Iteration 4

Customer Meeting

We successfully implemented the algorithm and added many UI features.
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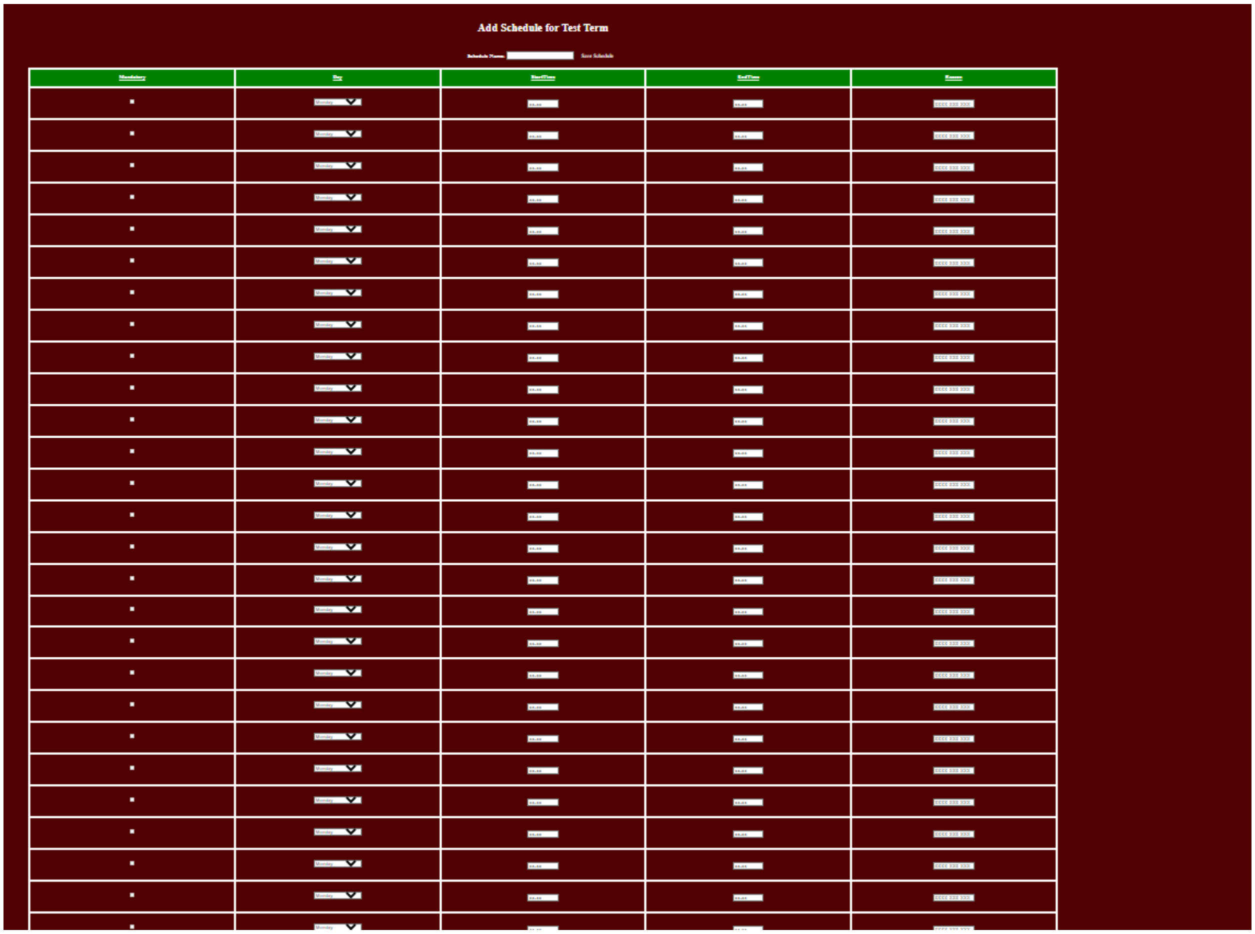
User Stories

For this iteration, we implemented the algorithm to realize the function of computing the slot of every possible time slot, which is required by the customer. We also fixed some bugs in the algorithm part of legacy code and added some new features.

Feature1: Increase the number of rows where student can add their class schedule
As a student, I need enough lines to fill in my weekly schedule.



Add Schedule for Test Term

Schedule Name: Save Schedule

Mandatory	Day	StartTime	EndTime	Room
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
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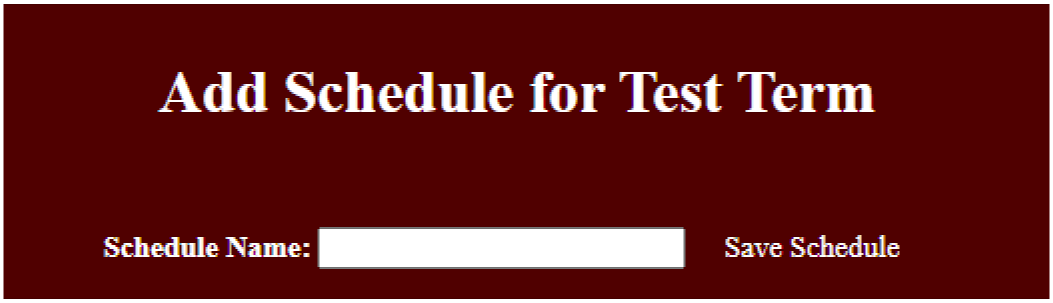
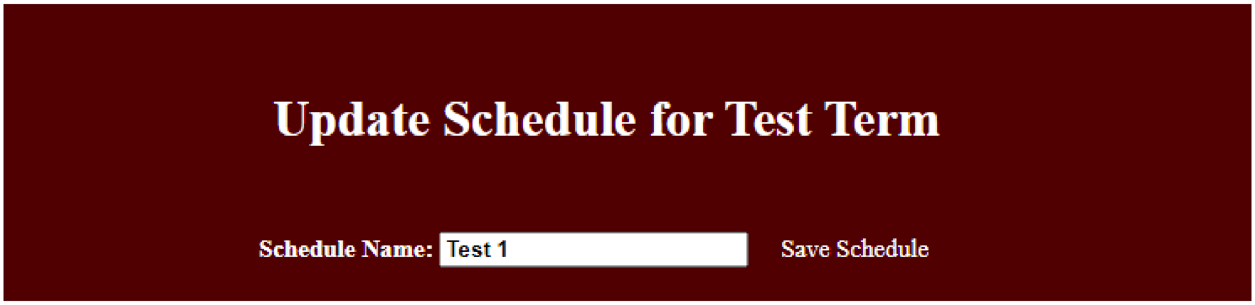
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX
☐	Monday	xx:xx	xx:xx	XXXX XXX XXX

Feature2: add the ‘Save’ button near schedule name
As a student, if i just need to fill about 5 lines, i don't want to scroll the page until the end so that i can click the ‘Save’ button. I need a Save button which is available no matter i am at the top or bottom of the page.

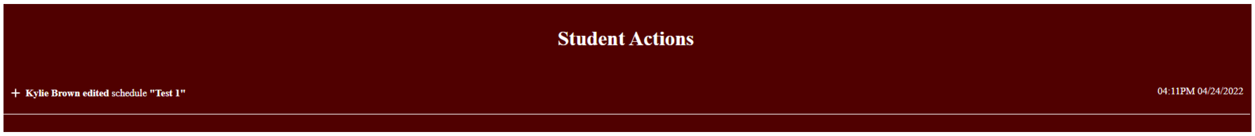

Add Schedule for Test Term

Feature3: only readable schedule name when edit an existing schedule
As an admin, I don't want to allow students to change their schedule name arbitrarily when they just want to edit their existing schedule because I don't want to get confused between the new schedule and the edited schedule.


Update Schedule for Test Term

Schedule Name: Test 1

Feature4: view student action
As an admin, I can view the actions of each student when they create, edit or delete a schedule which is helpful for me to find out the progress.

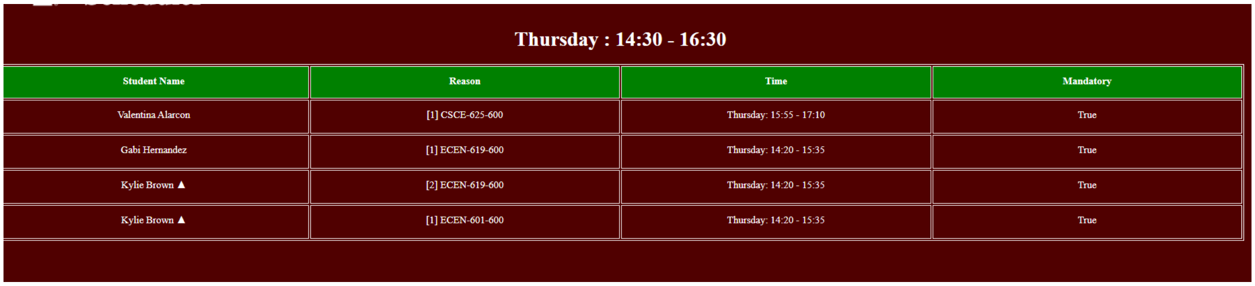

Student Actions

+ Kylie Brown edited schedule "Test 1" 04:11PM 04/24/2022

Feature5: a much more straightforward time slot conflict
As an admin, I hope I can differentiate between the common time slots which just conflict with freshmen’s schedules and those special time slots which conflict with urgent senior students’ schedules. Because even if freshmen fail to choose the zlp course they have more chances to choose in the next few semesters. But if a senior student can not choose the zlp course, they can not graduate successfully.

Feature6: a much more straightforward time slot conflict detail

As an admin, I hope I can easily see into the time slot details, including who is an urgent student, what schedule this conflict comes from. An urgent student is noted with a triangle symbol. Which schedule is marked in the “Reason” column as [1], [2], or [3].



Thursday : 14:30 - 16:30

Student Name	Reason	Time	Mandatory
Valentina Alarcon	[1] CSCE-625-600	Thursday: 15:55 - 17:10	True
Gabi Hernandez	[1] ECEN-619-600	Thursday: 14:20 - 15:35	True
Kylie Brown ▲	[2] ECEN-619-600	Thursday: 14:20 - 15:35	True
Kylie Brown ▲	[1] ECEN-601-600	Thursday: 14:20 - 15:35	True

Feature7: Algorithm Implementation

As an admin, I hope I click the button “run algorithm” and the result can be displayed efficiently and correctly. The old algorithm is incorrect and somewhat counter-intuitive. So we make a new one and the detailed idea is described as follows.

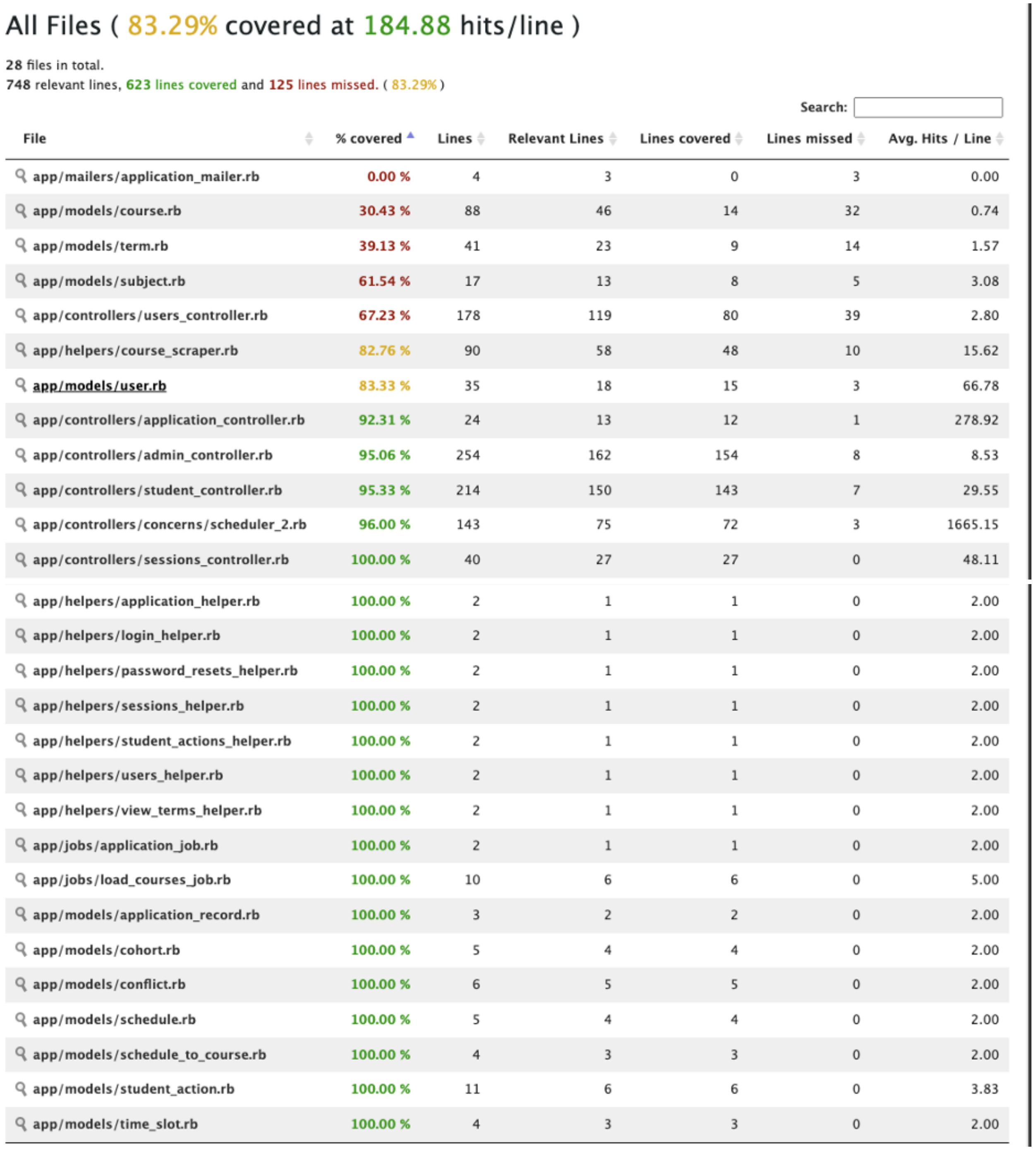
1. Cost of **non-mandatory** course for one **urgent** student in different schedule:
   First schedule cost for one conflict= 5*7^2 = 245
   Second schedule cost for one conflict = 5*7^1 = 35
   Third schedule cost for one conflict = 5*7^0 = 5
2. Cost of **non-mandatory** course for one **non-urgent** student in different schedule:
   First schedule cost for one conflict= 7^2 = 49
   Second schedule cost for one conflict = 7^1 = 7
   Third schedule cost for one conflict = 7^0 = 1
3. Cost of **mandatory** course for one **urgent** student in different schedule:
   First schedule cost for one conflict= 2*5*7^2 = 490
   Second schedule cost for one conflict = 2*5*7^1 = 70
   Third schedule cost for one conflict = 2*5*7^0 = 10
4. Cost of **mandatory** course for one **non-urgent** student in different schedule:
   First schedule cost for one conflict= 2*7^2 = 98
   Second schedule cost for one conflict = 2*7^1 = 14
   Third schedule cost for one conflict = 2*7^0 = 2

Generally speaking,

a. For any urgent students, the cost is 5 times higher than non-urgent students.
b. For any mandatory courses, the cost is 2 times higher than non-mandatory courses.
c. The cost of the time slot after 3 o’clock will increase exponentially until it reaches 1500.
d. Students are allowed to input three schedules in total. The first one they input is the one they deem the most important; the third one, the least. Hence, the cost for the first schedule is 7^2, the second 7^1, the third 7^0. The reason is that we need to make sure that the cost of three courses from the second or third schedule will not exceed that of any courses from the first schedule.
e. If the first schedule encounters no conflicts at all, there is no need to display the conflicts due to the second or third schedule.

Test Coverage

We worked on improving the test coverage which was initially 59.6%. We made sure that every new feature we worked on is covered by BDD or unit tests. Besides, we inspected the code for refactoring and removing the unnecessary parts. In its current state, the ZLP Scheduler project has 83.29% coverage.

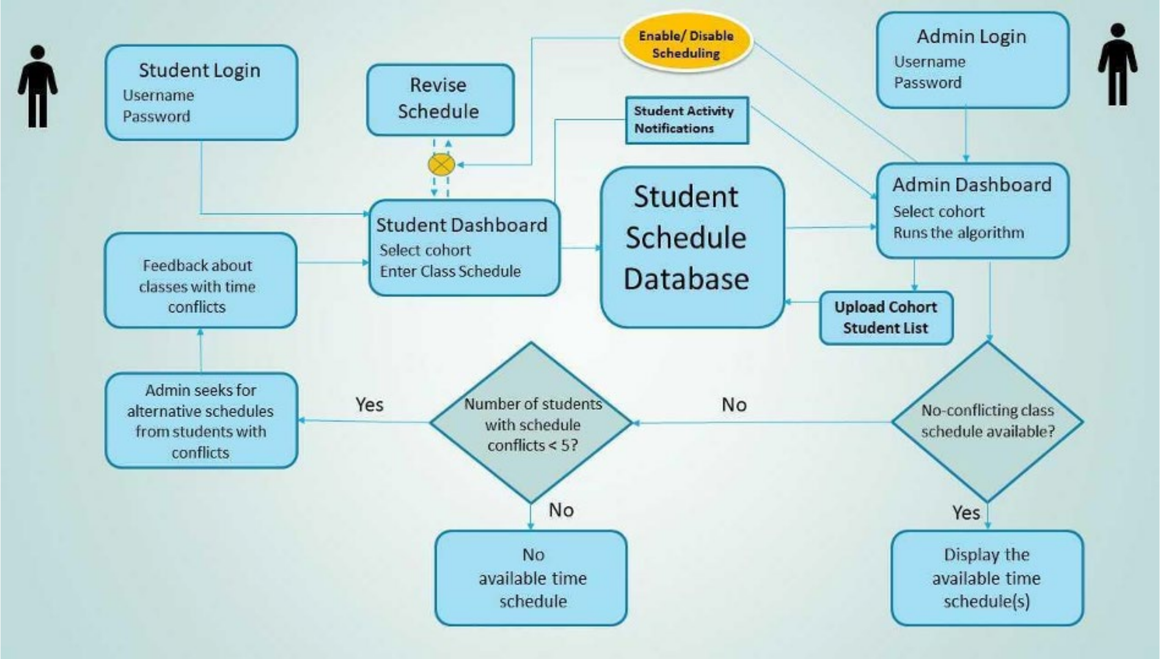


All Files (83.29% covered at 184.88 hits/line)

28 files in total.
748 relevant lines, 623 lines covered and 125 lines missed. (83.29%)

File	% covered	Lines	Relevant Lines	Lines covered	Lines missed	Avg. Hits / Line
app/mailers/application_mailer.rb	0.00 %	4	3	0	3	0.00
app/models/course.rb	30.43 %	88	46	14	32	0.74
app/models/term.rb	39.13 %	41	23	9	14	1.57
app/models/subject.rb	61.54 %	17	13	8	5	3.08
app/controllers/users_controller.rb	67.23 %	178	119	80	39	2.80
app/helpers/course_scraper.rb	82.76 %	90	58	48	10	15.62
app/models/user.rb	83.33 %	35	18	15	3	66.78
app/controllers/application_controller.rb	92.31 %	24	13	12	1	278.92
app/controllers/admin_controller.rb	95.06 %	254	162	154	8	8.53
app/controllers/student_controller.rb	95.33 %	214	150	143	7	29.55
app/controllers/concerns/scheduler_2.rb	96.00 %	143	75	72	3	1665.15
app/controllers/sessions_controller.rb	100.00 %	40	27	27	0	48.11
app/helpers/application_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/login_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/password_resets_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/sessions_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/student_actions_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/users_helper.rb	100.00 %	2	1	1	0	2.00
app/helpers/view_terms_helper.rb	100.00 %	2	1	1	0	2.00
app/jobs/application_job.rb	100.00 %	2	1	1	0	2.00
app/jobs/load_courses_job.rb	100.00 %	10	6	6	0	5.00
app/models/application_record.rb	100.00 %	3	2	2	0	2.00
app/models/cohort.rb	100.00 %	5	4	4	0	2.00
app/models/conflict.rb	100.00 %	6	5	5	0	2.00
app/models/schedule.rb	100.00 %	5	4	4	0	2.00
app/models/schedule_to_course.rb	100.00 %	4	3	3	0	2.00
app/models/student_action.rb	100.00 %	11	6	6	0	3.83
app/models/time_slot.rb	100.00 %	4	3	3	0	2.00

Design Diagram


Student Login
Username
Password
Revise Schedule
Enable/ Disable Scheduling
Student Activity Notifications
Admin Login
Username
Password
Student Dashboard
Select cohort
Enter Class Schedule
Student Schedule Database
Admin Dashboard
Select cohort
Runs the algorithm
Feedback about classes with time conflicts
Upload Cohort Student List
Admin seeks for alternative schedules from students with conflicts
Yes
Number of students with schedule conflicts < 5?
No
No-conflicting class schedule available?
No
Yes
No available time schedule
Display the available time schedule(s)

Links

GitHub: https://github.com/RuichenNi/TAMU-ZachryLeadershipScheduler

Heroku:
https://tamu-zlp.herokuapp.com/

Meeting Records:

04-14:https://drive.google.com/file/d/1odj4p0mVRtdJa6UEeezeOlVOZjweNtNM/view?usp=sharing

04-21:https://drive.google.com/file/d/1q0sHZ2YfV63iqkV77ICm22EZMZdPkQpe/view?usp=sharing