



# Your Code Runs in Docker, Why Not Your IDE?

Thomas Bley, June 2021 @ ipc

# About me

- Senior PHP Developer
- Linux, PHP, MySQL since 2001
- studied at TU München
- working for Bringmeister in Berlin



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# Why use Docker?

- easy to manage different isolated environments
- quick and easy to setup development environments
- easy to share with other developers
- easy to integrate in continuous integrations
- easy to standardize environments
- easy to test new things
- write once, run anywhere
- big ecosystem with Docker Hub

→ we love to run our code in Docker



# Why use an IDE?

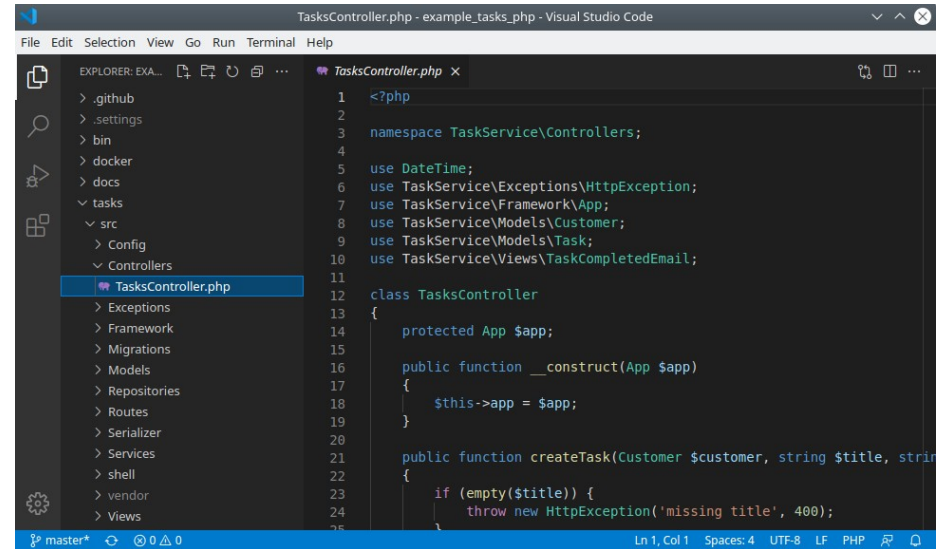
IDE = Integrated Development Environment

- flexible text editor
  - code completion, formatting
  - automatic checks for errors, debugging
  - integrated version control
  - many other features with extensions
- more productivity, more quality

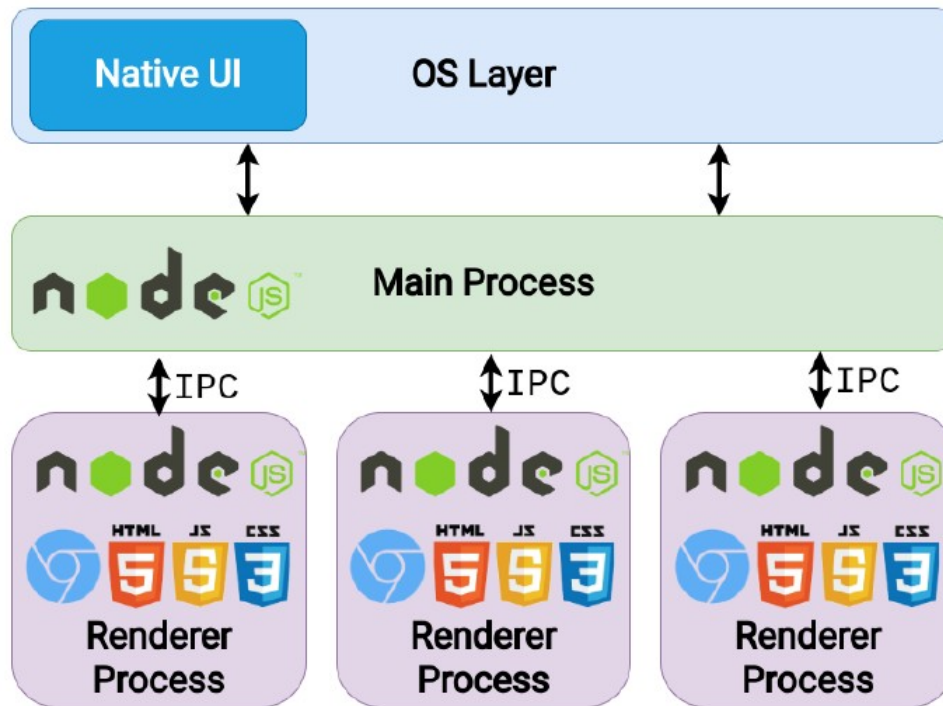
**but:** installed as desktop application, configured manually

# What is Visual Studio Code?

- free and open source IDE from Microsoft
- lightweight, very fast
- supports many programming languages
- big community
- many extensions
- desktop application, based on Electron (by GitHub)
- marketplace is not open source, proprietary license



# What is Electron?



Framework for cross platform desktop applications from GitHub

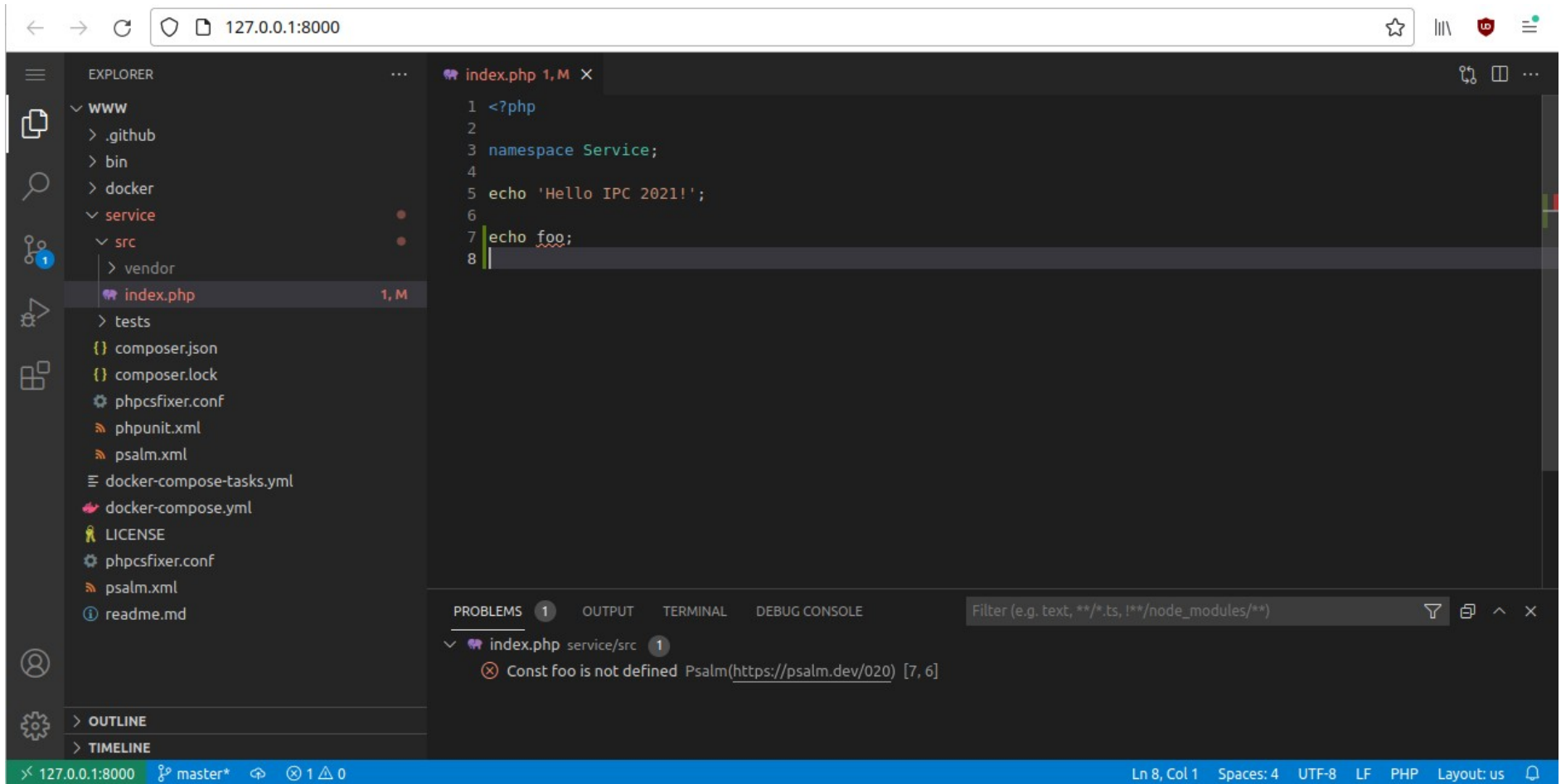
- combines the Chromium rendering engine (Frontend)
- with node.js runtime (Backend)

source:

[livecodestream.dev/post/how-to-build-desktop-applications-using-electron-the-right-way/](https://livecodestream.dev/post/how-to-build-desktop-applications-using-electron-the-right-way/)



# Can we run VS Code in the browser?



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# Code-Server

- “VS Code in the browser”
- fork of VS Code, open source
- runs backend part on server, frontend part in browser
- supports VSX extensions
- can be installed as Debian package (94M)
- not allowed to use VS Code Marketplace
- uses Open VSX Registry as marketplace (open-vsx.org)

sources:

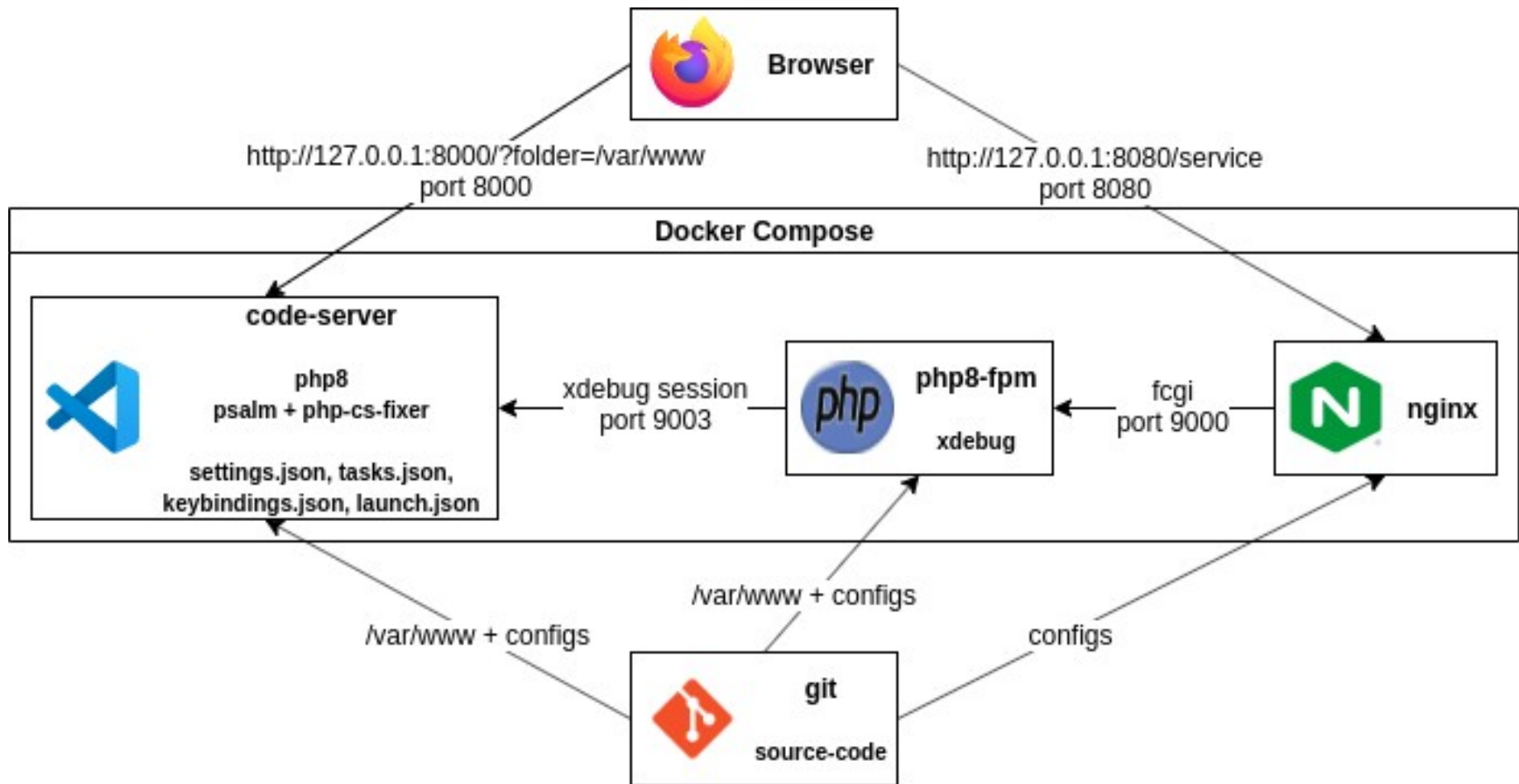
[github.com/cdr/code-server](https://github.com/cdr/code-server)

[github.com/cdr/code-server/blob/main/docs/FAQ.md](https://github.com/cdr/code-server/blob/main/docs/FAQ.md)





# Setup



# Dockerfile

```
# Setup a Debian container with PHP 8.0, Composer and code-server
```

```
# docker-compose build --build-arg UID=$(id -u)
```

```
FROM debian:buster-slim
```

```
RUN apt-get -y update \
```

```
&& DEBIAN_FRONTEND=noninteractive apt-get -y --no-install-recommends install apt-transport-https curl \
    ca-certificates \
```

```
&& echo "deb https://packages.sury.org/php/ buster main" >/etc/apt/sources.list.d/ondrej-debian-php.list \
```

```
&& curl -s https://packages.sury.org/php/apt.gpg >/etc/apt/trusted.gpg.d/php.gpg \
```

```
&& apt-get -y update \
```

```
&& DEBIAN_FRONTEND=noninteractive apt-get -y --no-install-recommends install git php8.0-cli \
    php8.0-mbstring php8.0-curl php8.0-xml php8.0-zip \
```

```
&& curl -#L -o /tmp/code-server.deb \
```

```
https://github.com/cdr/code-server/releases/download/v3.10.2/code-server_3.10.2_amd64.deb \
```

```
&& dpkg -i /tmp/code-server.deb \
```

```
&& curl -#L -o /usr/bin/composer https://getcomposer.org/download/latest-stable/composer.phar \
```

```
&& chmod +x /usr/bin/composer
```

```
ARG UID
```

```
RUN useradd -m docker -u ${UID} -d /config -s /bin/bash
```

```
USER docker
```



# Dockerfile #2

```
# Add composer libraries, install VS Code extensions, start code-server

ENV SERVICE_URL=https://open-vsx.org/vscode/gallery
ENV ITEM_URL=https://open-vsx.org/vscode/item

RUN composer global require --no-suggest --no-progress --no-cache vimeo/psalm friendsofphp/php-cs-fixer

ADD getpsalm.psalms-vscode-plugin-1.2.2.vsix /tmp/
RUN code-server --install-extension felixfbecker.php-debug \
    --install-extension fterrag.vscode-php-cs-fixer \
    --install-extension /tmp/getpsalm.psalms-vscode-plugin-1.2.2.vsix \
    --install-extension alphabotsec.vscode-eclipse-keybindings \
    && chmod -R a+w /config

WORKDIR /var/www
EXPOSE 8000
CMD [ "code-server", "--auth", "none", "--disable-telemetry", "--disable-update-check", "--bind-addr", "0.0.0.0:8000" ]
```



# docker-compose.yml

code-server:

build:

context: ./docker/code-server

args: **[UID]**

cap\_drop: [all]

**usersns\_mode: "host"**

volumes:

- **./:/var/www**
- ./bin:/usr/local/sbin
- ./docker/code-server/**settings.json**:/config/.local/share/code-server/User/settings.json
- ./docker/code-server/**tasks.json**:/config/.local/share/code-server/User/tasks.json
- ./docker/code-server/**keybindings.json**:/config/.local/share/code-server/User/keybindings.json
- ./docker/code-server/**launch.json**:/var/www/.vscode/launch.json #xdebug

ports:

- "**127.0.0.1:8000**:8000"

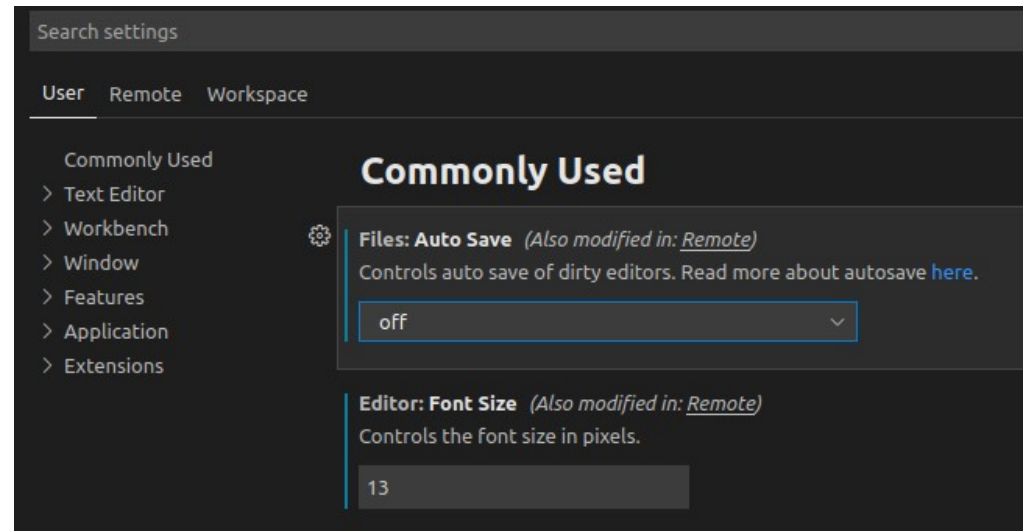


# Pre-Configure VS Code settings

# settings.json

```
{  
  "files.autoSave": "afterDelay",  
  "editor.minimap.enabled": false,  
  "editor.renderIndentGuides": false,  
  "editor.fontSize": 13,  
  "workbench.colorTheme": "Default Dark+",  
  ....  
}
```

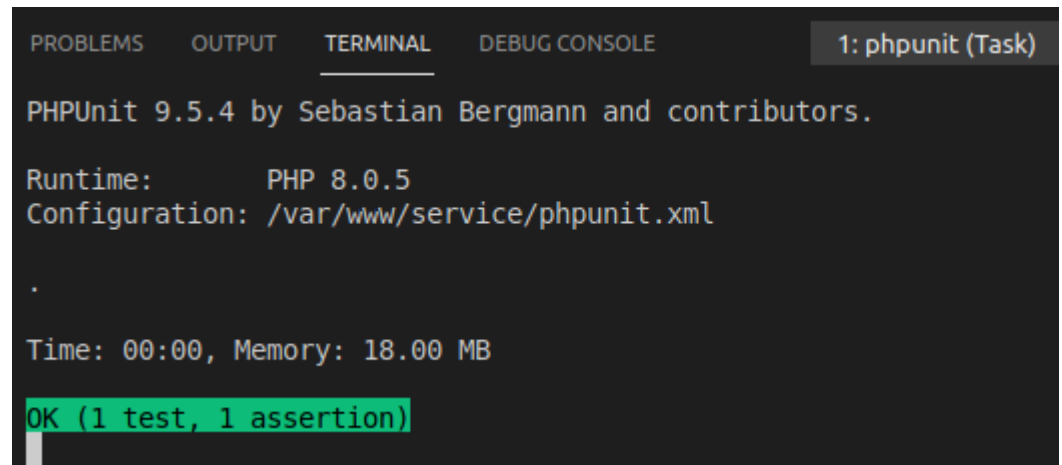
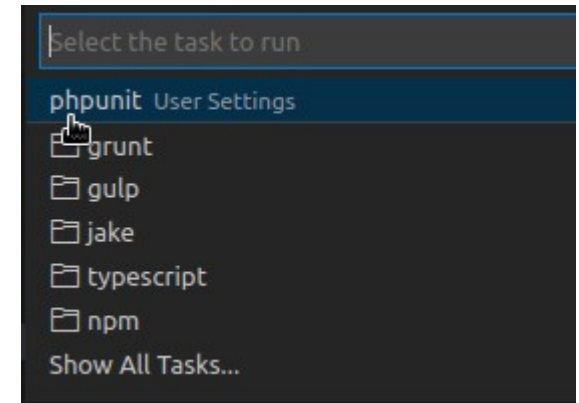
```
git diff docker/code-server/settings.json  
+++ b/docker/code-server/settings.json  
@@ -35,5 +35,6 @@  
+   "files.autoSave": "off"  
}
```



# Can we run tasks?

# tasks.json (Ctrl + Shift + t)

```
{
  // See https://code.visualstudio.com/docs/editor/tasks#vscode
  "version": "2.0.0",
  "tasks": [{
    "label": "phpunit",
    "type": "shell",
    "problemMatcher": [],
    "command": "phpunit.phar",
    "options": {"cwd": "/var/www/service"},
    "presentation": {
      "showReuseMessage": false,
      "echo": false,
      "clear": true
    }
  }]
}
```



# How about keyboard shortcuts?

```
# keybindings.json

[
  {"key": "ctrl+shift+t", "command": "workbench.action.tasks.runTask"},

  // switch file tabs, normally: ctrl+tab
  {"key": "ctrl+[Backquote]", "command":
    "workbench.action.quickOpenLeastRecentlyUsedEditorInGroup"},
  {"key": "ctrl+[Backquote]", "command":
    "workbench.action.quickOpenNavigateNextInEditorPicker",
    "when": "inEditorsPicker && inQuickOpen"},

  // close active file tab, normally: ctrl+w
  {"key": "ctrl+e", "command": "workbench.action.closeActiveEditor"}
]

# Some keyboard shortcuts are exclusively reserved to the browser (e.g. ctrl+tab).

# With Chrome you can use "Menu -> Install code-server" to run code-server
  as a Chrome App to bypass reserved keyboard shortcuts.
```



# Debugging (xdebug)

The image shows a development environment with VS Code and a web browser. In VS Code, the file `index.php` is open, showing the following code:

```
1 <?php
2
3 namespace Service;
4
5 $message = 'Hello IPC 2021!';
6
7 xdebug_break();
8
9 echo $message;
10
```

The `xdebug_break();` line is highlighted with a red dot, indicating a breakpoint. The `RUN AND DE...` button is set to `Listen for Xd...` and a `Start Debugging` button is visible. The `WATCH` panel is empty, and the `CALL STACK` panel is also empty. The `BREAKPOINTS` panel shows `index.php service/src` with `Everything` checked.

A web browser window is open at `127.0.0.1:8080/service`, displaying the text `Hello IPC 2021!`. Another browser window is open at `127.0.0.1:8000/?folder=/var/www`, showing the VS Code interface with the `index.php` file open. The `WATCH` panel shows `$message: "Hello IPC 2021!"`. The `BREAKPOINTS` panel shows `index.php service/src` with `Everything` checked. The `CALL STACK` panel is empty. The `RUN AND DE...` button is set to `Listen for Xd...` and a `Start Debugging` button is visible. The `WATCH` panel is empty, and the `CALL STACK` panel is also empty. The `BREAKPOINTS` panel shows `index.php service/src` with `Everything` checked.



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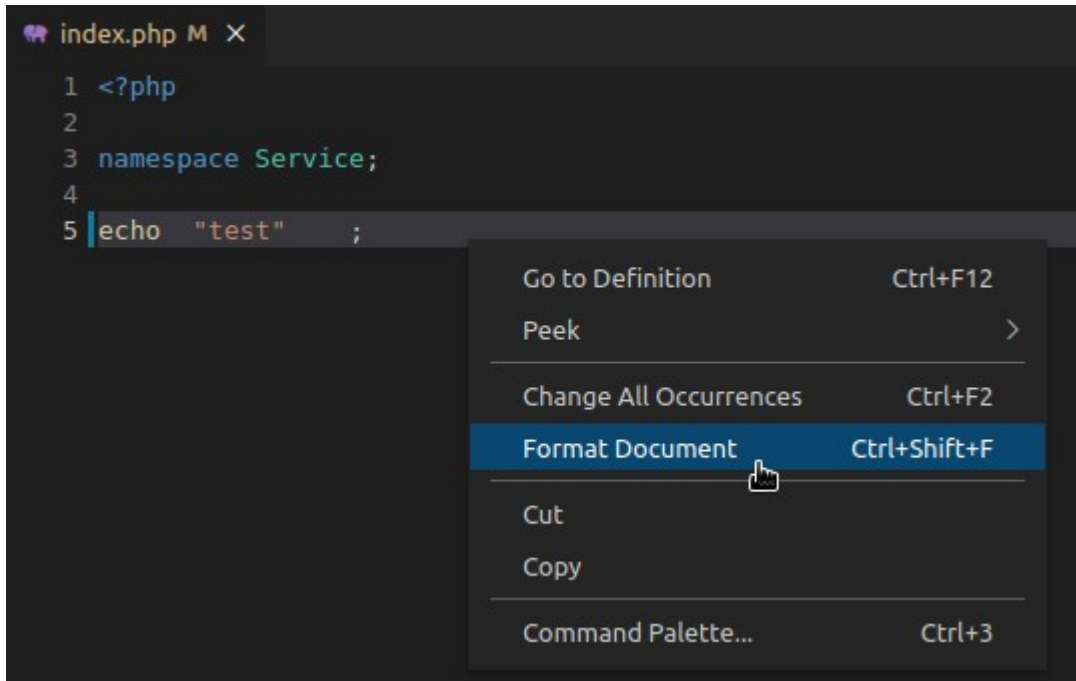
# Auto-Completion (psalm language server)

```
index.php 2, M X
1 <?php
2
3 namespace Service;
4
5 echo myfoo
6 \Service\myfoo... function Service\myfoobar(int $a...
7
8 /** a foobar function */
9 function myfoobar(int $a, string $b, bool $c): string {
10     return sprintf('%s-%b-%c', $a, $b, (int) $c);
11 }
12
```

```
index.php 1, M X
1 <?php
2
3 namespace Service;
4
5
6
7
8 echo foobar();
9
10 /** a foobar function */
11 function foobar(int $a, string $b, bool $c): string {
12     return sprintf('%s-%b-%c', $a, $b, (int) $c);
13 }
14
```



# Auto-Formatting (php-cs-fixer)

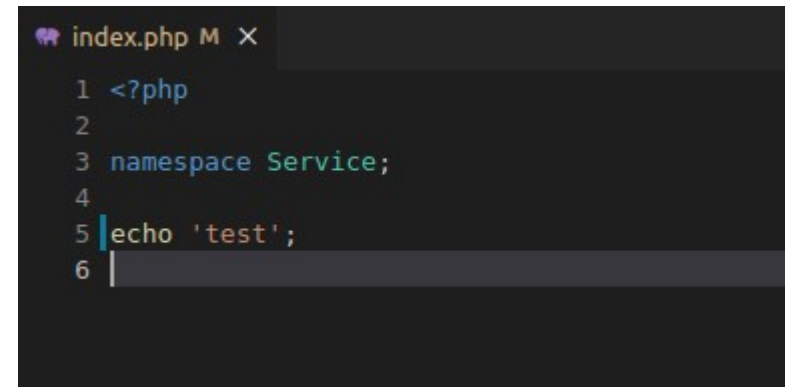


A screenshot of an IDE window titled 'index.php M X'. The code is as follows:

```
1 <?php
2
3 namespace Service;
4
5 echo "test" ;
```

A context menu is open over the code, with the 'Format Document' option highlighted. The menu items and their shortcuts are:

- Go to Definition (Ctrl+F12)
- Peek (>)
- Change All Occurrences (Ctrl+F2)
- Format Document (Ctrl+Shift+F)**
- Cut
- Copy
- Command Palette... (Ctrl+3)

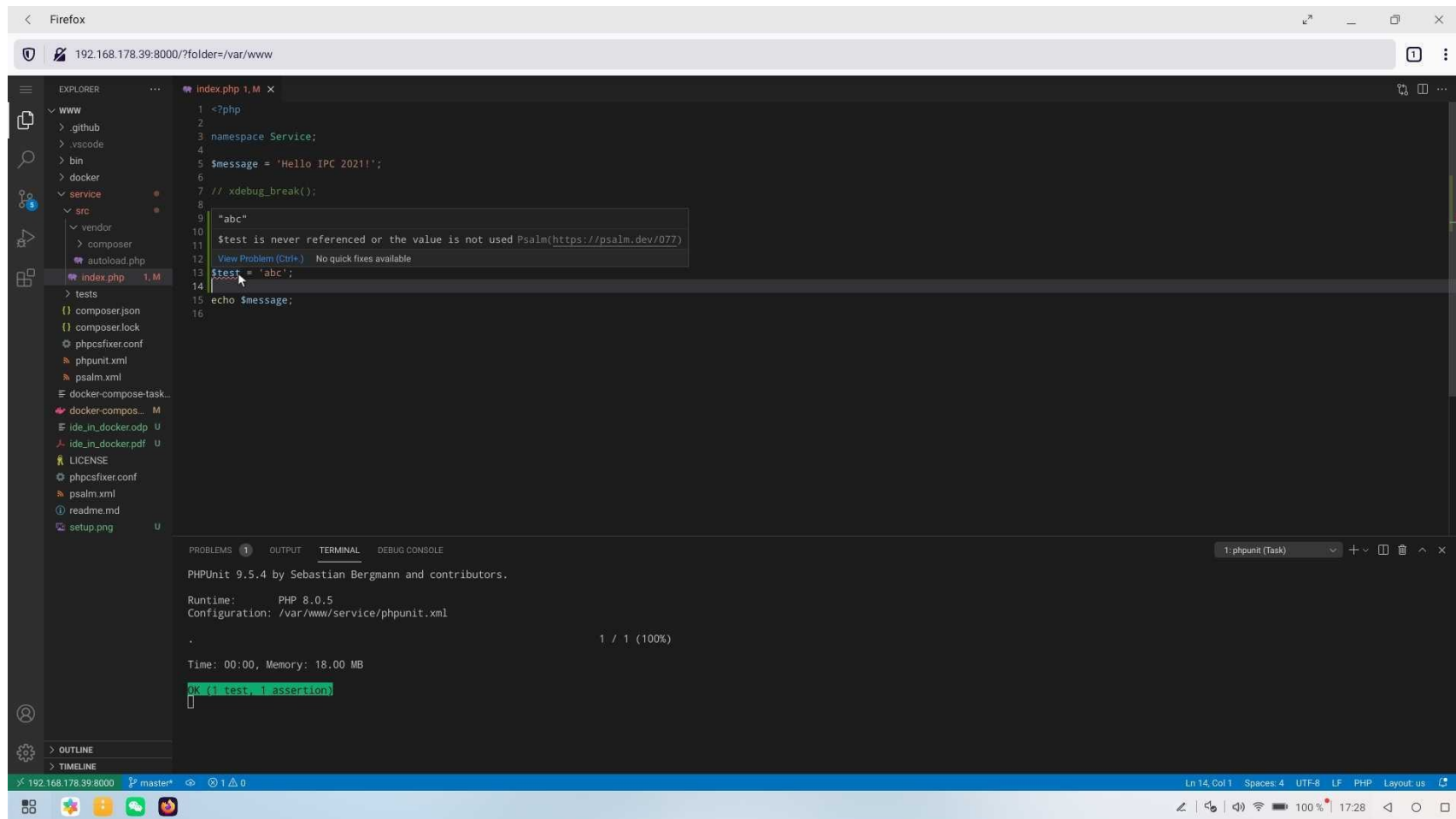


The same IDE window after auto-formatting. The code is now:

```
1 <?php
2
3 namespace Service;
4
5 echo 'test' ;
6
```



# DEMO



Firefox 88 on Huawei P40 Desktop mode



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Thanks for listening!

Questions?

slides and sources:

[github.com/thomasbley/ide\\_in\\_docker](https://github.com/thomasbley/ide_in_docker)



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