

Plan.ly

CS 673 Team 1 - UNO Iteration 3

Team Overview

- Team UNO
- Working to build Plan.ly, an event planning tool

Name	Role
George Wright	Team Leader
Vibhu Bhatia	Backup Team Leader
Aysha Zenab Kenza	Security Leader
Karen Sommer	Design/Implementation Leader
Zach Schandorf-Lartey	Configuration Leader
Chris Kulig	Requirements Leader
Matt Dowding	Quality Assurance Leader



Content

- 1. Project management
- 2. Requirement analysis
- 3. Design
- 4. Implementation
- 5. Testing
- 6. Security
- 7. Deployment
- 8. Demo



Project management

Management Strategy

George Wright
Team Leader

- Management style
- Meetings
- Training/pair programming
- Use of PivotalTracker for management

Management Style

- [Attempted to] adhere to a **agile scrum** methodology with a working product to show at the end of each iteration
- Given team schedules:
 - No daily stand-up
 - Combined sprint planning and retrospective
- Supplement meetings with technical workshops and pair programming

Iteration 0 Iteration 3

Technical workshops about Django/React

Pair programming (2-3 people) for specific stories

Meetings

- Hosted 25 group meetings
- 30 pages of meeting minutes
- Typically Saturdays or Sundays at 2 PM
- Numerous smaller breakout groups for pair programming or troubleshooting
- Added 1-2 meetings during weeks before iteration presentations

Sprint (iteration) planning/retrospective

Technical workshop, testing, or debugging

Non-technical (documents, presentation, etc.)

Use of PivotalTracker in Meetings

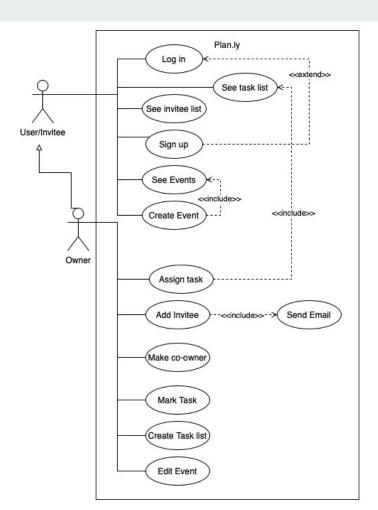
- Mainly during meetings immediately leading up to or following presentations
- Use Pivotal to drive group discussion of:
 - Bug review
 - Metric update
 - Story cleanup
 - Work assignment



Requirement analysis

Plan.ly - Essential Stories

- Sign Up
- Log In
- Create a Event
- View Feed of Events
- "Owner" inherits from "User/Invitee"
- Final product use case diagram design

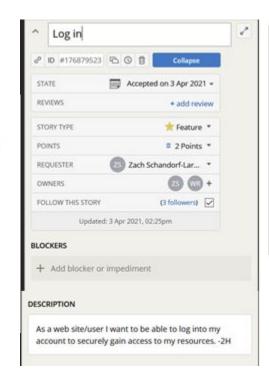


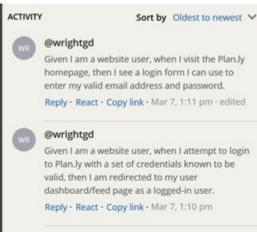
Use Case Description

Name:	Add an Event	Initiating actor:	User/Invitee					
Entry condition:	→ The user is logged into Planly → The user is on the dashboard page		 → The user becomes an Owner of the created event. → The user receives display information about the error. 					
The flow of events: <ba< td=""><td>sic Flow></td><td></td><td></td></ba<>	sic Flow>							
User/Invitee Steps		Planly steps	Planly steps					
Clicks on Create eve Input information abo		 Displays the pop up for input information Validates inserted information Create a new event and save it into the database Displays the dashboard page with the new event 						
The flow of events: <al< td=""><td>ternative Flow></td><td>•</td><td></td></al<>	ternative Flow>	•						
User/Invitee Steps		Planly steps						
1. Input information abou	t the event [Invalid information]	[Invalid information] Displays the failure.						

Pivotal: Starting Out

 Set detailed guide on functional expectations through user stories using Given, When, Then to describe what a completed story looks like.





Pivotal: Starting Out

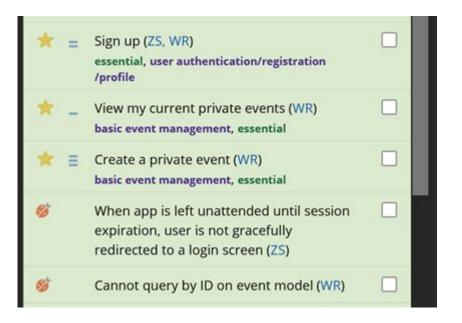
 Developer defined tasks are crucial to estimating development time and the pace of

TASKS (7/7)

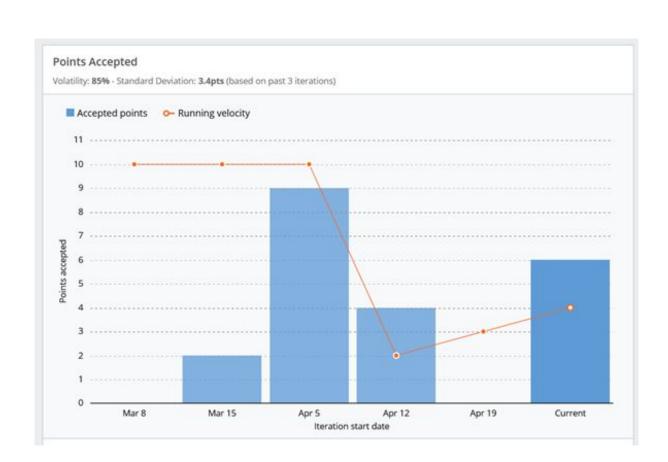
- ✓ Create authentication flow 2h
- ✓ Create a login/signup component .5h
- create the logic to check if the user logging in already has an account in the django database
 - 1h
- write user tests 1h
- ✓ test the log in flow -1h
- if the user does not exist, create logic to create user account in mongo database with the provided name/email/password -3h
- if the user does exist, create logic to send them to the dashboard component - 1h

Pivotal: Making Progress

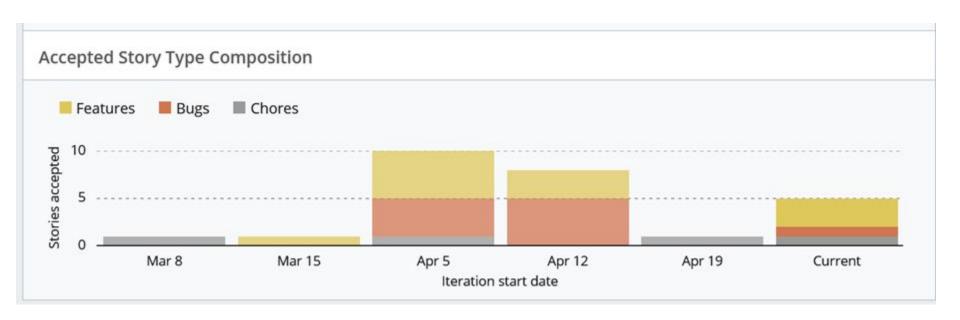
- We used Pivotal to
 - •Guide development
 - •Adjust our direction if necessary
 - Log bugs



Results



Results



ResultsConfig is Frontloaded

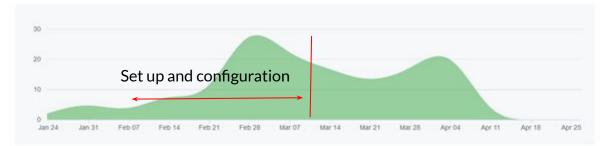
View feed of events

TASKS (6/6) ✓ Create user class - .5h Create the user in the database - .5h Create the event class - .5h Create an event table in the database - .5h Create the React UI that will display the users event information - 1.5h Unit test - 1.5h

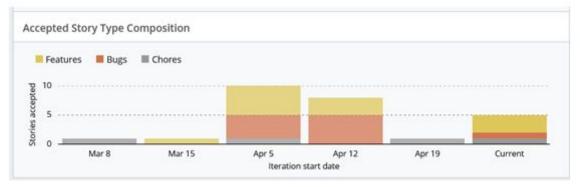
ResultsConfig is Frontloaded



Contributions to main, excluding merge commits and bot accounts



Contributions: Commits .



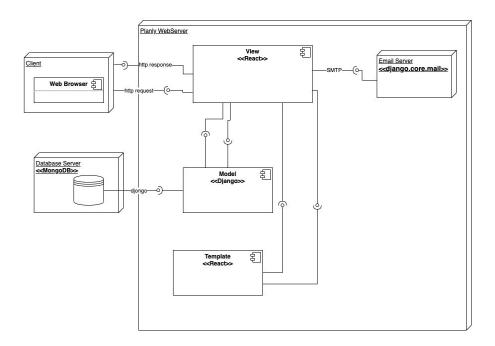
Design

Software Architecture

-Component diagram

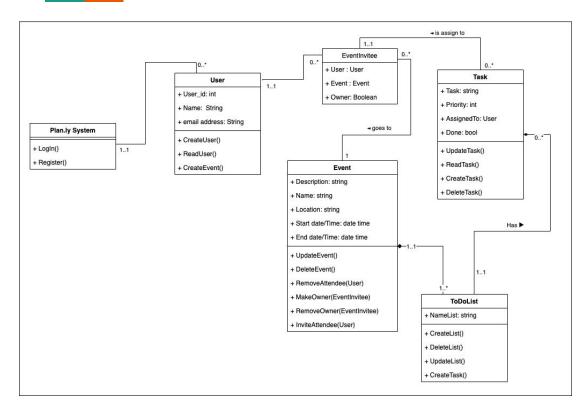


- Django architecture
- MTV pattern
 - Modified MVC.





Software Architecture



-Class diagram

Classes

- 1. Plan.ly System
- 2. User
- Event Invitee
- 4. Event
- 5. ToDoList
- 6. Task

Classes and Methods



Database

- Plan.ly uses NoSQL Database (mongoDB)
- Django Provides a mongoDB interface, **Djongo** which allows easy integration

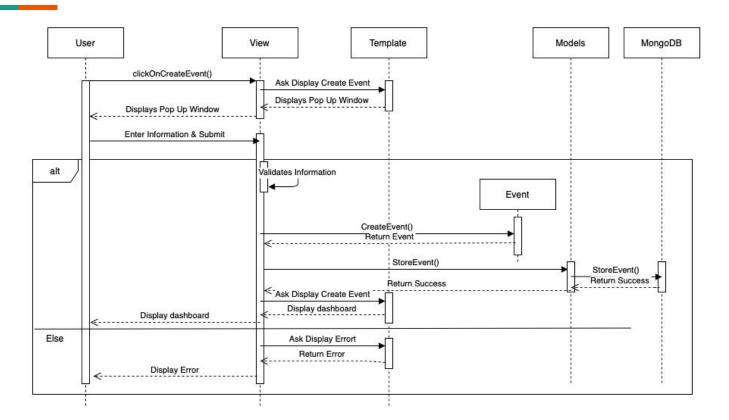
Event Class

```
"_id" : <DB generated id>,
    "Name" : "My Sample Event",
    "Description" : "This is the sample description for my awesome event. Please be there. I need help...",
    "Location" : "Boston, Massachussetts",
    "Start_date" : Jan 26 2021 10:20:00 AM,
    "End_date" : Jan 30 2021 10:20:00 AM,
    "Participants" : [Event_invitee1_id, Event_invitee2_id, Event_invitee3_id, Event_invitee4_id...],
    "Owner" : Event_invitee_id,
    "Lists" : [todoList_1_id, todoList_2_id, todoList_3_id, todoList_4_id..],
```



Sequence Diagram

-Add Event

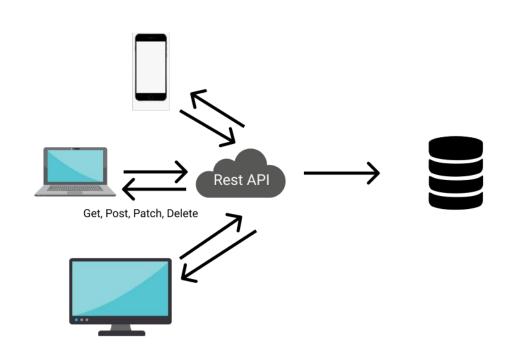




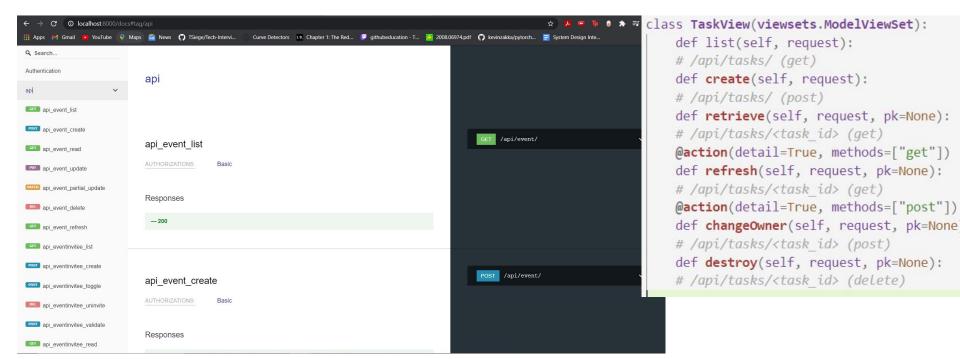
Implementation

System Architecture

- Stateless architecture
- Supported across multiple devices.
- Highly Scalable.
- Frontend-backend segregation.



Backend: API



Backend: Database (NoSQL)

```
_id:ObjectId("6081e13bcbff4d74a9944e10")
name: "Make Eggs"
priority: 1

invitee_assigned:Object
    _id:ObjectId("6081e0eccbff4d74a9944e0e")
    user_id: 36
    isOwner: true
    event_id: 139
completed: false
list_id: "6081e12ecbff4d74a9944e0f"
```

Some Features of Database:

- Added redundancy (increased in Space complexity).
- No expensive joins needed (fast response api calls).
- Embedded documents saved as separate files for separate retrieval.
- Nesting allows for arbitrary levels of storage.

```
id: ObjectId("60876684e02398f215ab8214")
 name: "test"
 description: "test"
> creator: Object
v tasks: Array
  > 0: Object
  > 1: Object

√ 2: Object

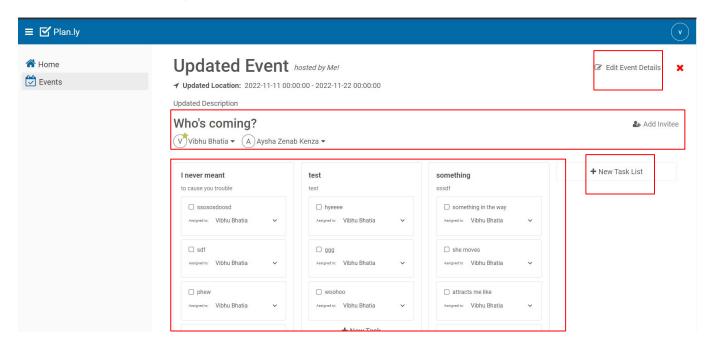
       id: ObjectId("6089784ba75ea8617b9fe67a")
       name: "woohoo"
       priority: 1
     > invitee_assigned: Object
       completed: false
       list id: "60876684e02398f215ab8214"
```

Frontend: Components

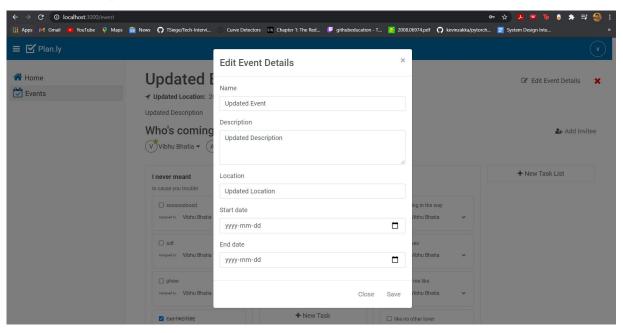
- Html page is divided into components.
- Some components are initialized after certain conditions go through.
- Information is stored in state variable
- As Parent or child component gets updated the updated information is passed through all the components that need that information so that updated info is reflected globally.
- Dashboard has the most expensive operation.
- Pages fetch information independently (makes execution faster)

```
* Class representing the Dashboard once user logs in.
 * @extends Component
export default class Dashboard extends Component
  * Create a Dashboard
  * @param {string} name - The ???
  * @param {string} username - The name of the person Logged in.
  * @param {string} items - The list of items in that person's account.
  constructor(props) {
   super(props);
   this.state = -
     username: ''
     user id: -1,
     logged in: !!localStorage.getItem('token'),
      userEventList: [],
      eventFormComponent: null,
      calendarEvents: [],
      allTaskComponent: (
        <span>
          <Col>
            <Spinner animation="border" variant="danger" />
          </col>
          <Col>
           Loading your tasks.
          </col>
        </span>
      recUpComponent: (
        <span>
          <Col>
            <Spinner animation="border" variant="primary" />
          </col>
```

Frontend: Components



Frontend: Components



Refactoring Case Study:

- 1. Event page displayed all the information related to an event.
- 2. Edit event modal could be used in similar way as the create event modal in home page.
- 3. As we started delegating more duties to group members, everyone needed to edit state variables and not affect or break webapp for others.
- 4. State should only hold the most important information, leave the rest to either rendering or external functions (render called every time state is updated).
- 5. Updates in child component not reflected in the parent component or sibling components.
- 6. Every Page now independently fetches for information.

Testing

Unit Testing: python unit test

Unit Tests. For unit testing, we have made use of the Django built-in unit testing mechanism in tests.py. In this file, we have checks to verify that we can create and delete model records with the expected successes and validation exceptions being returned by the back-end. Example tests include:

- Checking to make sure that the id field of the User model cannot be assigned by a developer; only the back-end
- Testing that Event Invitee records can be created and tied to an event/user using the respective ID attributes of each
- Testing behavior when task records are given extremely long names/descriptions (exceeding the validation requirements)
- Checking that no ValidationError is raised when an Event record is created with all required field filled in correctly.

```
(planly) D:\github\ms_cs\Spring-2021\software engineering\BUMETCS673S21T1>python manage.py test
System check identified no issues (0 silenced).
.....
Ran 7 tests in 0.914s
```

System Testing: selenium

System Tests. Our system testing approach relies upon Selenium, which we have imported through its Python module. The system testing is designed specifically around the requirements we have stored in PivotalTracker: in the spreadsheets referred-to below, we specifically map each test case to the requirements it exercises. We aimed to automate each and every single one of our test cases. By doing so, we will ensure they can be quickly run, and serve as a valuable tool to quickly test changes to our app and ensure nothing has regressed. Samples of system test cases include (but are not limited to):

- Sign up for a new Plan.ly account and ensure you can login
- Attempt to login with credentials known to be invalid and ensure a warning is given
- Sign in, navigate to an Event page, and attempt to edit the event; ensure the details are updated on the event page once "Save" is clicked on the edit form

System Testing: requirement testing coverage sheet

	Pivotal Export (4-22-2021)				Test cases					
ld	Title	Description	Labels	TC-01	TC-02	TC-03	TC-04	TC-05	TC-06	TC-07
76949922	Sign up	essential, user authentication/registration/profile	As a website user I want to be able to create an account to be able to create so that I can log into the page as an authorized user and use the page functions as necessary.8.5H							
76879523	Log in	essential, user authentication/registration/profile	As a web site/user I want to be able to log into my account to securely gain access to my resources2H							
76879628	Create a private event	basic event management, essential	As a website member(Signed User), I want to create a private event, so that I can share details like the description, location, and starting and ending date and time, of the event with the invitee. 6.5 H							
76879631	View my current private events	basic event management, essential	As an event owner, I want to view my current private events, so that I see how are they going - 4H							
76879638	Update my private event	basic event management, desirable	As an event owner, I want to update a private event, so that I can modify the information(description, starting and ending date, and time) of the event. 7.2H							
76953068	Go To Event From Feed	desirable, user dashboard/feed	As a logged in user on the home page when there are events available in the feed I want to be able to click on an event within the feed and go to the details page to get information about it not							

System Testing: end-to-end test cases sheet

	Description	Туре	Objective	Procedure	Expected Results	2021-04-03 15:34:47		2021-04-04 18:58:05		2021-04-05 19:42:03	
Test Case ID						Results	Comments	Results	Comments	Results	Comments
TC-01	Sign up with <u>Plan.ly</u> for the first time, using a valid email account	Positive Functionality	Ensure that <u>Plan.ly</u> allows new (unregistered) users to sign up using a valid email account	Open web browser and navigate to Plan Iv homepage Click "signup" to initiate registration process Choose the option to register with a Google account Type in the credentials of a known email account to be used for testing Click submit	Account is successfully created and user is redirected to the dashboard/feed page. User receives an automated email (at the email address associated with the email account) confirming that the registration was succesful.	Р	N/A	Error: Name Error	syntax error	Р	N/A
TC-02	Log in to <u>Plan.ly</u> with a valid email account	Positive Functionality	Ensure that <u>Plan.lv</u> allows a previously registered user to sign in with their associated email account	Open web browser and navigate to Plan Iv homepage Click "Sign In" button to initiate logging in Choose same email account the user has previously signed up with 4. Click "submit" button	Successful log in with correct Google account Redirect to user dashboard	Р	N/A	Р	N/A	Р	N/A
TC-03	Logout from <u>Plan.ly</u>	Positive Functionality	Ensure that <u>Plan.ly</u> allows users to logout after they successfully logged in	Open web browser and navigate to Plan ly homepage. Login with known email account credentials that were previously used to register on Plan ly Once logged in, click logout	Successfully logged out of users account Return to Plan.ly homepage	P	N/A	Р	N/A	Р	N/A
TC-04	Logout from Plan.ly and attempt to click back button	Negative Functionality	Ensure that on successful log out a user cannot hit the back button to see restricted content	Open web browser and navigate to Plan Iy homepage. Login with known email account credentials that were previously used to register on Plan.Iy Once logged in, click logout Click the "back" browser button	The user is not able to return to previous restricted content User redirected to Plan.ly homepage	Р	N/A	Р	N/A	Р	N/A
TC-05	Create a private event	Positive Functionality	Ensure that a registered user on Plan.ly can create an event	Open web browser and navigate to Plan Iy homepage. Login with known email account credentials that were previously used to register on Plan.ly 3. Clcik on create an event Verify that an event has been created.	Successfully create an event for the user	P	N/A	Error: No Such Element Exception	failure after merge with updated dev	Р	N/A

System Testing: report generation

Unittest Results

Start Time: 2021-04-27 11:02:47

Duration: 166.60 s

Summary: Total: 14, Pass: 14

mainAutomated Testing	Status
test_TC_01	Pass
test_TC_02	Pass
test_TC_03	Pass
test_TC_04	Pass
test_TC_05	Pass
test_TC_06	Pass
test_TC_07	Pass
test_TC_08	Pass
test_TC_09	Pass
test_TC_10	Pass
test_TC_11	Pass
test_TC_12	Pass
test_TC_13	Pass
test_TC_14	Pass

Total: 14, Pass: 14 -- Duration: 166.60 s

System Testing: report generation - catching bugs

Unittest Results Start Time: 2021-04-27 10:20:15 Duration: 121.77 s Summary: Total: 12, Pass: 7, Error. 5 __main__.AutomatedTesting Status test TC 01 test_TC_02 test_TC_03 test_TC_04 test TC 05 test TC 06 test_TC_07 test TC 08 Hide NoSuchElementException: Message: no such element: Unable to locate element: {"method": "xpath", "selector": "//" [@id="events"]/div/div/div/div/div /div/div[2]/a/div/div/h3"} (Session info: chrome=90.0.4430.93) Traceback (most recent call last): File "c:\Users\Matthew\Desktop\project673\main\BUMETCS673S21T1\testing\automated_testing.py", line 155, in test_TC_08 self.driver.find_element_by_xpath(//*[@id="events"]/div/div/div/div/div/div/div/div/h3').click() File "C:\Users\Matthew\Desktop\project673 \main\BUMETCS673S21T1\venv\lib\site-packages\selenium\webdriver\remote\webdriver.py", line 394, in find_element_by_xpath return self.find_element(by=By.XPATH, value=xpath) File "C:\Users\Matthew\Desktop\project673\main\BUMETCS673S21T1\venv\lib\site-packages \selenium\webdriver\remote\webdriver.py", line 976, in find element return self.execute(Command.FIND ELEMENT, { File "C:\Users\Matthew \Desktop\project673\main\BUMETCS673S21T1\venv\lib\site-packages\selenium\webdriver\remote\webdriver.py", line 321, in execute self.error_handler.check_response(response) File "C:\Users\Matthew\Desktop\project673\main\BUMETCS673S21T1\venv\lib\site-packages \selenium\webdriver\remote\errorhandler.py", line 242, in check_response raise exception_class(message, screen, stacktrace) selenium.common.exceptions.NoSuchElementException: Message: no such element: Unable to locate element: {"method":"xpath", "selector":"//* [@id="events"]/div/div/div/div/div/div/div/div/div/h3"} (Session info: chrome=90.0.4430.93) test_TC_09 View test_TC_10 View

Total: 12, Pass: 7, Error: 5 - Duration: 121.77 s

test_TC_11 test_TC_12

System Testing: testing webpage UI

Unittest Results

Start Time: 2021-04-26 12:56:56	
Duration: 34.71 s	
Summary: Total: 3, Pass: 3	
mainWebpageTesting	Status
test_dashboard	Pass
test_event	Pass
test_homepage	Pass

Total: 3. Pass: 3 -- Duration: 34.71 s

```
def test_homepage(self):
    self.driver.get('http://localhost:3000/')
    time.sleep(1)
    # log in button
    log_in = self.driver.find_element_by_xpath('//*[@id="navigation-website"]/nav/div/a[1]').text
    assert log_in == 'Log In'
    # sign up button
    sign_up = self.driver.find_element_by_xpath('//*[@id="navigation-website"]/nav/div/a[2]').text
    assert sign_up == 'Sign Up'
    # start planning button
    start_planning = self.driver.find_element_by_xpath('//*[@id="product"]/div/div[1]/div/div[2]/a').text
    assert start_planning == 'Starting Planning'
    # plan.ly hompage button
    homepage = self.driver.find_element_by_xpath('//*[@id="navigation-website"]/nav/span/a').text
    assert homepage == 'Plan.ly'
```

Testing Metrics

Metric ID	Metric Description	End of Iteration 0	End of Iteration	End of Iteration 2	End of Iteration 3
M-1	Testing coverage	0	4	13	27
M-2	Unit tests written	0	0	7	7
M-3	Unit tests passing	0	0	7	7
M-4	System test written	3	4	6	20
M-5	System test simulated	0	4	6	17
M-6	System tests passing	0	4	6	17

Security

Security

- Cross Site Request Forgery (CSRF)
 - → CSRF tokens are unique, secret, and randomly generated values that are generated by a server-side application and sent to the client.
 - When a request is made from the client, the server checks to see if the request includes the expected CSRF token, and if it does, validates it.
- Django
- → Django comes with a user authentication system. It handles user accounts, groups, permissions and cookie-based user sessions.
- → The auth system consists of:
 - Users,Permissions: Binary (yes/no) flags designating whether a user may perform a certain task,Groups: A generic way of applying labels and permissions to more than one user,A configurable password hashing system,Forms and view tools for logging in users, or restricting content,A pluggable backend system
- JSON Web Token
 - → open standard that defines a securely transmitting information between parties as a JSON object, information can be verified using digital sign.
 - → JSON Web Tokens consist of three parts separated by dots (.), which are:
 - ☐ Header, Payload, Signature



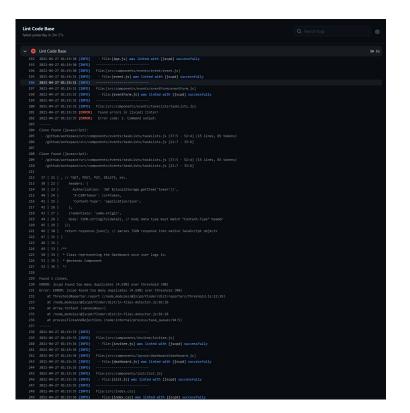
Testing: Non Functional Requirements

- Security
- User Interface
- Complexity
- Scalability

Deployment

CI/CD Pipeline

- -We setup two Github Actions workflows to create a small CI/CD process
- -Each pull request and commit was automatically linted by a combination of linters
- -Every pull request is automatically assigned three reviewers to go over the code and make sure it passes its linting checks
- -When a pull request is approved, it is merged with development, which is then pushed to Heroku
- -New changes are pulled from development into feature branches



```
Lint Code Base

✓ ✓ Lint Code Base

 215 2021-04-27 05:06:14 [INFO] File:[backend/urls.py]
  259 2021-04-27 05:06:26 [MARN] Report output folder (/github/workspace/super-linter.report) does NOT exist.
  Post Checkout Code

    Complete iob
```

Heroku Deployment

main/release branch - plan-ly.herokuapp.com

Development - development.planly.herokuapp.com

Heroku uses two buildpacks

- -heroku/nodejs
- -heroku/python

Each buildpack runs the build process for its respective framework and installs dependencies and modules into Heroku so that the app can run

```
----> Building on the Heroku-20 stack
----> Using buildpacks:
      1. heroku/nodejs
       2. heroku/python
----> Node, is ann detected
----> Creating runtime environment
       NPM_CONFIG_LOGLEVEL=error
       NODE VERBOSE=false
      NODE_ENV=production
       NODE MODULES CACHE-true
----> Installing binaries
       engines.node (package.json): 14.6.0
       engines.npm (package.json): 6.14.9
      Resolving node version 14.6.0...
       Downloading and installing node 14.6.0...
      Bootstrapping npm 6.14.9 (replacing 6.14.6)...
----> Restoring cache
       - node_modules
----> Installing dependencies
       Installing node modules
      > core-js@2.6.12 postinstall /tmp/build_4b7a20a3/node_modules/core-js
       > node -e "try{require('./postinstall')}catch(e){}"
      > ejs@2.7.4 postinstall /tmp/build_4b7a2@a3/node_modules/ejs
       > node ./postinstall.js
       > fsevents@1.2.13 install /tmp/build_4b7a20a3/node_modules/webpack-dev-server/node_modules/fsevents
       Skipping 'fsevents' build as platform linux is not supported
       > fsevents@1.2.13 install /tmp/build_4b7a20a3/node_modules/watchpack-chokidar2/node_modules/fsevents
       > node install, is
       Skipping 'fsevents' build as platform linux is not supported
       > core-js@3.9.1 postinstall /tmp/build_4b7a20a3/node_modules/react-app-polyfill/node_modules/core-js
       > node -e "try{require('./postinstall')}catch(e){}"
```

Demo

Thank you

Questions?

