

# Grading: A Journey

Peter McEvoy & Sean Konz

# What's the big deal?

```
$ cd ~/cs107e_home/assignments  
$ vim src/lib/*.c  
$ make clean && make test
```

## We can fix that

```
$ for student in $(cat student_usernames.txt) \  
do \  
    cd ~/cs107e_home/assignments \  
    vim src/lib/*.c \  
    make clean && make test \  
done
```

# Crap, we forgot to git pull

```
$ for student in $(cat student_usernames.txt) \  
do \  
    cd ~/cs107e_home/assignments \  
    git pull \  
    vim src/lib/*.c \  
    make clean && make test \  
done
```

# What about tracking results?

```
$ for student in $(cat student_usernames.txt) \  
do \  
    cd ~/cs107e_home/assignments \  
    git pull \  
    vim src/lib/*.c \  
    make clean && make test > results.txt \  
done
```

???

The screenshot shows a Gmail interface. On the left is a sidebar with 'Compose', 'Inbox' (2), 'Starred', 'Snoozed', 'Sent', 'Drafts' (7), and 'More'. Below this are 'Meet' (New meeting, My meetings) and 'Hangouts' (Peter Anthony). The main area is an inbox list. A modal window titled 'Here's your CS107E assign2 grade' is open, showing a message from Sean William Konz to Peter, with an attachment 'results.txt (1K)'. The modal has a rich text editor at the bottom. The inbox list includes emails from Danielle, Larry McEvoy (via G.), Anna, Pat Hanrahan, Nate Boyd, Ziyang, Anna, David, and Peter. The bottom status bar shows 'Using 11.66 GB' and 'Program Po Powered by G'.

Search mail

1-18 of 18

Compose

Inbox 2

Starred

Snoozed

Sent

Drafts 7

More

Meet

New meeting

My meetings

Hangouts

Peter Anthony +

No recent chats

Start a new one

Using 11.66 GB

Program Po Powered by G

Here's your CS107E assign2 grade

Sean William Konz

Here's your CS107E assign2 grade

Hi Sean,

Attached you'll find your grade for assign2.

Peter

results.txt (1K)

Send

Insert

(a)

# It's more difficult than we thought

```
// create assignment repos
// distribute assignment starter code
// review pull requests
// test functionality
// release grades
// create project repos
// archive repos
```

# Someone did this already though, right?

```
$ ls ~/cs107e_home/logistics/assignments
archive-project-repos.sh
archive-repos.sh
assign0
assign1
assign2
assign3
assign4
assign5
assign6
assign7
autograde.py
averages.py
collect_scores.py
compute_late_days.py
cur_total_scores.csv
cur_total_scores.json
delete-assignment-repos.py
delete-project-repos.py
deploy.py
due_dates.py
generate_csv.py
generate_grading_assignments.py
```



get\_late\_day\_commits.py  
github\_names.txt  
grade.py  
grade\_stats.py  
initialize\_repositories.py  
initialize\_travis.py  
init\_project\_repos.py  
merge\_grade.py  
merge\_starter\_code\_commit\_to\_master.py  
one-offs  
plot\_distribution.py  
project  
publish\_final\_score.py  
README.md  
release\_autograde.py  
release.py  
remove\_repositories.py  
requirements.txt  
scores\_to\_csv.py  
style.py  
tag\_submission\_commits.py  
toolbox  
update\_student\_repos.py  
utils.py  
who\_submitted.py

# If some scripts are good, more scripts must be better

```
$ ls -l | grep -e '.py' -e '.sh' | wc -l  
31
```

# C'mon, please?

```
$ find / -name magical-grading-infrastructure-that-just-works -type d
```

# Let's make it less shitty

```
$ lsi --help
  usage: lsi [-h] {add,clone,drop,generate,grade,release,review,test} ...
```

Run the CS107E grading infrastructure.

optional arguments:

-h, --help                    show this **help** message and **exit**

subcommands:

```
{add,clone,drop,generate,grade,release,review,test}
    subcommand help
    add          add student repos
    clone        clone student repos into $CS107E_STUDENTS_DIR
    drop         drop students from the class or tests from an
                  assignment
    generate      generate grading files
    grade        grade an assignment
    release      release grades for an assignment
    review       copy prewritten pull request comments to the clipboard
                  during code review
    test        build and run assignment tests without grading
```

# Ta-da

```
$ lsi add students
$ lsi grade quality assign3 -g sean
$ lsi grade functionality assign3 -g sean
$ lsi release assign3 -g sean
$ lsi test list assign4
$ lsi test run assign4 --username swkonz --test-name buggy_malloc_test
$ lsi add project-groups
$ lsi generate grades assign7
```

# Behind the scenes

```
$ ls ~/cs107e_home/lsi/lsi
add.py
assignments.py
cli.py
clone.py
drop.py
env.py
error.py
generate.py
grade.py
__init__.py
output.py
project.py
release.py
repo.py
review.py
test.py
utils.py
```

# Behind these other scenes

```
$ ls ~/cs107e_home/assignment-tests
assign0
assign1
assign2
assign3
assign4
assign5
assign6
code-review-comments.json
example-test.c
grading.makefile
Makefile.grading
ps2_emulator
test-framework.h
```

# Which reminds me

```
$ ls ~/cs107e_home/assignment-tests/assign5
assign5_grading.h
fake_ps2.c          <=====
keyboard_event_mixed_modifier.c
keyboard_event_no_modifier.c
keyboard_event_nonsticky_modifier.c
keyboard_event_sticky_modifier.c
keyboard_next_ascii_modifier.c
keyboard_next_ascii_plain.c
keyboard_next_nonascii.c
keyboard_sequence_press_extended.c
keyboard_sequence_press_nonextended.c
keyboard_sequence_release_extended.c
keyboard_sequence_release_nonextended.c
manifest.ini
ps2_read_all.c
ps2_read_invalid.c
shell_evaluate_echo.c
shell_evaluate_help_peek.c
shell_evaluate_history.c
shell_evaluate_invalid.c
```



# When in doubt, fake it

```
// keyboard_event_no_modifier.c
unsigned char scancodes[] = {
    press_and_release(_A),
    press_and_release(_B),
    press_and_release(_C),
    press(_ESC),
    0
};

void run_test(void) {
    read_keyboard_events(sizeof(scancodes));
}

// fake_ps2.c
unsigned char ps2_read(ps2_device_t *dev) {
    // The test defines which scancodes it wants by declaring a null-terminated
    // array within the test file.
    extern unsigned char scancodes[];
    static unsigned int i = 0;

    static bool sent_null = false;

    // Hang after sending the null at the end of the array.
    while (sent_null);
    sent_null = (scancodes[i] == 0);

    return scancodes[i++];
}
```

# What else can we fake?

```
$ ls ~/cs107e_home/assignment-tests/assign6
assign6_grading.h
console_normal.c
console_scroll.c
console_wrap.c
fake_fb.c           <=====
fb_get.c
fb_swap.c
gl_clear.c
gl_clip.c
gl_color.c
gl_double_buffer.c
gl_draw_char.c
gl_draw_pixel.c
gl_draw_pixel_invalid.c
gl_draw_rect.c
gl_draw_string.c
gl_get.c
gl_padded.c
gl_read_pixel_invalid.c
manifest.ini
```

# What else can we fake?

```
// fake_fb.c
#define MAX_BYTES (512 * 512 * 4)
unsigned char fakebuffer[MAX_BYTES];
unsigned char *red_zone_before, *red_zone_after;
const size_t RZ_SIZE = 128;

static volatile fb_config_t fb __attribute__((aligned(16)));

static unsigned char active_buffer = 0;
static bool double_buffered = false;

void fb_init(unsigned int width, unsigned int height,
             unsigned int depth_in_bytes, fb_mode_t mode) { /* code */ }

void fb_swap_buffer(void) { /* code */ }

void *fb_get_draw_buffer(void) { /* code */ }

void *fb_get_onscreen_buffer(void) { /* code */ }

unsigned int fb_get_depth(void) { return fb.bit_depth / 8; }

unsigned int fb_get_height(void) { return fb.height; }

unsigned int fb_get_width(void) { return fb.width; }

unsigned int fb_get_pitch(void) { return fb.pitch; }

static int memchk(const void *ptr, unsigned char byte, size_t sz) { /* code */ }

bool check_red_zones(void) { /* code */ }
```

# Can we fake a device with another device?

```
$ ls ~/cs107e_home/assignment-tests/ps2_emulator
Makefile
ps2_emulator.c
ps2_emulator_constants.h
README.md
```

# Of course we can

```
// ps2_emulator.c
static void init(unsigned int clk_pin, unsigned int data_pin) { /* code */ }

static void write_bit(unsigned char bit, unsigned int clk_pin,
    unsigned int data_pin) {

    // Write data bit while clock is high.
    gpio_write(data_pin, bit & 1);

    // Delay 5 microseconds before pulling clock low.
    # define US_PER_DATA_TRANSITION 5
    timer_delay_us(US_PER_DATA_TRANSITION);

    // Pull clock low.
    gpio_write(clk_pin, 0);

    # define US_PER_CLK_STATE 50
    timer_delay_us(US_PER_CLK_STATE);

    // Bring clock high.
    gpio_write(clk_pin, 1);

    // Delay before next data transition.
    timer_delay_us(US_PER_CLK_STATE - US_PER_DATA_TRANSITION);
}

static void write_corrupt_scancodes(unsigned int clk_pin,
    unsigned int data_pin) { /* code */ }

static unsigned char wait_for_handshake(unsigned int clk_pin,
    unsigned int data_pin) { /* code */ }

void main(void) { /* code */ }
```

# What happened in between?

```
commit b90a2a9ab65f3ae04b3e5915f503bc1dfc5c1fba
```

```
Author: Peter McEvoy <43772349+mcevoypeter@users.noreply.github.com>
```

```
Date:   Mon Feb 10 12:08:57 2020 -0800
```

```
Initial commit
```

```
.gitignore | 129 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
README.md | 2 ++
```

```
2 files changed, 131 insertions(+)
```

# What happened in between?

commit 36773676a49d732105f1b392da692e1a898b5932

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Fri Feb 21 11:23:03 2020 -0800

Put all assignment metadata **in** single .json file

`assign\_whitelist.json` has been swapped out **in** favor of  
`assignments.json`. The former only contained files to whitelist,  
whereas the latter contains the app, modules, student test, grading  
tests, and whitelist files. The idea here is that **if** a future staff  
member wishes to change an aspect of an assignment (i.e. the name of the  
application or which tests get run), **then** they'll only need to modify  
`assignments.json`.

assign_whitelist.json		168	-----
assignments.json		91	+++++
deploy.py		13	+++--
state.py		2	+-

# What happened in between?

commit 9b63ac2644bdd0a09be3e55abb81f7d45823ad26

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Fri Feb 21 21:04:41 2020 -0800

Refactor into object-oriented design

The big change here is the switch from separate files **for** each step of the grading pipeline to having a single file, `workers.py`, define a class **for** each step of the pipeline **in** addition to a base class that contains common variables and methods that are used frequently throughout the pipeline. The Deployer class was moved into `workers.py`, but it hasn't been updated to leverage its inheritance of the Worker class variables and methods.

```
lsi.py | 38 ++++++-----
state.py | 26 -----
deploy.py => workers.py | 178 ++++++-----
3 files changed, 172 insertions(+), 70 deletions(-)
```



# What happened in between?

```
commit b28566e1b3d000c091855b83679152babe61a1bf
Author: Peter McEvoy <pmcevoy@stanford.edu>
Date: Sat Feb 22 03:17:25 2020 -0800
```

Finished app grader

I refactored the Deployer class code so that it now works as a subclass of the Worker class. Another big addition on this commit is the execute method of the Worker class, which provides a flexible interface for running a command as if the user were at the shell. The AppGrader class is also mostly finished. I think all that's remaining is to beef up the error checking when reading in the grader's deductions.

```
assignments.json | 39 ++++++---
workers.py       | 326 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++-----
2 files changed, 236 insertions(+), 129 deletions(-)
```

# What happened in between?

commit 002048debc1f39b442cca5a14bb0c564a6a4e5b6

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Mon Mar 16 14:58:03 2020 -0700

Half-baked version of previous design

Committing all that I came up with prior to the design meeting with Sean last week. Given the COVID-19 outbreak, we'll both have lots of **time** to code, and I feel better starting more or less from scratch after having the benefit of weeks to think about the best design.

```
deploy.py | 23 ++++++++-----
```

```
lsi.py    | 3 +++
```

```
state.py  | 7 ++++++
```

```
worker.py | 26 ++++++++-----
```

```
4 files changed, 37 insertions(+), 22 deletions(-)
```

# What happened in between?

commit 3054ca2311f049e60fc019b7a8f0c1a52c291c72

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Tue Mar 17 16:05:11 2020 -0700

Half-baked version of new design

Again, I don't like the current design. It's taking too much time to find a clean install/setup procedure to make the script easy to use. I'm thinking that a Bash script might be easier. Am I crazy?

.gitignore	13 +--
.grades.json	969 -----
.student_usernames.txt	37 -----
deploy.py	104 -----
grade.py	166 -----
lsi.py	103 ++++++++-----
requirements.txt	1 +
state.py	55 -----
worker.py	127 -----

# What happened in between?

```
commit e1032a93eaa53a8c9adf88a610bfbab33f550c35
Author: Peter McEvoy <pmcevoy@stanford.edu>
Date:   Thu Mar 19 18:38:37 2020 -0700
```

Switched from python to bash

Bash feels like a more natural language **for** the task at hand. Some of the syntax is complicated and dense, but it's well-suited to executing lots of shell commands and dealing with json (after I learned jq).

```
README.md      | 63 -----
lsi.py         | 106 -----
requirements.txt | 1 -
3 files changed, 170 deletions(-)
```

# What happened in between?

```
commit 1931479447c41789082ae722677957b463c9b634
Author: Peter McEvoy <pmcevoy@stanford.edu>
Date:   Mon Mar 23 13:29:37 2020 -0600
```

Configure bot to commit to student repos

Ensure that the only staff member committing to student repositories is CS107E bot.

```
README.md          | 2 ++
scripts/create_repos.sh | 4 ++++
2 files changed, 6 insertions(+)
```

# What happened in between?

commit 3701b8645f228453e56da1e2b097a4cc7c7139e1

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Wed Mar 25 23:11:23 2020 -0600

Switch back to python

Command line parser **for** ``create`` phase set-up. Adapting the bash scripts to python shouldn't be difficult. Hopefully this is the last major design shift.

```
.gitignore      | 147 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
lsi.py          |  29 +++++++++++++++++++++++++++++++++++++
lsi/__init__.py |   0
lsi/create.py   |   4 ++++
lsi/deploy.py   |   4 ++++
lsi/grade.py    |   4 ++++
lsi/release.py  |   4 ++++
7 files changed, 188 insertions(+), 4 deletions(-)
```

# What happened in between?

commit 474ca7d3ab7f916ffcf0c3cca1b97d25ae7c5b44

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Sun Mar 29 11:05:45 2020 -0600

Add absolute paths and LSI env var to ``state.py``

Change the file paths `in`state.py`` to be absolute so that ``lsi.py`` can run from any directory. An environment variable pointing to the root of the LSI repo was necessary to achieve this.

lsi/state.py | 10 +++++-----

1 file changed, 5 insertions(+), 5 deletions(-)

# What happened in between?

```
commit a0360dade102a65703811a72ebf6986eb3f6dd32
Author: Peter McEvoy <pmcevoy@stanford.edu>
Date:   Mon Mar 30 10:56:21 2020 -0600
```

Switched from github3.py to curl **for** GitHub API

To get more information into ``.lsi.log``, we switched from the python GitHub API wrapper to curl, which generates more information. Logging was also updated **in** the create step.

```
grades/assignment_grades.json | 16 ++++++-----
lsi.py                         |  5 +++--
lsi/create.py                  | 101 ++++++-----
lsi/utlis.py                   | 19 ++++++-----
4 files changed, 75 insertions(+), 66 deletions(-)
```



# What happened in between?

```
commit f3c46080796b1a963609589ee22cc9ff9d511377
```

```
Author: Peter McEvoy <pmcevoy@stanford.edu>
```

```
Date: Mon Mar 30 13:06:24 2020 -0600
```

Beginnings of release phase

Modified `deploy.py` so that the starter code is copied to master, `then` the new branch is created. This allows `for` a better diff `for` pull requests. The merge functionality `in` `release.py` seems to be good, but `I'm not sure. I'm sick of git for` the moment.

```
grades/assignment_grades.json | 12 ++++++-----
lsi.py                         |  2 ++
lsi/deploy.py                  | 52 ++++++-----
lsi/release.py                 | 47 ++++++-----
4 files changed, 87 insertions(+), 26 deletions(-)
```

# What happened in between?

commit 832171d99f3dcfec2105fc648ae6ed26b8dcd452

Author: Peter McEvoy <pmcevoy@stanford.edu>

Date: Sat Apr 4 14:09:22 2020 -0600

Switched back from curl to github3 **for** GitHub API

Error detection with curl was too weak. Using github3 gives a richer ability to report errors, even though there's less information that ends up **in** .lsi.log.

```
grades/assignment_grades.json | 129 ++++-----  
lsi/create.py                  | 70 ++++++-----  
2 files changed, 46 insertions(+), 153 deletions(-)
```

# What happened in between?

commit fbf879ec9a521a35d1c00ea73cfa849544fd44db

Author: Sean Konz <swkonz@gmail.com>

Date: Sun Apr 5 22:55:05 2020 -0700

assignment 2 tests **done**

I also added a **test** template file that should be used as the starter **for** all **test** files

```
grades/assignments/assign2/test_gpio_get_function.c | 189 ++++++
grades/assignments/assign2/test_gpio_read.c         | 159 ++++++
grades/assignments/assign2/test_gpio_set_function.c | 194 ++++++
grades/assignments/assign2/test_gpio_write.c        | 174 ++++++
grades/assignments/assign2/test_timer.c             | 124 ++++++
grades/assignments/assign2/tests.c                  | 110 -----
grades/assignments/test_example_file.c              | 105 ++++++
7 files changed, 945 insertions(+), 110 deletions(-)
```

# What happened in between?

```
commit b6a22037602e54d0a719fcbde95c6cc2d87a49f9
```

```
Author: Sean Konz <swkonz@gmail.com>
```

```
Date: Tue Apr 7 13:20:10 2020 -0700
```

```
    working on getting grader makefile to work for all assignments
```

```
grades/assignments/Makefile | 151 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
lsi.py                       |    2 ++
lsi/grade.py                 |    1 +
3 files changed, 130 insertions(+), 24 deletions(-)
```

# What happened in between?

commit 45958a815b2272fb8ce650c82443a74c42321a3a

Author: Sean Konz <swkonz@gmail.com>

Date: Tue Apr 7 19:50:04 2020 -0700

making progress on grade script

Script is ready to integrate with the build process and reading deductions

```
grades/assignments/assign2/deductions.json | 88 ++++++-----
lsi/grade.py                               | 63 ++++++
lsi/state.py                               | 1 +
3 files changed, 87 insertions(+), 65 deletions(-)
```

# What happened in between?

```
commit fe6320d3ee9f9537e8b74b95d6a3f064567dd5c9
```

```
Author: Peter McEvoy <mcevoypeter@outlook.com>
```

```
Date: Thu Apr 9 12:18:13 2020 -0600
```

```
Successfully deployed assign0 starter code
```

Deploy of assign0 was a success. I forgot to add a student who is auditing to `data/course_info.json` before creating the repos and deploying, so I had to `do` theirs manually. I also added a staff-only and students-only flag to `lsi.py` so that `lsi/deploy.py` can selectively to deploy to students, staff, or both.

```
data/course_info.json | 1 +
lsi.py                 | 5 +++++
lsi/deploy.py          | 13 ++++++++--
3 files changed, 17 insertions(+), 2 deletions(-)
```

## What happened in between?

```
commit 7fc67f1319fed55d8bf2c8a24bdc854ee7bf6418
```

Author: Sean Konz <swkonz@gmail.com>

Date: Thu Apr 9 15:39:47 2020 -0700

trying to get git merge to work consistently

Sometimes it works, but most of the time it doesn't merge...

```
lsi.py      |  8 ++++--
```

```
lsi/grade.py | 295 ++++++
```

2 files changed, 177 insertions(+), 126 deletions(-)

# What happened in between?

```
commit c2966659dafe2e163be99d8285919870a0c27fd2
```

```
Author: Sean Konz <swkonz@gmail.com>
```

```
Date: Thu Apr 9 16:09:35 2020 -0700
```

```
fix bug in merging... Was just forgetting to actually merge...
```

```
lsi/grade.py | 1 +
```

```
1 file changed, 1 insertion(+)
```



# What happened in between?

```
commit aee91fd52cfe0afc836006275e831b9a5d937035
```

```
Author: Peter McEvoy <mcevoypeter@outlook.com>
```

```
Date: Mon Apr 13 13:52:19 2020 -0600
```

Add input `function` to Log class `in` `lsi/utils.py`

Add a fifth `function` to the Log class that identifies a line that requires user input. The current implementation has the `function read in` the input and `return` it so that ANSI escape sequences can be used to make the user-inputted text show up `in` italics. This might not be the right decision, however, and is subject to change.

```
lsi/utils.py | 69 ++++++-----  
1 file changed, 46 insertions(+), 23 deletions(-)
```

# What happened in between?

```
commit b18a471b4ba4d4b5166d9aa038a7c35200b78a73
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Wed Apr 15 10:40:31 2020 -0600
```

Deploy starter code to master first

We had switched from deploying starter code to master and **then** creating the assignment branch to creating the assignment branch and **then** deploying the starter code first. We've switched back to the former to make merging easier (fast-forward merge) and also to diff against the starter code when reviewing pull request.

```
lsi/deploy.py | 3 ++-
1 file changed, 2 insertions(+), 1 deletion(-)
```

# What happened in between?

commit d3d0ff94e29c1cf648df8e822bef34ec773c7756

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Wed Apr 15 23:53:56 2020 -0600

Drop use of ``tee`` in ``utils.execute``

We'd been using ``tee`` to direct stdout and stderr of commands run in ``utils.execute`` to both the stdout and stderr variables in ``utils.execute`` and to ``.lsi.log``. This was interfering with the `return` status of commands (i.e. a failed ``make`` still returned zero), so we dropped the use of ``tee`` in favor of writing the stdout and stderr streams to their own log files using python.

```
lsi.py          | 12 ++++++-----  
lsi/state.py    |  3 ++-  
lsi/utils.py    | 12 ++++++-----  
3 files changed, 18 insertions(+), 9 deletions(-)
```

# What happened in between?

```
commit a8c4f585c536ee8f3f5009b35f4cb3d6379cc246
```

```
Author: Peter McEvoy <mcevoypeter@outlook.com>
```

```
Date: Sat Apr 18 15:20:52 2020 -0600
```

```
Add `get_repo_names` to `lsi/utils`
```

Retrieving the list of repo names from the `command` line or from  
`data/course\_info.json` is needed `in` `lsi/deploy` and `lsi/release`.  
Refactored to move the shared code into `lsi/utils` under the name  
`get\_repo\_names`.

```
lsi.py          |  9 +++++++-  
lsi/deploy.py   | 15 ++-----  
lsi/release.py  | 43 +++++-----  
lsi/utils.py    | 19 ++++++++  
4 files changed, 33 insertions(+), 53 deletions(-)
```

# What happened in between?

commit 345ed5c5adae75053773ddc0a116565a49e7303f

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sat Apr 18 16:02:48 2020 -0600

Convert all json file accesses to use `utils.touch_json`

Searched through the modules `in lsi/` and replaced all `with open(<some json> ...)` with a call to `utils.touch_json`.

```
lsi/create.py | 13 +++++-----
lsi/grade.py  |  4 ----
lsi/utils.py  | 41 +++++++++++++++++++++-----
3 files changed, 26 insertions(+), 32 deletions(-)
```

# What happened in between?

```
commit ea01c872436f80e9c52c97c317e6df9a5bb777bc
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date: Sat Apr 18 19:06:15 2020 -0600
```

Refactor to add `test` suite

The parsing functionality `in` ``lsi.py`` has been moved into ``lsi/parse.py`` to `enable` thorough testing. The ``tests`` subdirectory was also added along with ``tests/test_parse.py``, which tests the parsing functionality. A `test` file `for` each of the remaining modules is `in` the works.

```
lsi.py          | 75 +++-----
lsi/parse.py    | 88 ++++++
tests/test_parse.py | 648 ++++++
3 files changed, 746 insertions(+), 65 deletions(-)
```

# What happened in between?

```
commit d36eae7a1c0d439b64d9b66bef5fbbd4845efe92
```

```
Author: Peter McEvoy <mcevoypeter@outlook.com>
```

```
Date: Thu Apr 23 16:20:09 2020 -0600
```

Fix bug `in` deploy

We used ``cp -r -n <starter_code_dir>/* .`` to copy the starter code into the student repos, but ``-n`` doesn't overwrite any existing files, so we were stuck with the assign1 Makefile after releasing assign2.

``scripts/patch_deploy.sh`` is the bash script that we wrote to make the fix. This should eventually be refactored into ``lsi/patch.py``, which will add a ``patch`` subcommand to `lsi` that will allow us to make small tweaks like this.

```
lsi/deploy.py | 25 ++++++-----
scripts/patch_deploy.sh | 21 ++++++
2 files changed, 34 insertions(+), 12 deletions(-)
```

# What happened in between?

commit 0277a846544789751a8e46690028eed867399fa9

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sat Apr 25 09:31:40 2020 -0600

Fix grader issue `in` grades database

For a given assignment, only one grader was assigned to grade all students. Turned out this is because of a python reference issue: the dictionary we were using as a template `for` a student's grades was being changed to latest student even after being assigned to the grades database dictionary. The fix was to make a deep copy of the template `for` each student. To facilitate this fix, we added a `--database` flag `for` `create.py` so that it can be run to only create the database.

```
grades/assignment_grades.json | 564 ++++++-----
lsi/create.py                  | 16 +++++-
lsi/parse.py                   | 2 +
tests/test_parse.py            | 20 ++++++
4 files changed, 117 insertions(+), 485 deletions(-)
```



# What happened in between?

```
commit e2ef98c8c513ebf9cf79fa793d2453d4a6992ec2
```

```
Author: Sean Konz <swkonz@gmail.com>
```

```
Date: Sat May 2 16:30:34 2020 -0700
```

```
fix autograder functionality bugs
```

```
lsi/functionality.py | 13 ++++++++---
```

```
1 file changed, 10 insertions(+), 3 deletions(-)
```

# What happened in between?

commit 563815313f744a5e05d135d7139d5511bf436f9b

Author: Sean Konz <swkonz@gmail.com>

Date: Sat May 2 16:45:17 2020 -0700

edit script to add tags on extension branches. This is janky

scripts/create\_tags.py | 20 ++++++++-----

1 file changed, 16 insertions(+), 4 deletions(-)

# What happened in between?

commit c51f70da57fd9005af680203985a9e12b24e7a48

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sat May 9 15:35:49 2020 -0600

Remove array literal `in`test_strings.c``

gcc uses a `memcpy` when creating a literal array. When we're testing the `student`'s `memcpy`, this is bad news. To get around this, individually assign each `function` pointer into the `function` pointer array so that gcc uses a ``ldr`` and ``str`` rather than ``memcpy``.

```
grades/assignments/assign3/test_strings.c | 40 ++++++-----  
1 file changed, 36 insertions(+), 4 deletions(-)
```

# What happened in between?

commit e4f0bf14732291c49a6cd939467385017111c9b3

Author: Sean Konz <swkonz@gmail.com>

Date: Sat May 9 14:55:21 2020 -0700

upgrades on grade script to prevent student code usage, issues on branch selection

grades/assignment_grades.json	624	+++++
grades/assignments/assign2/test_gpio_get_function.c	2	+-
grades/assignments/assign2/test_gpio_read.c	2	+-
grades/assignments/assign2/test_gpio_set_function.c	2	+-
grades/assignments/assign2/test_gpio_write.c	2	+-
grades/assignments/assign2/test_timer.c	2	+-
grades/assignments/assign3/deductions.json	138	+++++-----
grades/assignments/assign3/test_snprintf.c	31	++++----
grades/assignments/assign3/test_strings.c	55	+++++-----
grades/assignments/assign3/test_to_base.c	28	++-----
grades/assignments/test_example_file.c	6	+-
lsi/functionality.py	21	+++++-
lsi/grade.py	2	+-

13 files changed, 759 insertions(+), 156 deletions(-)

# What happened in between?

commit f4cf38c1f52c835809427bfd3356f15b240536dd

Author: Sean Konz <swkonz@gmail.com>

Date: Mon May 11 23:03:58 2020 -0700

refund student grades for bug in snprintf implementation

grades/assignment\_grades.json | 124 ++++++-----  
1 file changed, 13 insertions(+), 111 deletions(-)

# What happened in between?

commit 1febd469b6ae774516b3caee626275bd6dbaab0b

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Thu May 14 15:31:22 2020 -0600

First pass at keyboard emulator

This isn't working, but I suspect I might have an issue with my hardware. I'm unable to communicate from one pi to another using a GPIO pin.

```
grades/assignments/keyboard-emulator/Makefile      | 47 ++++++
grades/assignments/keyboard-emulator/cstart.c       | 26 ++++++
grades/assignments/keyboard-emulator/key-em.c       | 147 ++++++
grades/assignments/keyboard-emulator/key-em.h       | 16 ++++++
grades/assignments/keyboard-emulator/keyboard-emulator.c | 22 ++++++
grades/assignments/keyboard-emulator/memmap         | 10 ++++++
grades/assignments/keyboard-emulator/start.s        | 6 ++++++
7 files changed, 274 insertions(+)
```

# What happened in between?

commit 26826f980356cc77ddf7517853d117c60b8584d0

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sun May 24 17:55:10 2020 -0600

Simplify keyboard emulator design

In the process of simplifying the keyboard emulator design by creating a **set** of inlined, header files.

```
grades/assignments/keyboard-emulator/Makefile      | 11 ++++++-----
grades/assignments/keyboard-emulator/gpiofast.h    | 77 +++++++++++++++++++++++++++++++++++++++++++++++++++++
grades/assignments/keyboard-emulator/key-em.c       | 154 -----
grades/assignments/keyboard-emulator/key-em.h       | 130 +++++++++++++++++++++++++++++++++++++++++++++++++++++
grades/assignments/keyboard-emulator/keyboard-emulator.c | 20 ++++-----
grades/assignments/keyboard-emulator/timerfast.h    | 29 +++++++++++++++++++++++++++++++++++++
6 files changed, 235 insertions(+), 186 deletions(-)
```

# What happened in between?

```
commit ee26c002d930ccb85c976e6f1bf453247ad79de7
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Mon Jun 1 17:49:36 2020 -0600
```

Finished grading fb.c and gl.c

```
grades/assignment_grades.json | 137 +++++++++++++++++++++++++++++++++++++
grades/assignments/assign6/deductions.json | 118 +++++
2 files changed, 244 insertions(+), 11 deletions(-)
```



# What happened in between?

```
commit cc28744e3b527eb30d4535d14f0ac527864bbd48
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Thu Jun 4 15:42:30 2020 -0600
```

```
    Increase timeout on malloc robustness tests
```

```
    Some of our tests were unconditionally failing because of timeout
    issues.
```

```
grades/assignments/assign4/deductions.json | 8 ++++----
1 file changed, 4 insertions(+), 4 deletions(-)
```

# What happened in between?

```
commit fa3a9b7aed42d2bc5e90754c1e125a9e0c8bffa4
Author: Peter McEvoy <mcevoy peter@outlook.com>
Date:   Mon Jun 8 16:13:02 2020 -0600
```

Assign5 scripts and traces

Had to grade assign5 by hand, so here is the "infrastructure" that I used to **do** so.

grades/assignments/assign5/basic.script	23 ++++++
grades/assignments/assign5/extension.script	6 ++++++

# What happened in between?

```
commit 14448726ed71ab9a1062aae21d07d2bb59a33d72
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Mon Jun 8 16:14:35 2020 -0600
```

```
[in-progress] keyboard emulator
```

This is by no means complete, but I'm adding my work on the keyboard emulator should we need to build on it for future quarters.

```
grades/assignments/keyboard-emulator/key-em.c      |    7 ++-
grades/assignments/keyboard-emulator/key-em.h      |  376 +++++
grades/assignments/keyboard-emulator/keyboard-emulator.c |    5 +-
3 files changed, 377 insertions(+), 11 deletions(-)
```

# What happened in between?

```
commit c2f32086f872f3fcf3a4a570eafcfe2b696cd0be  
Author: Peter McEvoy <mcevoypeter@outlook.com>  
Date:   Mon Jun 8 16:16:07 2020 -0600
```

Assign6 traces

Also had to grade assign6 by hand.

# What happened in between?

```
commit 1ceebcbbb815956c11cb9408024c2b693c551e2a
```

```
Author: Peter McEvoy <mcevoy peter@outlook.com>
```

```
Date:   Wed Sep 9 11:43:34 2020 -0600
```

```
Create build system and testing framework
```

```
For each test in the given assignment's subdirectory, build two versions  
of the test--one staff, one student--in the given student's repo, run  
each version, collect the output in the given student's repo, diff the  
two outputs, and collect the results ("pass" or "fail") for each test in a results  
file within the given student's repo.
```

```
Define the testing framework in `test-framework.h` to minimize the  
amount of boiler plate code needed to write assignment tests. Include an  
example test in `example-test.c`.
```

```
Makefile          | 111 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
example-test.c    |  15 ++++++  
test-framework.h  |  21 ++++++  
3 files changed, 130 insertions(+), 17 deletions(-)
```

# What happened in between?

commit 6b3c8ba250701c0bb0a6a71060010efe4a45d2a4

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sat Sep 12 12:01:30 2020 -0600

[in-progress] tune up for fall 2020

Remove all of the assignment `test` files since assignment tests now live in a separate repo, ``assignment-tests``.

Remove the ``scripts`` directory, which contained hacky one-off scripts that shouldn't be used again.

Remove ``deploy.py`` and the accompanying deploy-related code in ``parse.py`` and ``test_parse.py`` since we no longer need an explicit deploy action now that we have ``assignments-mirror``.

Rewrite the module that creates the grades csv from the grades json so that it is more easily understandable.

Add clone subcommand to create local copies of the student repos.

Rewrite the function in the release module that inserts grades into the `student's` README.md so that we can handle a more prettily formatted

README.md.

Add checkout\_branch **function** to utils module and adopt it **in** release module.

Remove dependency on github3.py from utils and release modules.

# What happened in between?

```
commit 02b476dd51756183150a2027ac93b6e652ecd3d4
Author: Peter McEvoy <mcevoy peter@outlook.com>
Date: Sat Sep 19 18:28:20 2020 -0600
```

Add update-branch and debug targets to Makefile

Update the branch to be graded from within the Makefile. This gets us one step closer to completely abstracting away the running of the tests from the LSI python driver. Also add a debug target that prints out all of the Makefile's macros.

```
Makefile | 110 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
1 file changed, 82 insertions(+), 28 deletions(-)
```



# What happened in between?

commit 3395a2e45f774f46cb824a98cceccef20d2b481e

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Mon Sep 28 17:08:40 2020 -0600

Change due dates to ISO format

The GitHub API returns datetimes `in` the ISO format. To make things easier `in` the grade module, update the due dates `in` `course_info.json` to also adopt the ISO format. Use `isoformat` `in` `dateutil.parser` module to parse ISO formatted strings into datetime objects.

```
course_info.json | 16 ++++++-----
lsi/state.py     |  3 ---
requirements.txt |  1 +
3 files changed, 9 insertions(+), 11 deletions(-)
```

# What happened in between?

```
commit e8f75aa892ac0b3c8ea7097e35227cadf6d3bf47
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Fri Oct 2 13:42:34 2020 -0600
```

Convert due dates to 24-hour **time in** course info json

``compute_late_days`` **in** the assignments module failed to correctly compute the late days because the assignments were due at 11:59am on Tuesday, not 11:59pm.

```
course_info.json | 16 ++++++-----
1 file changed, 8 insertions(+), 8 deletions(-)
```

# What happened in between?

```
commit 33dcc7080c28dca77e5f252bb18f651b1c4a54d6
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Fri Oct 2 14:09:37 2020 -0600
```

Add output module

Add output module that contains the ``log` function`, which will be used as a `function` decorator to clean up the code base and remove all of the ugly calls to ``log.*(...)`.`

```
lsi/output.py | 60 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
1 file changed, 60 insertions(+)
```

# What happened in between?

```
commit 97dd53795c2368cbc4edd1391873c710fd631210
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Sun Oct 11 11:29:10 2020 -0600
```

Replace long flags with short flags **in** Makefile

Some long flags available on Linux are apparently not available on macOS.

```
Makefile | 23 ++++++++-----
1 file changed, 11 insertions(+), 12 deletions(-)
```

# What happened in between?

```
commit a0ea0b4b50b6c617b47a71c8a7dbc9f5f7fb4183
```

```
Author: Peter McEvoy <mcevoypeter@outlook.com>
```

```
Date: Mon Oct 12 00:21:55 2020 -0600
```

```
Fix insidious pipe max output bug in utils.execute
```

Unix pipes apparently have a max output capacity of 65K, which we exceed when invoking the assignment-tests Makefile during the test-running portion of the grade module.

<https://thraxil.org/users/anders/posts/2008/03/13/Subprocess-Hanging-PIPE-is-your-enemy/>

```
lsi/utils.py | 22 ++++++-----
```

```
1 file changed, 6 insertions(+), 16 deletions(-)
```

## What happened in between?

```
commit 71a685874fb0d1731867e256be55af4f9a6f0c68
```

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sun Oct 18 10:44:14 2020 -0600

Cache staff results in `$CS107E_ASSIGNMENTS_MIRROR_REPO`

Run the staff version of the tests once and stick the results in `$CS107E_ASSIGNMENTS_MIRROR_REPO`.

```
Makefile | 120 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
1 file changed, 85 insertions(+), 35 deletions(-)
```

# What happened in between?

commit d6e02785c7f0ca849e68814304aab920a923b000

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sun Oct 25 19:00:41 2020 -0600

First version of keyboard emulator

keyboard-emulator/Makefile	55	+++++
keyboard-emulator/cstart.c	26	+++++
keyboard-emulator/fast-gpio.h	80	+++++
keyboard-emulator/fast-pi.h	45	+++++
keyboard-emulator/fast-timer.h	21	+++++
keyboard-emulator/key-em.h	126	+++++
keyboard-emulator/keyboard-emulator.c	31	+++++
keyboard-emulator/memmap	10	+++++
keyboard-emulator/scancode-sequence-500.h	14	+++++
keyboard-emulator/scancode-sequences.h	11	+++++
keyboard-emulator/scancodes.h	132	+++++
keyboard-emulator/start.s	6	+++++
scancodes-example.h	9	+++++
13 files changed, 566 insertions(+)		

# What happened in between?

```
commit 691c50de1beebff59aaca7c1847fe2e2b198edab
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Thu Oct 29 18:34:53 2020 -0600
```

Check keyboard emulator clock with logic analyzer

```
keyboard-emulator/key-em.h          | 3 +--
keyboard-emulator/keyboard-emulator.c | 2 +-
2 files changed, 2 insertions(+), 3 deletions(-)
```



# What happened in between?

commit 0516bcc9f772c3534c79edb98c27665d93cb3b4a

Author: Peter McEvoy <mcevoy peter@outlook.com>

Date: Mon Nov 2 11:32:20 2020 -0700

Update assign5 keyboard tests

Keyboard emulator is now up and running. The fix: use the appropriate keyboard\_init **function**. If using ref\_keyboard\_\*, **then** use ref\_keyboard\_init. Same **for** the non ref\_ keyboard implementation.

# What happened in between?

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Tue Nov 24 11:26:48 2020 -0700

Refactor cli.py to use shared parsers

```
lsi/cli.py | 137 ++++++-----  
1 file changed, 61 insertions(+), 76 deletions(-)
```

# What happened in between?

commit 6185e9b5903cd2fb7a8e85c30ff369debc535fa2

Author: Sean Konz <swkonz@gmail.com>

Date: Tue Dec 1 11:52:02 2020 -0800

fix late day script

compute\_late\_days.py | 14 ++++++++--

1 file changed, 13 insertions(+), 1 deletion(-)

# What happened in between?

commit 9e8508dbde1c3cce3174aa077620837827e2cb7f

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Fri Dec 4 14:19:39 2020 -0700

Move subparser creation into `command` modules

Each module that defines a subcommand of `lsi` now must implement the ``add_cli_parser`` `function` so that its subparser can be added to the top level parser by ``cli.py``.

```
lsi/add.py      | 68 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
lsi/cli.py      | 81 ++++++-----
lsi/clone.py    | 44 +++++++++++++++++++++++++++++++++++++--
lsi/drop.py     | 23 +++++++++++++++++
lsi/generate.py | 41 +++++++++++++++++++++++++++++++++++++
lsi/grade.py    | 82 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
lsi/release.py  | 15 ++++++++
lsi/review.py   | 14 ++++++++
8 files changed, 292 insertions(+), 76 deletions(-)
```

# What happened in between?

commit 854b1c61a3e4abb9b0cecde3116f08cbbf8e3066

Author: Peter McEvoy <mcevoy peter@outlook.com>

Date: Wed Dec 23 13:54:27 2020 -0700

Strip remaining code `in` assignments.Repo and add TODOs

```
lsi/assignments.py | 166 ++++++-----  
1 file changed, 45 insertions(+), 121 deletions(-)
```

# What happened in between?

```
commit d9c12e22fb9a98e199aed2d2ca6ad3b98fa67104
Author: Peter McEvoy <mcevoypeter@outlook.com>
Date:   Mon Jan 18 13:36:49 2021 -0700
```

Replace autonomous makefile with makefile stub

Simplify the `test` build process by replacing the previously humongous makefile with a simpler one designed to be included into the student's existing makefile.

```
Makefile          | 466 -----
grading.makefile  |  59 +++++
2 files changed, 59 insertions(+), 466 deletions(-)
```

# What happened in between?

```
commit ae3d6e40ef2ad53bb6b6586e3afd3651fa52d354
```

```
Author: Sean Konz <swkonz@gmail.com>
```

```
Date: Sun Jan 31 08:08:03 2021 -0800
```

```
update assign db format
```

```
assignment_grades.json | 180 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
1 file changed, 138 insertions(+), 42 deletions(-)
```

# What happened in between?

```
commit cb51fccc12f1aec5a9364a16291904fad0be5e11
```

```
Author: Sean Konz <swkonz@gmail.com>
```

```
Date: Sun Jan 31 18:20:37 2021 -0800
```

```
Update how we fetch tags to force update refs
```

```
assignment_grades.json | 188 ++++++
lsi/repo.py              |  2 +-
2 files changed, 95 insertions(+), 95 deletions(-)
```



# What happened in between?

commit 27e6faa51e45f14a5e0361963d6134b8a5665dc7

Author: Sean Konz <swkonz@gmail.com>

Date: Mon Feb 1 15:46:30 2021 -0800

fix crashing bug and update grade report language

lsi/assignments.py | 6 ++++++

1 file changed, 6 insertions(+)

# What happened in between?

commit 65db1d17b06a6d04cb160bcbb98fc3b48cae7dd8

Author: Sean Konz <swkonz@gmail.com>

Date: Fri Feb 5 13:39:08 2021 -0800

finish assign3 core tests

```
assign3/snprintf_max_int.c      | 33 ++++++
assign3/snprintf_min_width.c    | 40 ++++++
assign3/snprintf_min_width_buf_size.c | 49 ++++++
assign3/snprintf_percent.c      | 32 ++++++
assign3/snprintf_return_value.c | 33 ++++++
assign3/strlcat_dst_nonnull.c    | 26 ++++++
assign3/strlcat_exact_len.c      | 22 ++++++
assign3/strlcat_trunc.c          |  2 +-
assign3/strtonum_endptr.c        | 29 ++++++
assign3/strtonum_invalid_chars.c | 26 ++++++
assign3/strtonum_invalid_edge.c  | 26 ++++++
11 files changed, 317 insertions(+), 1 deletion(-)
```

# What happened in between?

commit 6985771113396c341fc241e44d2fd687a5ba41da

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sun Feb 7 17:09:56 2021 -0800

Add support for test command and new makefile grading stubs

```
lsi/assignments.py | 384 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
lsi/cli.py         |  53 +++++++++++++++++++++++++++++++++++++-
lsi/env.py         |   1 +
lsi/grade.py       |  26 +++++-----
lsi/test.py        |  85 ++++++++++++++++++++++++++++++++++++++
5 files changed, 329 insertions(+), 220 deletions(-)
```

# What happened in between?

commit ddd2e6c634b00bd62bedf3f6fa3e141ba8e35245

Author: Sean Konz <swkonz@gmail.com>

Date: Mon Feb 8 20:43:32 2021 -0800

pesky --force to properly update tags

lsi/repo.py | 2 +-  
1 file changed, 1 insertion(+), 1 deletion(-)

# What happened in between?

commit 1c8fbf21abc5cab8fb168bac5ab9ca19ae187b68

Author: Sean Konz <swkonz@gmail.com>

Date: Mon Feb 15 15:27:27 2021 -0800

when will the grading end

assignment\_grades.json | 1970 ++++++-----  
1 file changed, 161 insertions(+), 1809 deletions(-)

# What happened in between?

commit 8403867d1a6941b27a391db7e36140fe9c2e1ad9

Author: Peter McEvoy <mcevoypeter@outlook.com>

Date: Sun Feb 21 20:27:17 2021 -0800

Implement ugly new version of grade generation

lsi/assignments.py | 1 +

lsi/generate.py | 93 +++--

2 files changed, 71 insertions(+), 23 deletions(-)

# What happened in between?

```
commit 2c23885b287b970eb2b1a51b22b0b7b4a1c4349e
Author: Julie Zelenski <zelenski@cs.stanford.edu>
Date:   Sun Mar 7 20:36:04 2021 -0800
```

Fix fake fb to not draw pixels **in** the padded section

```
assign6/assign6_grading.h | 5 +++--
1 file changed, 3 insertions(+), 2 deletions(-)
```

# What happened in between?

commit 5f91295e2035f8fa6f20223dfca0a740345a6ab2

Author: Sean Konz <swkonz@gmail.com>

Date: Sun Feb 21 22:32:37 2021 -0800

fix log file issue and add extension emergency **test**

assign4/malloc\_redzones\_after.c | 2 +-  
assign4/manifest.ini | 8 +++++++  
2 files changed, 9 insertions(+), 1 deletion(-)



# What happened in between?

commit 86c6864bbb3cd71af62a5becbcb9dbadd253

Author: Sean Konz <swkonz@gmail.com>

Date: Wed Mar 3 14:28:35 2021 -0800

switch to new **test** filter approach **for** runnings tests

```
assignment_grades.json | 12 ++++++-----  
lsi/assignments.py     |  2 +-  
lsi/grade.py           | 30 ++++++++-----  
lsi/test.py            | 11 +++-----  
4 files changed, 20 insertions(+), 35 deletions(-)
```

# What happened in between?

commit 38038f88e88bb5ce4c978505cadca0aa11d54eba

Author: Sean Konz <swkonz@gmail.com>

Date: Mon Mar 8 11:55:48 2021 -0800

correct padding tests **in** db

assignment\_grades.json | 811 +-----  
1 file changed, 4 insertions(+), 807 deletions(-)

# By the numbers

```
// 883 commits  
// 4,036 lines of C  
// 4,056 lines of Python  
// 128 lines of make  
// 997 lines of configuration  
// 95 tests  
// 41 hours of device time this quarter  
// 2 tired brains
```

# What's next?

```
// Pi cluster  
// Linux on the pi  
// Pi on Linux
```

We appreciate you all