

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

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"

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

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

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`
-

Success Criteria

You're ready to start developing when:

✅ Performance:

- ☐ WSL2 uses ≤ 6 GB RAM
- ☐ Docker uses ≤ 4 GB 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
```