

WSL2 + Docker Setup - Quick Start Checklist

Print this page and check off each step as you complete it.

Pre-Installation Checklist

- Windows 10/11 Build 19041 or higher
 - At least 12GB RAM
 - Administrator access to Windows
 - 50GB+ free disk space
 - Stable internet connection
 - GitHub account created
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Phase 1: WSL2 Configuration (30 minutes)

Windows Side

- Open PowerShell as Administrator
- Run: `wsl --version` (verify WSL is installed)
- Create `C:\Users\<YourUsername>\.wslconfig`
- Copy provided `.wslconfig` content
- Save file
- Run: `wsl --shutdown`
- Wait 10 seconds
- Run: `wsl` (restart WSL)

WSL Ubuntu Side

- Open WSL Ubuntu terminal
- Run: `sudo nano /etc/wsl.conf`
- Paste provided `wsl.conf` content
- Save: `Ctrl+X`, then `Y`, then `Enter`
- Exit WSL: `exit`
- From PowerShell: `wsl --shutdown`
- Restart: `wsl`
- Verify systemd: `systemctl --version`

- Checkpoint:** Systemd version should appear
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Phase 2: Docker Installation (30 minutes)

Install Docker in WSL

- Update packages: `sudo apt-get update`
- Install prerequisites (ca-certificates, curl, gnupg, lsb-release)
- Add Docker GPG key
- Set up Docker repository
- Install Docker Engine: `sudo apt-get install -y docker-ce docker-ce-cli containerd.io docker-compose-plugin`
- Add user to docker group: `sudo usermod -aG docker $USER`
- Apply group: `newgrp docker`
- Test: `docker run hello-world`

- Checkpoint:** "Hello from Docker!" message appears

Install Docker Desktop (Windows)

- Download Docker Desktop from docker.com
- Run installer
- Restart computer if prompted
- Open Docker Desktop
- Skip tutorial
- Go to Settings → General:
- Check "Use WSL 2 based engine"
- Uncheck "Start Docker Desktop when you log in"
- Go to Settings → Resources → WSL Integration:
- Enable "Ubuntu" (or your distro)
- Go to Settings → Resources → Advanced:
- Memory: 4 GB
- CPUs: 2
- Click "Apply & Restart"

- Checkpoint:** Docker Desktop shows "Running"
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Phase 3: Project Structure (15 minutes)

Create Directories

```
bash

# Copy and paste this entire block
mkdir -p ~/projects/{web-apps,microservices,ml-models,databases,mcp-services,_templates,_shared,_docs}
mkdir -p ~/projects/_shared/{docker-networks,configs,scripts,volumes}
```

- Run above command
- Verify: `tree ~/projects -L 2`

Create Shared Networks

- `cd ~/projects/_shared/docker-networks`
 - Create `docker-compose.yml` with provided content
 - Run: `docker compose up -d`
 - Verify: `docker network ls`
- ✓ Checkpoint:** See networks: app-network, db-network, mcp-network
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Phase 4: VS Code Setup (20 minutes)

Install Extensions

- Open VS Code
- Install: Remote - WSL
- Install: Docker
- Install: Python
- Install: Dev Containers
- Install: GitLens (optional)

Connect to WSL

- In WSL terminal: `code ~/projects`
- VS Code opens in WSL mode
- Bottom-left corner shows "WSL: Ubuntu"

- ✓ Checkpoint:** VS Code connected to WSL
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Phase 5: Git Configuration (10 minutes)

- In WSL: `git config --global user.name "Your Name"`
- `git config --global user.email "your@email.com"`
- `git config --global core.autocrlf input`
- `git config --global core.filemode false`
- `git config --global pull.rebase false`
- Verify: `git config --list`

 **Checkpoint:** Name and email appear in config

Phase 6: Create First Project (15 minutes)

From Template

- `cd ~/projects/_templates`
- Create `python-microservice/` directory
- Copy all template files from artifacts:
 - `.gitignore`
 - `.dockerignore`
 - `Dockerfile`
 - `docker-compose.yml`
 - `.env.example`
 - `.devcontainer/devcontainer.json`
 - `.vscode/settings.json`

Test Project

- `cp -r ~/projects/_templates/python-microservice ~/projects/microservices/test-app`
- `cd ~/projects/microservices/test-app`
- `cp .env.example .env`
- `nano .env` (edit if needed)
- `docker compose up -d`
- `docker compose ps` (verify services are running)
- `docker compose logs -f` (check logs)
- `docker compose down` (stop containers)

 **Checkpoint:** Containers start and stop successfully

Phase 7: GitHub Integration (20 minutes)

Setup SSH Key

- `ssh-keygen -t ed25519 -C "your@email.com"`
- Press Enter (accept default location)
- Enter passphrase (optional)
- `cat ~/.ssh/id_ed25519.pub` (copy output)
- Go to GitHub → Settings → SSH Keys → New SSH key
- Paste key, give it a name (e.g., "WSL2-Laptop")
- Save
- Test: `ssh -T git@github.com`

 **Checkpoint:** "Hi <username>! You've successfully authenticated"

Create Test Repository

- On GitHub, create new repository "test-wsl-setup"
- Copy SSH clone URL
- In WSL: `cd ~/projects/microservices/test-app`
- `git init`
- `git add .`
- `git commit -m "Initial commit"`
- `git branch -M main`
- `git remote add origin git@github.com:username/test-wsl-setup.git`
- `git push -u origin main`

 **Checkpoint:** Code appears on GitHub

Phase 8: Final Verification (10 minutes)

System Check

- WSL version: `wsl --version`
- Docker version: `docker --version`
- Docker Compose: `docker compose version`
- Python: `python3 --version`
- Git: `git --version`
- VS Code: `code --version`

Resource Check

- In PowerShell: Task Manager → Performance
- Check "VmMem" process (should be ~1-2GB idle)
- In WSL: `docker stats` (when containers running)
- Verify limits are respected

Functionality Check

- Can create project from template: ✓
- Can start/stop containers: ✓
- Can commit to Git: ✓
- Can push to GitHub: ✓
- VS Code connects to WSL: ✓
- Dev containers work: ✓

 **Checkpoint:** All checks pass

Common First-Time Issues

Issue: "WSL not found"

Fix: Install WSL from Microsoft Store, then restart

Issue: "Docker daemon not running"

Fix: `sudo systemctl start docker`

Issue: "Permission denied (docker)"

Fix: `(sudo usermod -aG docker $USER)`, then `(newgrp docker)`

Issue: "Cannot find module 'xyz'"

Fix: Inside container: `(pip install xyz)`

Issue: "Port already in use"

Fix: Change port in `(docker-compose.yml)` or kill process

Post-Setup Tasks

Optional but Recommended

- Install GitHub CLI: `sudo apt install gh`
- Configure git aliases (provided in artifacts)
- Set up Docker Desktop notifications
- Bookmark this checklist
- Join course Discord/Slack for help

Create Helper Scripts

- Copy `create-project.sh` to `~/projects/_shared/scripts/`
 - Copy `pre-switch.sh` to `~/projects/_shared/scripts/`
 - Copy `toggle-mcp.sh` to `~/projects/_shared/scripts/`
 - Make executable: `chmod +x ~/projects/_shared/scripts/*.sh`
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Success Criteria

You're ready to start developing when:

Performance:

- WSL2 uses \leq 6GB RAM
- Docker uses \leq 4GB RAM
- System remains responsive with containers running

Functionality:

- Can create new projects from template
- Can start/stop containers independently
- Can develop inside VS Code dev containers
- Git commits work without permission errors

Multi-Machine:

- Can push code to GitHub
 - Can clone on another machine
 - Containers work identically on both machines
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Estimated Total Time

- **Experienced users:** 90 minutes
- **First-time users:** 2-3 hours
- **With troubleshooting:** 3-4 hours

Don't rush! Take breaks between phases.

Getting Help

If stuck:

1. Check the Troubleshooting section in COMPLETE_SETUP_GUIDE.md
2. Review the specific phase instructions
3. Search error message on Google/Stack Overflow
4. Ask in course forum/Discord
5. Review Docker/WSL documentation

Common documentation links:

- WSL Docs: <https://learn.microsoft.com/en-us/windows/wsl/>
 - Docker Docs: <https://docs.docker.com/>
 - VS Code Remote: <https://code.visualstudio.com/docs/remote/wsl>
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Final Notes

 **Keep this checklist** for setting up additional machines

 **Goal:** Complete all checkboxes before starting development

 **Budget:** 2-4 hours for first-time setup

 **Backup:** Commit your configuration files to a "dotfiles" repo

 **Learn:** Understand each step, don't just copy-paste



Congratulations on completing the setup!

Now you're ready to build production-grade applications with professional developer tools.

Quick Commands Reference Card

Cut this out and keep it visible:

```
# Start work
cd ~/projects/microservices/my-app
git pull origin main
docker compose up -d
code .
```

```
# End work
git add .
git commit -m "feat: description"
git push origin main
docker compose down
```

```
# Check resources
docker stats
docker compose ps
```

```
# Clean up
docker system prune -a
```