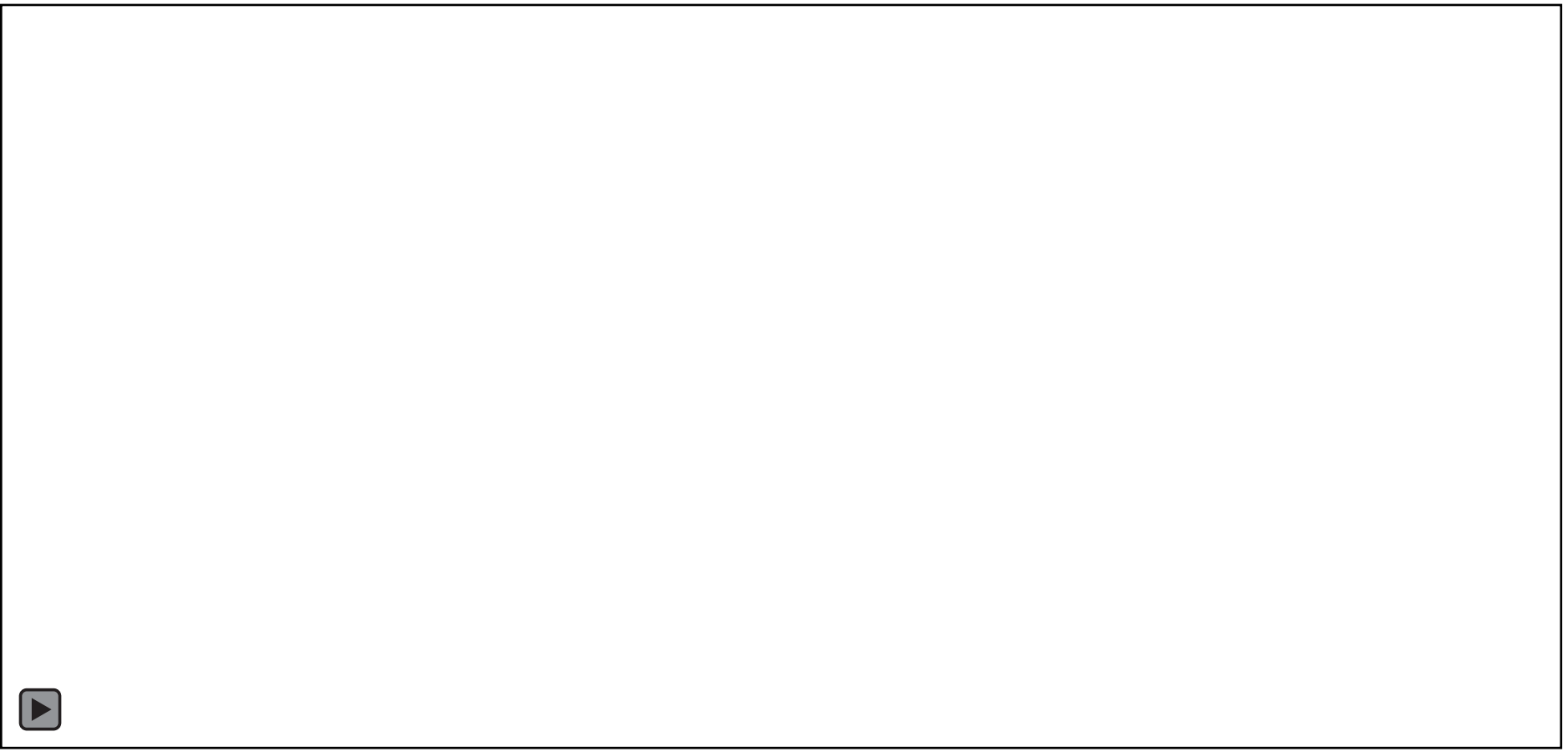
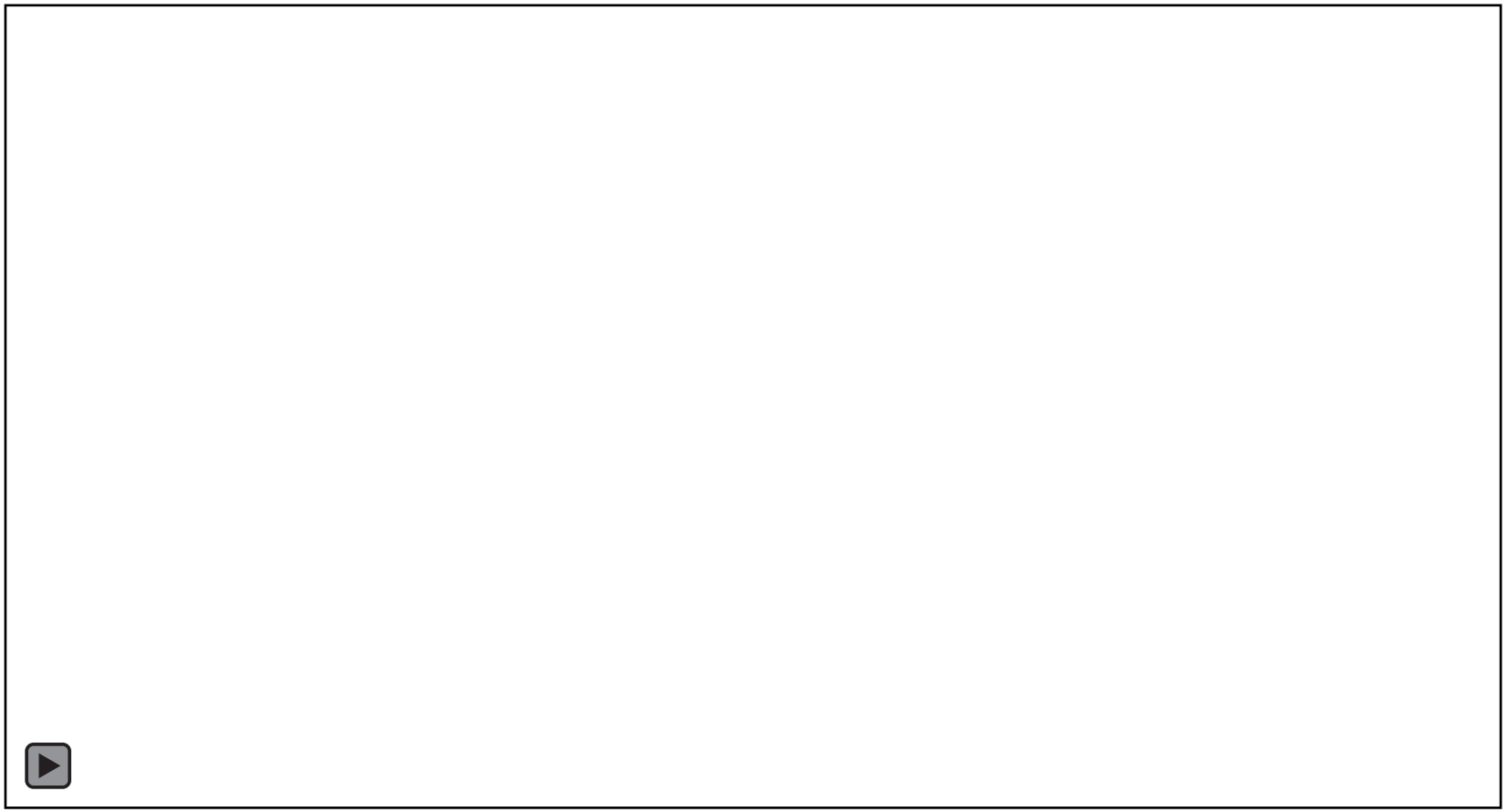
Code Autocompletion and Documentation



Code Autocompletion and Documentation

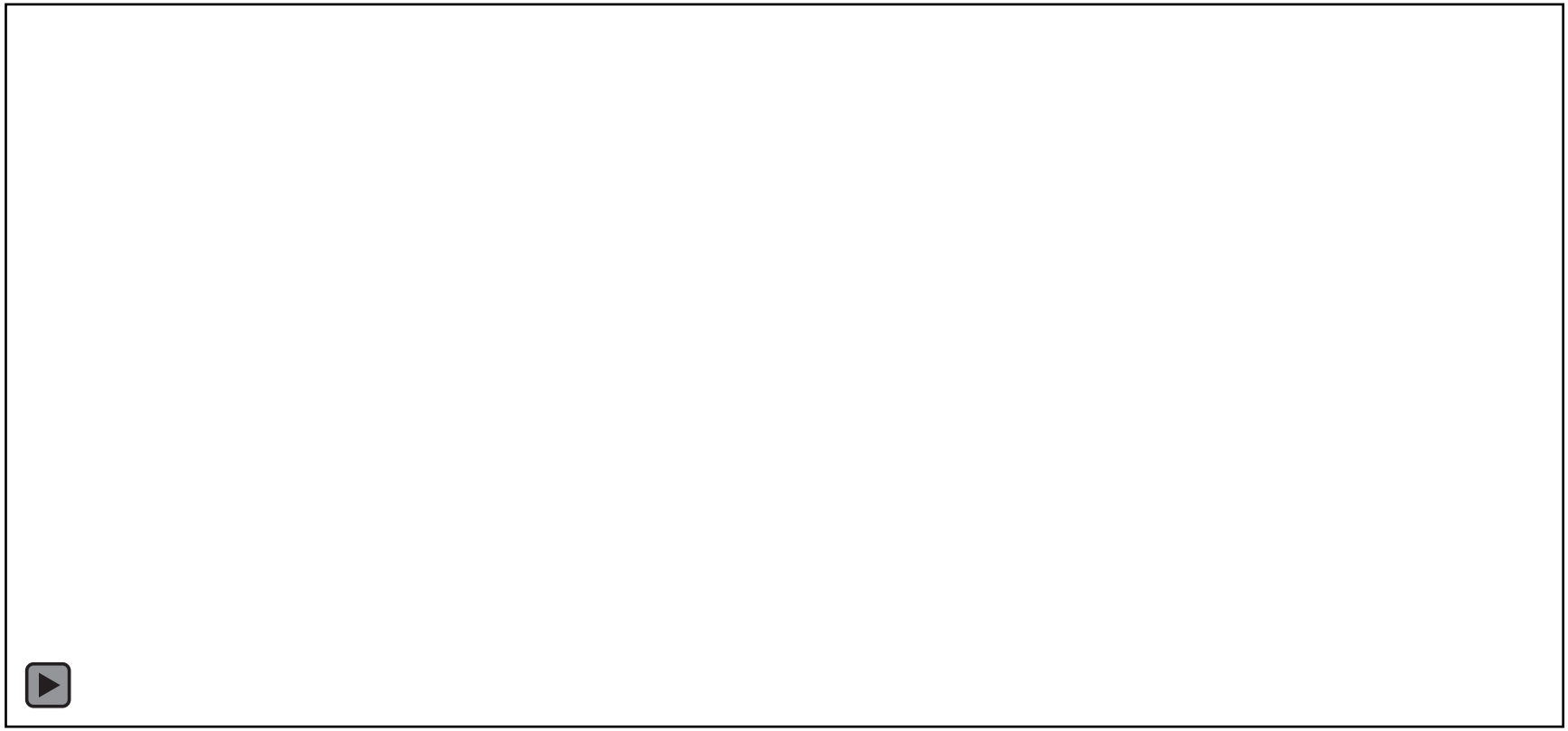
IntelliSense – intelligent code completion; quick access to documentation

Code Navigation



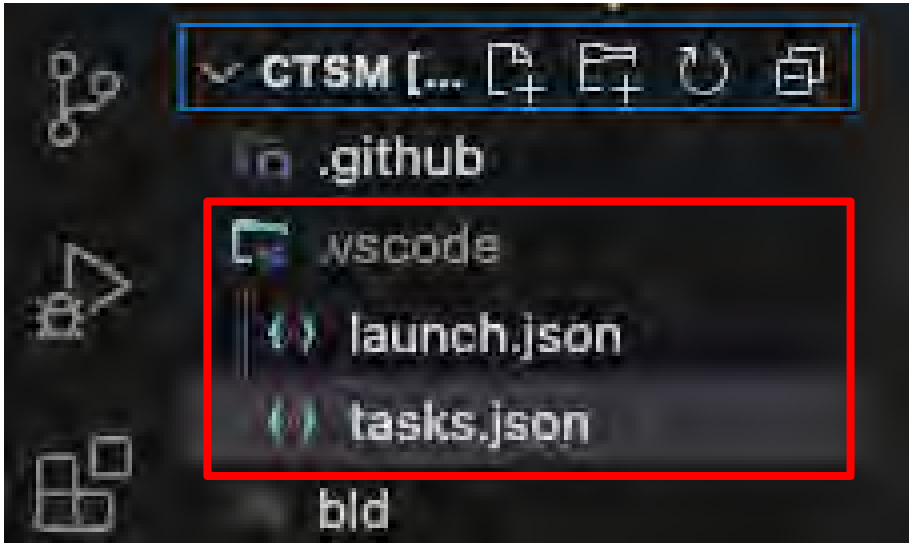
Code Refactoring

PyCharm



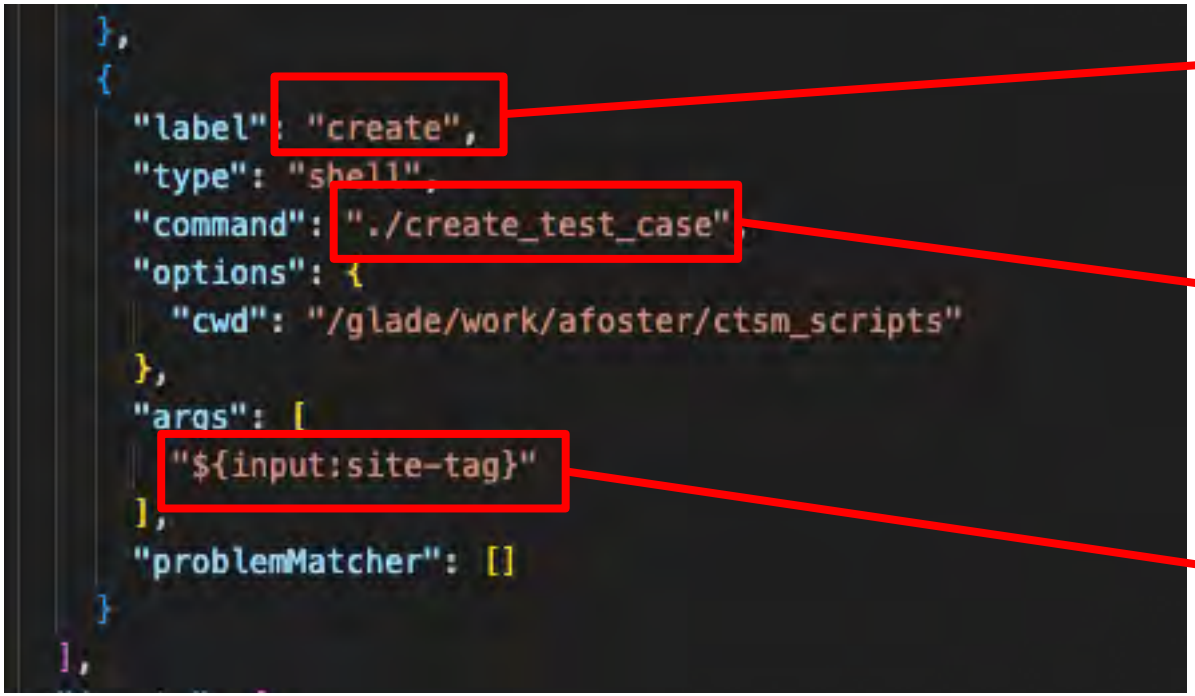
Building, Executing, Debugging

Can build, execute, and debug code (yes even Fortran!) from within VS Code



Building, Executing, Debugging

tasks.json – for automating everyday tasks (my use)



”create” – creates a CTSM case

bash script that creates a case using an input config file

script argument (i.e. the config file name)

Building, Executing, Debugging

tasks.json – for automating everyday tasks (my use)

```
    ],
    "inputs": [
        {
            "id": "site-tag",
            "type": "pickString",
            "description": "Enter the type of test or site name.",
            "options": [
                "BONA",
                "FATES_f45",
                "CLM_f45"
            ],
            "default": "CLM_f45"
        },
        {
```

Building, Executing, Debugging

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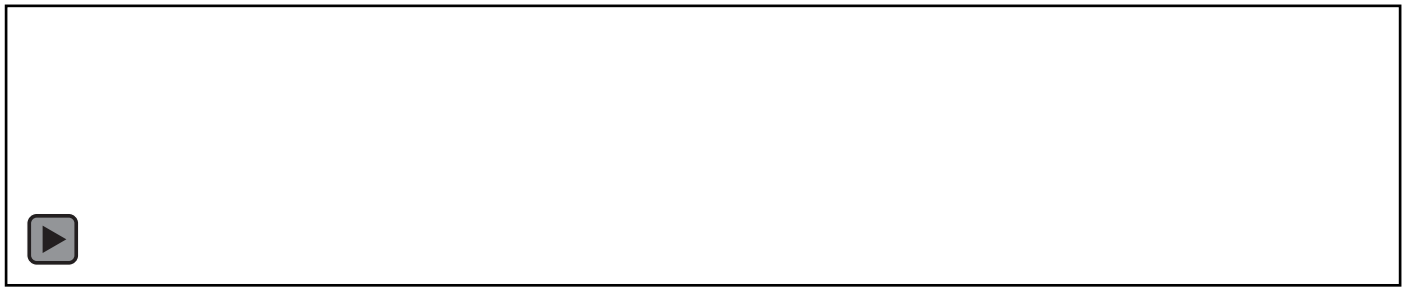
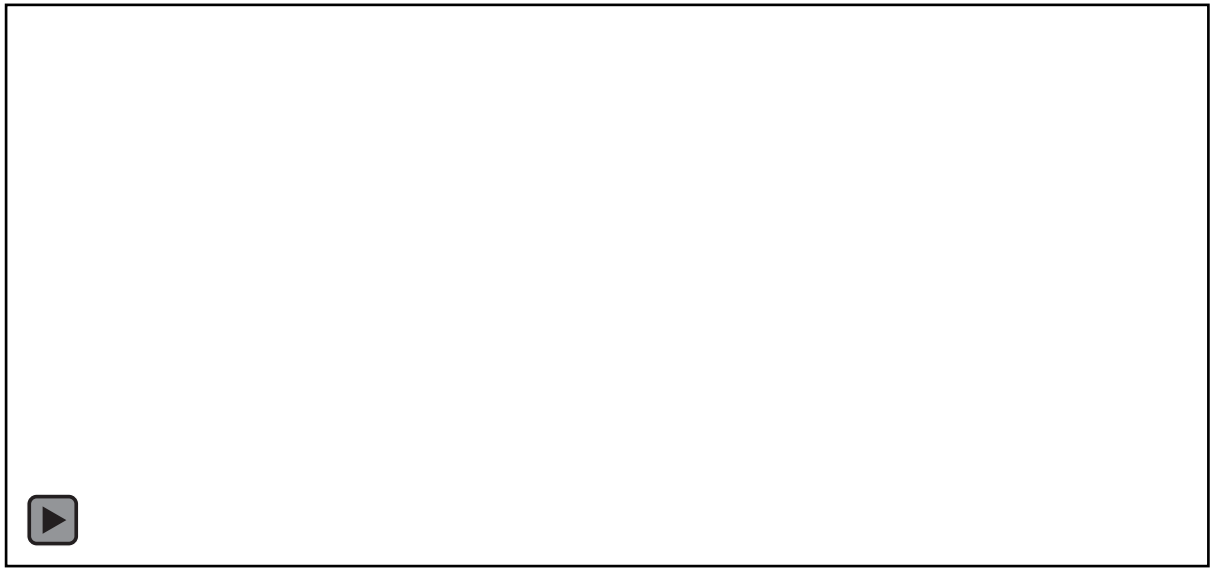
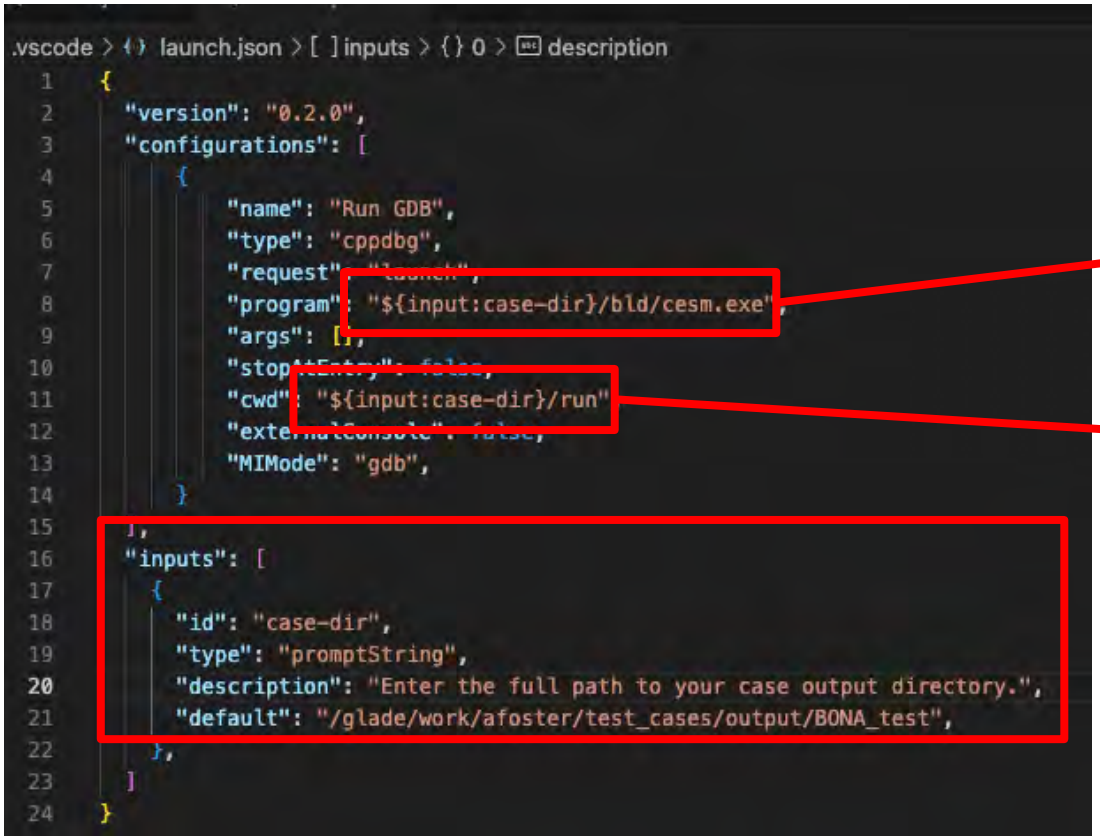




Building, Executing, Debugging

launch.json – debugging!



executable

run directory

Other stuff!

- Customizing your editor
  - custom themes
  - guide bars
  - interfacing with git
  - mini-window
  - source control pane and outline
- emacs/vim enthusiasts can use emulator
- remote ssh
- gitlens
- lots of other extensions

IDE Usage within CGD