# gem5 at home (or work/school)



# **Getting help**

gem5 has lots of resources to get help:

- 1. Documentation at gem5 doxygen
- 2. Ways to reachout for help:
  - Github discussions
    This is the main place for questions
  - gem5 Slack channel
  - Join our mailing lists:
    - gem5-dev@gem5.org : For discussions regarding gem5 development
    - gem5-users@gem5.org : For general discussions about gem5 and its use
    - gem5-announce@gem5.org : For general gem5 announcements

#### 3. Youtube videos

These links and more information are also available at <a href="https://www.gem5.org/ask-a-question/">https://www.gem5.org/ask-a-question/</a>

We do our best to get to questions, but they often go unanswered. This isn't because it's not a good question, but because we don't have enough volunteers.



## Running gem5 at home

- gem5 performance qualities
  - Single threaded
  - Consumes lots of RAM (if you want to model 32 GB of memory, it needs 32 GB of memory to model it)
  - Can take a lot of time
- Because of this its best to run multiple experiments in parallel
- Recommended hardware:
  - High single thread performance
  - Doesn't need many cores
  - LOTS OF RAM



# System software requirements

- Ubuntu 22.04+ (at least GCC 10)
  - 20.04 works, but there are bugs in GCC 8 (or 9, whatever the default is) and you have to upgrade the GCC version.
- Python 3.6+
- SCons
- Many optional requirements.

This should work on most Linux systems and on MacOS.

See our Dockerfiles for the most up-to-date version information:

gem5/util/dockerfiles/



# **Using dockerfiles**

If you have trouble, we have docker images.

Here's a generic docker command that should work.

```
docker run --rm -v $(pwd):$(pwd) -w $(pwd) ghcr.io/gem5/ubuntu-24.04_all-dependencies:v24-0 <your command>
```

- Runs the image at [https://ghcr.io/gem5/ubuntu-24.04\_all-dependencies:v24-0].
- Automatically removes the docker image (--rm)
- Sets it up so that the current directory (-v \$(pwd):\$(pwd)) is available inside the docker container
- Sets the working directory to the current directory ( -w \$(pwd) )
- Runs a command.
- Every command will now need to run with this to make sure the libraries are set up correctly.

I cannot **strongly enough** emphasize that you should not run interactively in the docker container. Use it to just run one command at a time.



#### The devcontainer

The devcontainer we've been using is based off of <a href="ghcr.io/gem5/ubuntu-24.04\_all-dependencies:v24-0">ghcr.io/gem5/ubuntu-24.04\_all-dependencies:v24-0</a>, but also includes some gem5 binaries.

You can find it at ghcr.io/gem5/devcontainer:bootcamp-2024.

The source will be at gem5/utils/dockerfiles/devcontainer soon.



## **Recommended practices**

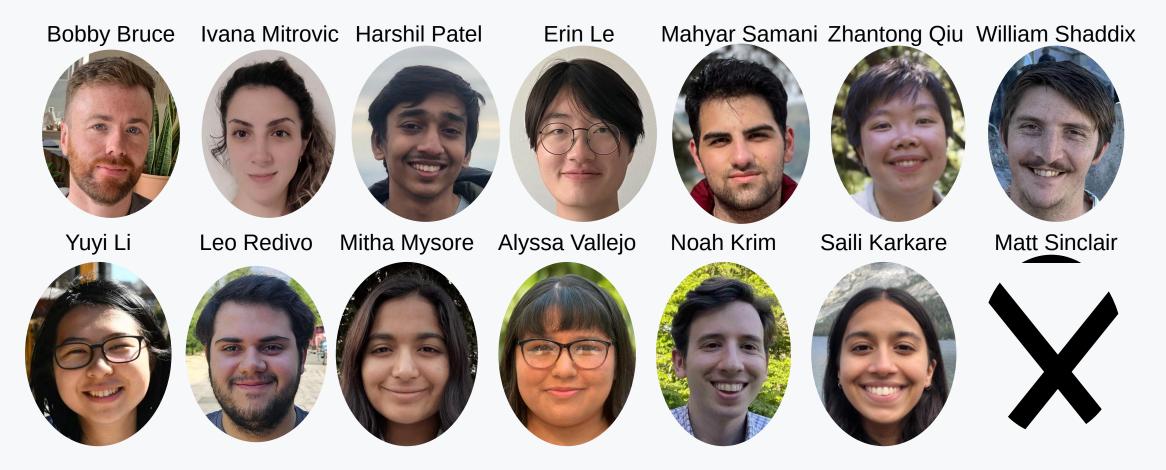
- Unless planning on contributing to gem5 or you need to use recently developed work, use the stable branch.
- Create branches off of stable.
- Don't modify parameters of python files in <code>src/</code>. Instead create *extensions* of stdlib types or SimObjects.
- Don't be afraid to read the code. The code is the best documentation.



# **Final things**



# **Big thanks**





# Big thanks to you all!

