4156 Second Iteration Report

Team name: Falcon

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Github link
 https://github.com/YuyaoZhong/4156-team-project/tree/master/

Part 1

MVP for the second iteration

https://github.com/YuyaoZhong/4156-team-project/releases/tag/MVP-2-iter

Difference between Iteration 1 and Iteration 2 in user stories

We do not see a major difference between iteration 1'user stories and iteration 2's stories.
But we do modify some description and test cases to better fit our current version of application.
We have also implemented functionalities that are not developed in Iteration 1, including
creating a Zoom link, data validation when creating or editing a timer, sharing a timer with other
users.

User Stories Final Version

1. Pomodoro Timer:

User story

As a user, I want to have a pomodoro timer with a Zoom link attached so that I can pace myself
and boost my work efficiency.

Conditions of satisfaction:

- Should be able to create a Pomodoro timer with options to select a start time, name, duration and description
- Should see error and be required to select the start time again if he or she have chosen a past time point
- Should be able to generate a related Zoom link
- A user who creates the timer is able to share the pomodoro by copying a generated link to other uses.
- Should fail if a user create a timer which has overlaps with other existing timers
- Should see the information of the timer after a timer is successfully created
- Successfully created timers can be seen on the timer management page
- A timer can start counting down at the configured time

Acceptance testing plan

(1) Let a user try to create a Pomodoro timer, with a title, start time, duration and description. The start time will be set to be a time starting within a few minutes.

Expected results to accept:

- The user will be redirected to the page shows the configuration of the newly created timer and he can review and update this timer at any time

(2) (Exception) Let a user choose a start timer earlier than current time

Expect results to accept:
- The user will see a message that indicates that start time can not be later than current time and must select the start time and duration again.

2.Tasks and task lists

User story

As a user, I want to create a task list so that I can have a holistic overview of what is left to do.
Conditions of satisfaction:
- Should be able to add/delete tasks at any time.
- Should be able to add/delete task lists at any time.
- Can mark tasks as completed or incomplete.
- Can review all previous tasks.

Acceptance testing plan

    (1) Let a user try to create a task list by entering a task list name. We assume that this user has many tasks that he wants to add to this task list. Then let the user try to add tasks to the newly created task list.

        Expected results to accept:
- Users can add new task lists successfully.
- Users can add tasks successfully.
- Users can edit a task to be complete or incomplete.
- Users can delete tasks and task lists successfully.

    (2) （Exception）Let the user try to add an existing task to a task list that has already been deleted. While we have implemented the UI to not display any task lists that have already been deleted, we have also developed the backend which will check the existence of the targeted task list to avoid possibilities that the user may use the endpoint to add tasks directly.

        Expected results to accept:
- Let the user try to add a task to a deleted task list by directly calling the endpoint, the user will see the backend return a code of 500 and a message indicates that the request can not be successfully handled.

3. Attach tasks to pomodoro timers

User story

As a user, I want to attach tasks to a pomodoro timer so that I can see the work planned to be done during the pomodoro sessions.

Conditions of satisfaction:

- The user can add a created task to a pomodoro timer
- The user can add a task to multiple pomodoro timers
- The user can add multiple tasks to a pomodoro timer
- The user can not add a task again if the task has been added to the timer

Acceptance testing plan

    (1) Let a user try to attach an existing task to a pomodoro timer by clicking the "add" icon on a page of a pomodoro timer on the edit page, then click the "Save" button.

        Expected results to accept:
- The user can see all the tasks has been created

- The user can add one of the tasks that have not been attached to the timer by clicking it
- The user can see the task being successfully added to the timer

(2) (Exception) Let a user try to add a task that has been added to a pomodoro timer by clicking it again.

Expected results to accept:
- The user will see the task has been removed from the lists of attached tasks instead of successfully adding it.

Part 2

Plan for Equivalence Partitions and Boundary Conditions

We defined our own set of boundary conditions and gave our users rather generous room for inputs. Our allowed set of inputs is strings and integers for inputs like data time, task title, task name, task description, etc. Our users could enter strings up to 140 characters and for integers, the boundary is from -1000 to 65536. Also, non-integer would be counted as invalid. We thought these might be a rather reasonable boundary yet still not put too much pressure on the database backend. We tested the boundary conditions and equivalence partitions in a way such that both valid and invalids were tested. We tested integers within the reasonable bound and exactly at the bounds. Values just slightly missed the bounds were also tested to make sure the bounds are working. For string, we tested both valid strings and invalid strings (too long, since there is no negative length string).

As for the date for our timers, the boundary would be the current datetime. Since we do not allow our users to schedule a timer in the past. Anytime before the current datetime would be marked as invalid.

Implementation of boundary tests

We have implemented boundary tests based on the conditions for string and id for every function of the backend server, as well as check and test the validation of user inputs for the frontend.

For frontend, the boundary tests are included in the following files:
- **Task name** (string), src\components\taskList__tests__\edit-task-div.test.js
- **Task list name** (string), src\components\taskList__tests__\new-tasklist-card.test.js
- **Timer title** (string), src\components\timerpage__tests__\timer-form-edit.test.js

- **Timer description** (string),
  src\components\timerpage__tests__\timer-form-create.test.js
- **Timer start date, date part** (string with valid date format),
  src\components\timerpage__tests__\timer-form-edit.test.js
- **Timer start date, time part** (string with valid time format),
  src\components\timerpage__tests__\timer-form-edit.test.js
- **Timer duration (positive integer)**,
  src\components\timerpage__tests__\timer-form-num-boundary.test.js
- **Timer break time (positive integer)**,
  src\components\timerpage__tests__\timer-form-num-boundary.test.js
- **Timer round (positive integer)**,
  src\components\timerpage__tests__\timer-form-num-boundary.test.js

In consideration of SQL injection, we have used an object mapping relation (ORM) tool called Flask-SQLAlchemy (https://flask-sqlalchemy.palletsprojects.com/en/2.x/) to avoid writing sql directly. The ORM will help handle SQL injection automatically.

For backend, the boundary tests are included in the following files (backend/tests/*.py):
- **Tasklists** (string, int): testBoundaryTaskLists, testTaskLists
- **Task**(string, int): testBoundaryTask, testTask
- **Timers**(string, int): testBoundaryTimer, testTimer,
- **TasksToTimers**(string, int): testBoundaryTasksToTimers, testTasksToTimers
- **TimerToUser**(string, int): testBoundaryTimerToUser, testTimerToUse
- **Utilities**(string, int): testUtilites

Backend Test Suite Repo:
https://github.com/YuyaoZhong/4156-team-project/tree/master/backend/tests

Frontend Test Suite Repo:
1.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/homepage/__tests__
2.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/navbar/__tests__
3.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/taskList/__tests__
4.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/timerpage/__tests__
5.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/timers/__tests__
6.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/components/zoom/__tests__
7.https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/context/__tests__

8. https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/routes/__tests__

9, https://github.com/YuyaoZhong/4156-team-project/tree/master/frontend/src/utilities/__tests__

Part 3

Backend Coverage

https://github.com/YuyaoZhong/4156-team-project/blob/tests/backend/coverage%20report.html

Coverage report: 97%

Show keyboard shortcuts

filter...

Hide keyboard shortcuts

Hot-keys on this page

n s m x c   change column sorting

Module	statements	missing	excluded	coverage
F:\4156 team\4156-team-tests\4156-team-project\backend\app__init__.py	36	6	0	83%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\config.py	23	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\ext.py	2	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\models.py	92	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes__init__.py	2	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes\tasklists.py	120	5	0	94%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes\tasks.py	139	12	0	91%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes\tasksToTimers.py	138	10	0	93%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes\timerToUser.py	119	7	0	94%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\routes\timers.py	146	6	0	96%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\utls\apiStatus.py	11	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\app\utls\utilities.py	36	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testBoundaryTaskLists.py	123	1	0	99%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testBoundaryTasks.py	122	1	0	99%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testBoundaryTasksToTimers.py	110	1	0	99%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\TestBoundaryTimer.py	64	1	0	98%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testBoundaryTimerToUser.py	47	1	0	98%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testCase.py	44	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testTask.py	70	1	0	99%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testTaskLists.py	88	1	0	99%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testTasksToTimers.py	107	8	0	93%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests1\testUtilities.py	136	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests__init__.py	0	0	0	100%
F:\4156 team\4156-team-tests\4156-team-project\backend\tests\testCase.py	27	0	0	100%
Total	1802	61	0	97%

No items found using the specified filter.

coverage.py v5.3, created at 2020-12-04 21:36 -0500

For all our main backend components, we reached over 90 percent coverage. The missing portion was mainly due to "except" statements and error code 500. Our database was designed in a way such that if we were to test error code 500, it would cause trouble in our rollback mechanism. An example is attached below:

```
49
50          targetTaskList = TaskList.query.get(taskListId)
51          if not targetTaskList:
52              code, msg = 404, apiStatus.getResponseMsg(404)
53          else:
54              try:
55                  db.session.delete(targetTaskList)
56                  db.session.commit()
57                  code, msg = 201, apiStatus.getResponseMsg(201)
58              except:
59                  code, msg = 500, apiStatus.getResponseMsg(500)
60
61          result["code"] = code
62          result["message"] = msg
63          return jsonify(result)
64
```

We have also implemented the test of API endpoint to create a Zoom meeting. However since the Zoom API needs user authentication, therefore the test can be only executed with manually generating tokens. We believe that the Zoom endpoint can not be tested in unit tests and instead should be completed as a part of the acceptance tests.

Frontend Coverage

We have completed 146 unit tests over 33 files for the frontend, reaching a coverage rate of 98.55% of all the statements and 97.18% for all the branches.

We did not include following files for coverage, but our tests do use part of the functions
- *data-context.js*: mainly for operations interacted with the endpoint without rendering any html trees, tested in the backend
- *google-login-context.js*: the context needs user login in to google and is hard to be mocked in the unit tests. Better to do in acceptance tests.
- *semantic-react-table.js*: it is mainly a file that wraps the third-party library `react-table`. The hooks and functions used are also from the library and therefore are hard to be tested in the unittest. We tested our component of the timer table instead.

We also exclude the src dictionary itself and snapshot folders since they mainly include setting files and testing files that are not related to the unit tests.

All the files tested reach coverage rate above 90% for both statements, functions and branches. One only file `timer-form' has a coverage rate of 100% statements but 89.06% for branches since we used third-party library `*semantic-ui-calendar-react*` and we have to mock the behavior of the library as an <input/> component and ignore the pop-up windows for selecting date or

time. Otherwise, it will be expensive to re-render the whole component with a pop-up window and cause stack overflow when testing. The uncovered branches are mainly related to the library and are hard to be tested in the unit tests.

All files

98.55% Statements 611/620   **97.18%** Branches 379/390   **94.19%** Functions 146/155   **99.83%** Lines 588/589

Press *n* or *j* to go to the next uncovered block, *b, p* or *k* for the previous block.

File ▲		Statements		Branches		Functions		Lines	
components/homepage		100%	5/5	100%	10/10	100%	2/2	100%	5/5
components/navbar		100%	10/10	100%	4/4	100%	3/3	100%	9/9
components/taskList		100%	71/71	100%	32/32	100%	23/23	100%	65/65
components/timerpage		99.41%	169/170	93.69%	104/111	97.96%	48/49	100%	163/163
components/timers		97.58%	121/124	100%	86/86	91.18%	31/34	100%	117/117
components/zoom		100%	19/19	100%	10/10	100%	5/5	100%	19/19
constants		100%	4/4	100%	0/0	100%	0/0	100%	4/4
routes		100%	8/8	100%	4/4	100%	4/4	100%	8/8
utilities		97.61%	204/209	96.99%	129/133	85.71%	30/35	99.5%	198/199

Part 4

Travis CI repo: https://github.com/YuyaoZhong/4156-team-project/tree/travis (.travis.yml location)
Travis CI Yaml file:
https://github.com/YuyaoZhong/4156-team-project/blob/travis/.travis.yml
Travis CI report raw log(Backend):
https://github.com/YuyaoZhong/4156-team-project/blob/travis/TravisCIReport/travidCIReportBackEnd.sh
Travis CI report raw log(Frontend):
https://github.com/YuyaoZhong/4156-team-project/blob/travis/TravisCIReport/travidCiReportFrontEnd.sh

Travis CI ScreenShot (Backend):

Travis CI ScreenShot (Frontend):

YuyaoZhong / 4156-team-project   build unknown

Current   Branches   Build History   Pull Requests

More options

✓ travis Update .travis.yml   ⚙ #41 passed   ↻ Restart build

◇ Commit 772895c ↗   ⏱ Ran for 1 min 15 sec
⇄ Compare 4ffdac5..772895c ↗   ▤ less than a minute ago
⑂ Branch travis ↗   ⋉ Shared repository

😈 Silvalin

</> Node.js: 12.13
○ AMD64

Job log   View config

⤬ Remove log   ↓ Raw log

```
                                                                                    0.07s
                                                                                    2.60s
    1
                                                                        docker_mtu_and_registry_mirrors
                                                                                    resolvconf
  ▸ 2  $ git clone --depth=50 --branch=travis https://github.com/YuyaoZhong/4156-team-project.git YuyaoZhong/4156-team-project   git.checkout    0.73s
    12
    13                                                                                          0.01s
  ▸ 14 $ nvm install 12.13                                                            nvm.install    2.71s
    20
  ▸ 21 Setting up build cache                                                              cache.1
    27
  ▸ 28                                                                                    cache.npm
    30 $ node --version
    31 v12.13.1
```

Search all repositories

My Repositories   Running (0/0)   +

✓ YuyaoZhong/4156-team-project # 41

⏱ Duration: 1 min 15 sec
▤ Finished: less than a minute ago

```
   1  Worker information                                                                                worker_info      0.06s
   6                                                                                                                     0.01s
   7  Build system information                                                                          system_info
 161
 162                                                                                        docker_mtu_and_registry_mirrors   2.59s
                                                                                                        resolvconf
 163  $ git clone --depth=50 --branch=travis https://github.com/YuyaoZhong/4156-team-project.git YuyaoZhong/4156-team-project   git.checkout   0.58s
 173
 174  $ source ~/virtualenv/python3.7/bin/activate                                                                       0.01s
 175  $ python --version
 176  Python 3.7.1
 177  $ pip --version
 178  pip 20.1.1 from /home/travis/virtualenv/python3.7.1/lib/python3.7/site-packages/pip (python 3.7)
 179  $ cd backend/                                                                                     install.1        0.00s
 180  $ pip install -r requirements.txt                                                                 install.2        11.29s
 351  $ pwd                                                                                                              0.00s
 352  /home/travis/build/YuyaoZhong/4156-team-project/backend
 353  The command "pwd" exited with 0.
 354  $ ls                                                                                                              0.00s
 355  app                          pylint_report.html  run.py         tests
 356  pylint_old_report.html       readme.md           runTests.py
 357  pylint_old_report_tests.html requirements.txt    test_reports
 358  The command "ls" exited with 0.
 359  $ cd tests/                                                                                                       NaNs
 360  The command "cd tests/" exited with 0.
 361  $ pwd                                                                                                             0.00s
 362  /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 363  The command "pwd" exited with 0.
 364  $ ls                                                                                                              0.00s
 365  __init__.py                  testBoundaryTimerToUser.py  testTimer.py
 366  testBoundaryTaskLists.py     testCase.py                 testTimerToUser.py
 367  testBoundaryTasks.py         testTaskLists.py            testUtilities.py
 368  testBoundaryTasksToTimers.py testTask.py                 testZoom.py
 369  TestBoundaryTimer.py         testTasksToTimers.py
 370  The command "ls" exited with 0.
 371  $ pytest testTask.py                                                                                              13.85s
 372  =============================== test session starts ===============================
 373  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
 374  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 375  collected 9 items
```

```
 377  testTask.py .........                                             [100%]
 378
 379  =============================== 9 passed in 13.62s ===============================
 380  The command "pytest testTask.py" exited with 0.
 381  $ pytest testTimer.py                                                                                             17.07s
 382  =============================== test session starts ===============================
 383  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
 384  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 385  collected 14 items
 386
 387  testTimer.py ..............                                       [100%]
 388
 389  =============================== 14 passed in 16.84s ===============================
 390  The command "pytest testTimer.py" exited with 0.
 391  $ pytest testTaskLists.py                                                                                         11.59s
 392  =============================== test session starts ===============================
 393  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
 394  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 395  collected 5 items
 396
 397  testTaskLists.py .....                                            [100%]
 398
 399  =============================== 5 passed in 11.35s ===============================
 400  The command "pytest testTaskLists.py" exited with 0.
 401  $ pytest testUtilities.py                                                                                         0.58s
 402  =============================== test session starts ===============================
 403  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
 404  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 405  collected 22 items
 406
 407  testUtilities.py ......................                           [100%]
 408
 409  =============================== 22 passed in 0.33s ===============================
 410  The command "pytest testUtilities.py" exited with 0.
 411  $ pytest testTasksToTimers.py                                                                                     11.01s
 412  =============================== test session starts ===============================
 413  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
 414  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
 415  collected 5 items
 416
```

```
415  collected 5 items
416
417  testTasksToTimers.py .....                                          [100%]
418
419  =========================== 5 passed in 10.78s ===========================
420  The command "pytest testTasksToTimers.py" exited with 0.
421  $ pytest testTimerToUser.py                                               16.28s
422  =========================== test session starts ===========================
423  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
424  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
425  collected 11 items
426
427  testTimerToUser.py ..........                                        [100%]
428
429  =========================== 11 passed in 16.05s ==========================
430  The command "pytest testTimerToUser.py" exited with 0.
431  $ pytest testBoundaryTaskLists.py                                         16.84s
432  =========================== test session starts ===========================
433  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
434  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
435  collected 14 items
436
437  testBoundaryTaskLists.py ..............                              [100%]
438
439  =========================== 14 passed in 16.60s ==========================
440  The command "pytest testBoundaryTaskLists.py" exited with 0.
441  $ pytest testBoundaryTasks.py                                             18.73s
442  =========================== test session starts ===========================
443  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
444  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
445  collected 21 items
446
447  testBoundaryTasks.py .....................                           [100%]
448
449  =========================== 21 passed in 18.51s ==========================
450  The command "pytest testBoundaryTasks.py" exited with 0.
451  $ pytest testBoundaryTasksToTimers.py                                     13.17s
452  =========================== test session starts ===========================
453  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
454  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
```

```
444  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
445  collected 21 items
446
447  testBoundaryTasks.py .....................                           [100%]
448
449  =========================== 21 passed in 18.51s ==========================
450  The command "pytest testBoundaryTasks.py" exited with 0.
451  $ pytest testBoundaryTasksToTimers.py                                     13.17s
452  =========================== test session starts ===========================
453  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
454  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
455  collected 7 items
456
457  testBoundaryTasksToTimers.py .......                                 [100%]
458
459  =========================== 7 passed in 12.95s ===========================
460  The command "pytest testBoundaryTasksToTimers.py" exited with 0.
461  $ pytest TestBoundaryTimer.py                                             18.10s
462  =========================== test session starts ===========================
463  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
464  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
465  collected 12 items
466
467  TestBoundaryTimer.py ...........                                     [100%]
468
469  =========================== 12 passed in 17.87s ==========================
470  The command "pytest TestBoundaryTimer.py" exited with 0.
471  $ pytest testBoundaryTimerToUser.py                                       11.19s
472  =========================== test session starts ===========================
473  platform linux -- Python 3.7.1, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
474  rootdir: /home/travis/build/YuyaoZhong/4156-team-project/backend/tests
475  collected 10 items
476
477  testBoundaryTimerToUser.py ..........                                [100%]
478
479  =========================== 10 passed in 10.96s ==========================
480  The command "pytest testBoundaryTimerToUser.py" exited with 0.
481
482
483  Done. Your build exited with 0.                                          Top ▲
```
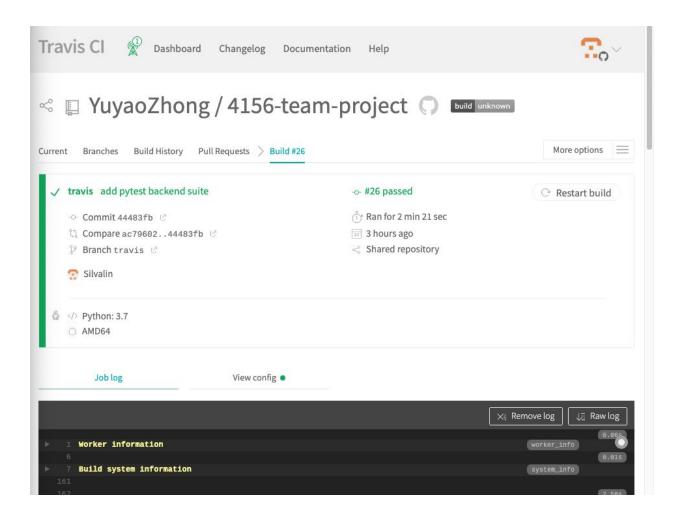
For full report, please refer to:

Travis CI report raw log(Backend):
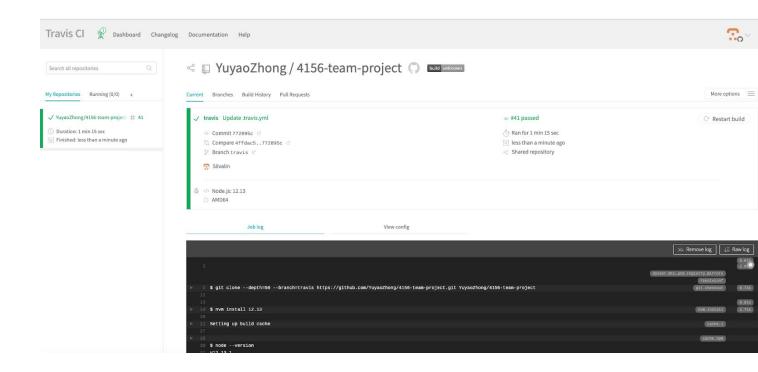https://github.com/YuyaoZhong/4156-team-project/blob/travis/TravisCIReport/travidCIReportBackEnd.sh
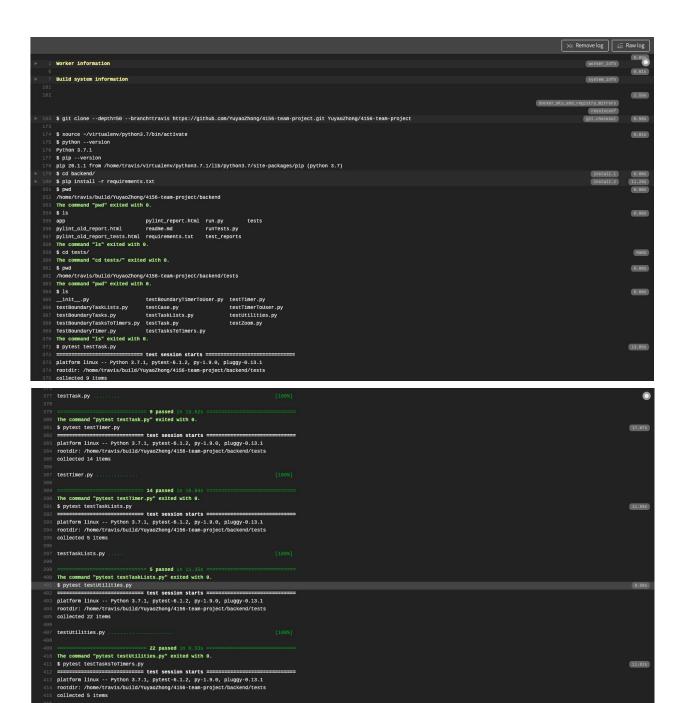Travis CI report raw log(Frontend):
https://github.com/YuyaoZhong/4156-team-project/blob/travis/TravisCIReport/travidCiReportFrontEnd.sh