Getting Started

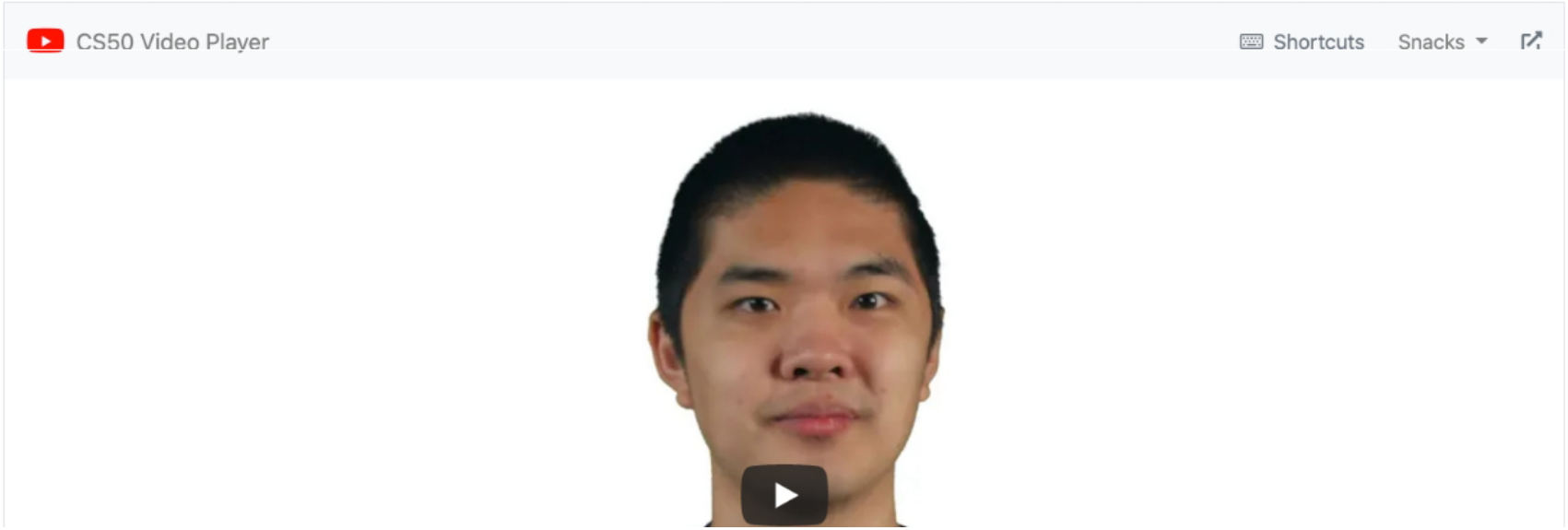
1. Log into ide.cs50.io using your GitHub account.
2. In your terminal window, run `wget https://cdn.cs50.net/2020/fall/labs/3/lab3.zip` to download a Zip file of the lab distribution code.
3. In your terminal window, run `unzip lab3.zip` to unzip (i.e., decompress) that Zip file.
4. In your terminal window, run `cd lab3` to change directories into your `lab3` directory.

Instructions

Provided to you are three already-compiled C programs, `sort1`, `sort2`, and `sort3`. Each of these programs implements a different sorting algorithm: selection sort, bubble sort, or merge sort (though not necessarily in that order!). Your task is to determine which sorting algorithm is used by each file.

- `sort1`, `sort2`, and `sort3` are binary files, so you won't be able to view the C source code for each. To assess which sort implements which algorithm, run the sorts on different lists of values.
- Multiple `.txt` files are provided to you. These files contain `n` lines of values, either reversed, shuffled, or sorted.
  - For example, `reversed10000.txt` contains 10000 lines of numbers that are reversed from `10000`, while `random100000.txt` contains 100000 lines of numbers that are in random order.
- To run the sorts on the text files, in the terminal, run `./[program_name] [text_file.txt]`.
  - For example, to sort `reversed10000.txt` with `sort1`, run `./sort1 reversed10000.txt`.
- You may find it helpful to time your sorts. To do so, run `time ./[sort_file] [text_file.txt]`.
  - For example, you could run `time ./sort1 reversed10000.txt` to run `sort1` on 10,000 reversed numbers. At the end of your terminal's output, you can look at the `real` time to see how much time actually elapsed while running the program.
- Record your answers in `answers.txt`, along with an explanation for each program, by filling in the blanks marked `TODO`.

Walkthrough



Hints

- The different types of `.txt` files may help you determine which sort is which. Consider how each algorithm performs with an already sorted list. How about a reversed list? Or shuffled list? It may help to work through a smaller list of each type and walk through each sorting process.

▶ **Not sure how to solve?**

How to Check Your Answers

Execute the below to evaluate the correctness of your answers using `check50`. But be sure to fill in your explanations as well, which `check50` won't check here!

```
check50 cs50/labs/2021/x/sort
```

How to Submit

Execute the below to submit your work.

```
submit50 cs50/labs/2021/x/sort
```

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Execute the below to submit your work.

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submit50 cs50/labs/2021/x/sort
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