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This documentation is mainly aimed at Windows users with an attempt to cover MacOS users.

1. Download & install docker on your local computer: <https://www.docker.com/products/docker-desktop>

NOTE: THE INSTALLATION PROCESS IS GOING TO ASK YOU TO RESTART YOUR COMPUTER.

1. Once Docker is installed and the docker application is running, open Windows PowerShell (Windows) / Terminal (MacOS) in the directory where you have the attached Dockerfile.

NOTE: IN THE FOLLOWING STEPS RUN THE COMMANDS WITHOUT THE QUOTATION MARKS.

1. Run the following command: “ **docker build -t coudalfish .** ”

NOTE: THIS STEP TAKES SEVERAL MINUTES TO COMPLETE.

1. Run the following command: “ **docker run --name fenics-coudalfish -p 127.0.0.1:8000:8000 -v "C:\shared\_fenics-coudalfish:/home/fenics/shared" -ti coudalfish** ”

NOTE: THE “shared\_fenics-coudalfish” IS A SHARED DIRECTORY BETWEEN YOUR HOST COMPUTER AND YOUR “fenics-coudalfish” CONTAINER.

1. Use “ **cd ~** ” to make sure that you are in your “/home/fenics” directory. Now, you can clone the CouDALFISh repository by running the following command: “ **git clone** [**https://github.com/david-kamensky/CouDALFISh.git**](https://github.com/david-kamensky/CouDALFISh.git)”. This will clone the repository to your present working directory which is your home directory.
2. To run the “heart-valve-moving-mesh” demo you will need the mesh which I have included in the attached file “mesh.zip”.
3. You can extract the “mesh.zip” and copy the mesh files into the “C:\shared\_fenics-coudalfish” directory on your host computer to share it with your “fenics-coudalfish” docker container.
4. We need to copy the mesh files to the “/home/fenics/CouDALFISh/demos/heart-valve-moving-mesh/aorta” directory inside the container.
5. Now that we have the mesh files in the aorta directory, to run the “heart-valve-moving-mesh” demo on 4 cores, you can use the following command: “ **mpirun -n 4 python3 heart-valve-moving-mesh.py --mesh-folder ./aorta/** ”
6. To exit the container you can simply type “ **exit** ”
7. To start the container again use the following command: “ **docker start -i fenics-coudalfish** ”

You can find more information here:

Docker: <https://docs.docker.com/get-started/>

Docker & FEniCS: <https://fenics.readthedocs.io/projects/containers/en/latest/index.html>

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