

# Gradescope Autograder Configuration

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# Introduction

Gradescope is a great tool for autograding assignments. However, there are two difficulties regarding the setup for an autograder which this document addresses:

1. How to streamline the general setup of autograding.
2. Provide a grading framework to develop tests in an efficient (and enjoyable!) manner.

Setup from start to finish is intended to take roughly 30 minutes. If you have any questions, please reach out to me at [mrussell@cs.tufts.edu](mailto:mrussell@cs.tufts.edu). Thanks!

## Infrastructure Background

Gradescope's autograders rely on Docker containers which are spun up each time a submission is graded. The default container runs a variant of **Ubuntu 18.04**, coupled with the bare-bones scripts to make the autograding framework function. The usual workflow is to manually upload a **.zip** file containing two scripts: **setup.sh**, which installs dependencies (e.g. **Python**, etc.), and a shell script named **run\_autograder**, which runs the autograder. The main issue here is that each time you upload the **.zip** file, the Docker container must be built from scratch, which can take quite a bit of time; this can compound quickly during the development of an autograder. This document provides an optional solution to the problem.

## Autograding Background

Once the container is built, there is of course the issue of how to run and test student's code. This is no easy task! This document provides documentation on an autograding framework we have developed which makes writing tests for student code as easy as possible.

# Infrastructure Solution

The solution for streamlining the infrastructure setup with Gradescope I've developed is twofold:

1. Build and upload our own Docker container to Dockerhub, which Gradescope will use.
2. Put the autograding code in a `git` repository which the Docker container can access at autograding time.

Note that these two elements are distinct from one another; if using Docker is something you really don't want to do, that's fine. The container building will just take more time. In that case, follow the instructions on Gradescope's website regarding setup:

<https://gradescope-autograders.readthedocs.io/en/latest/specs/>. In this case, you can still use the `.git` integration from above; just integrate the `git` commands from the Docker setup below into the `setup.sh` script.

## Install Docker

Install Docker Desktop: <https://www.docker.com/products/docker-desktop/>

Note that you don't need to have it start on boot; you can start it before uploading the setup.

## Clone the autograding repo