Florida International University
Knight Foundation School of Computing and Information Sciences

Software Engineering Focus

Final Deliverable

Team Members: John Gonzalez, Elvis Blanco Gonzalez, Daniela Agueros, Michael Banegas, Elijah Khazzouh

Product Owner(s): Masoud Sadjadi

Mentor(s): Masoud Sadjadi

Instructor: Masoud Sadjadi

Abstract

This document presents the information necessary to gain a good understanding of InternHub, the student's job board.

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INTRODUCTION

InternHub is a platform created with the belief that students and recent graduates deserve a seamless and efficient way to access job opportunities upon graduation. Whether you're seeking internships to gain practical experience or junior-level positions to kickstart your career, InternHub is designed to put the perfect opportunities right at your fingertips. Our mission is to empower and support students in their transition from academia to the professional world by connecting them with relevant and meaningful work opportunities. Say goodbye to endless job searches and let InternHub be your go-to resource for launching your career with confidence.

Current System

The current job-seeking landscape is characterized by the proliferation of online platforms, ranging from general job boards to industry-specific websites. While these platforms have made job searching more accessible, they often lack the specificity and tailored approach needed for students and recent graduates who are seeking internships or entry-level positions.

For example, on generic job boards, students may encounter a vast array of job listings that may not be relevant to their career goals or academic background. This can result in wasted time and effort sifting through numerous postings that do not align with their interests or qualifications. Moreover, these platforms may not provide the necessary guidance or resources to help students navigate the competitive job market and make informed decisions about their career paths.

Purpose of New System

The purpose of InternHub is to empower and support students and recent graduates in their transition from academia to the professional world by providing a specialized platform for finding internships and junior-level positions. The platform aims to streamline the job search process, making it quick and easy for users to find relevant and meaningful opportunities that align with their career goals and interests.

USER STORIES

The following section provides the detailed user stories that were implemented in this iteration of the InternHub project. These user stories served as the basis for the implementation of the project's features. This section also shows the user stories that are to be considered for future development.

Implemented User Stories

- User Story 1 – Complete Module 1 of the AWS course
    - As a developer, I will complete module 1 so that I understand the AWS course objectives.
- User Story 2 – Complete Module 2 of the AWS course
    - As a developer, I will complete module 2 so that I can learn how to get started developing on AWS.
- User Story 3 – Complete Module 3 of the AWS course
    - As a developer, I will complete module 3 so that I can learn how the storage service of AWS works.
- User Story 4 – Complete Module 4 of the AWS course
    - As a developer, I will complete module 4 so that I understand how to secure access to AWS resources
- User Story 5 – Complete Module 5 of the AWS course
    - As a developer, I will complete module 5 so that I can learn how to develop flexible NoSQL solutions

- User Story 6 – Complete Module 6 of the AWS course
    - As a developer, I will complete module 6 so that I can learn how to develop REST APIs
- User Story 7 – Complete Module 7 of the AWS course
    - As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
- User Story 8 – Complete Module 8 of the AWS course
    - As a developer, I will complete module 8 so that I can learn about containers and container services
- User Story 9 – Complete Module 7 of the AWS course
    - As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
- User Story 10 – Complete Module 8 of the AWS course
    - As a developer, I will complete module 8 so that I can learn about containers and container services
- User Story 11 – Complete Module 9 of the AWS course
    - As a developer, I will complete module 9 so that I can learn about caching strategies with AWS.
- User Story 12 – Complete Module 11 of the AWS course
    - As a developer, I will complete module 11 so that I can learn about Orchestrating Serverless Functions with Step Functions.

- User Story 13 – Complete Module 12 of the AWS course

    o As a developer, I will complete module 12 so that I can learn about Implementing Application Authentication Using Amazon Cognito.

- User Story 14 – Complete Module 13 of the AWS course

    o As a developer, I will complete module 13 so that I can learn about Automating Application Deployment Using a CI/CD Pipeline.

- User Story 15 – Complete Module 14 of the AWS course

    o As a developer, I will complete module 14 so that I can learn more about acquiring an AWS certification.

- User Story 16 – Complete Task Distribution

    o As a developer, I will start planning task distribution for the project

- User Story 17 – UI Layout System

    o As a developer, I will set up the UI of the app so that the app has a nice design.

- User Story 18 – Set Up Email Notification System

    o As a developer, I will set up an email notification system so that users can receive emails with important notifications.

- User Story 19 – Amazon Cognito

    o As a developer, I will utilize Amazon Cognito so that I can authenticate and authorize users.

- User Story 20 – Authentication Dashboard

    o As a developer, I will create the authenticated users dashboard so that users will be able to manage internship opportunities.

- User Story 21 – Connect DynamoDB to Laravel

    o As a developer, I will research how to connect DynamoDB to Laravel so I can utilize a database.

- User Story 22 – Host Project on AWS

    o As a developer, I will create a free AWS account so that I can host our project on an EC2 instance.

- User Story 23 – UI Layout System

    o As a developer, I will set up the UI of the app so that the app has a nice design.

- User Story 24 – Create AWS pipeline

    o As a developer, I will create an AWS GitHub pipeline and connect it to the Elastic Beanstalk environment so that our hosted project is always up to date.

- User Story 25 – Create Poster

    o As a presenter, I will create a poster to help showcase our project.

- User Story 26 – Prepare Presentation Slides

    o As a presenter, I will prepare presentation slides to help showcase our project.

- User Story 27 – Create Introductory Video

    o As a presenter, I will create an introductory video to introduce the team for the presentation.

- User Story 28 – Create Demo Video

    o As a presenter, I will create a demo video about the project to showcase the functionality of our project.

- User Story 29 – Create Livewire Component

    o As a developer, I will create a Livewire component to implement public list of opportunities so that users can view available opportunities.

- User Story 30 – Finish Posters

    o As a student, I will finish my poster so that I can display it at the showcase.

Pending User Stories

- User Story 31 – Finish Demo Video

    o As a student, I will finish the demo video of our project so that I can showcase the functionality.

- User Story 32 – Finish Presentation Slides

    o As a presenter, I will finish the presentation slides to help showcase our project.

- User Story 33 – Finish Introductory Video

    o As a presenter, I will finish the introductory video to introduce the team for the presentation.

- User Story 34 – Finish Final Project Documentation

    o As a student, I will finish the final project documentation to document everything involved in making the project.

- User Story 35 – Prepare and Submit Final Deliverables

    o As a student, I will prepare and submit the final deliverables so that all relevant files can be viewed in the zip file.

PROJECT PLAN

This section describes the planning that went into the realization of this project. This project incorporated the agile development techniques and as such required the sprints to be planned. These sprint plannings are detailed in the section. This section also describes the components, both software and hardware, chosen for this project.

Hardware and Software Resources

The following is a list of all hardware and software resources that were used in this project:

- Computer
- AWS
    - EC2
    - Elastic Beanstalk
    - RDS
    - SES SMTP
- PHP
- Laravel
- GitHub
- Tailwind CSS

Sprints Plan

Sprint 1

Sprint #1
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: January 17, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

- User Story 1 – Complete Module 1 of the AWS course
  - As a developer, I will complete module 1 so that I understand the AWS course objectives.
  - Assigned to - Everyone
- User Story 2 – Complete Module 2 of the AWS course
  - As a developer, I will complete module 2 so that I can learn how to get started developing on AWS.
  - Assigned to - Everyone
- User Story 3 – Complete Module 3 of the AWS course
  - As a developer, I will complete module 3 so that I can learn how the storage service of AWS works.
  - Assigned to - Everyone

Sprint 2

Sprint #2
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: January 30, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

- User Story 1 – Complete Module 4 of the AWS course
  - As a developer, I will complete module 4 so that I understand how to secure access to AWS resources
  - Assigned to - Everyone

- User Story 2 – Complete Module 5 of the AWS course
- As a developer, I will complete module 5 so that I can learn how to develop flexible NoSQL solutions
  - Assigned to - Everyone

- User Story 3 – Complete Module 6 of the AWS course
  - As a developer, I will complete module 6 so that I can learn how to develop REST APIs
  - Assigned to – Everyone

- User Story 4 – Complete Module 7 of the AWS course
  - As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
  - Assigned to - Everyone

- User Story 5 – Complete Module 8 of the AWS course
  - As a developer, I will complete module 8 so that I can learn about containers and container services
  - Assigned to - Everyone

Sprint 3

Sprint #3
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: February 13, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

- User Story 1 – Complete Module 7 of the AWS course
  - As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
  - Assigned to - Everyone

- User Story 2 – Complete Module 8 of the AWS course
  - As a developer, I will complete module 8 so that I can learn about containers and container services
  - Assigned to – Everyone

- User Story 3 – Complete Module 9 of the AWS course
  - As a developer, I will complete module 9 so that I can learn about caching strategies with AWS.
  - Assigned to - Everyone

Sprint 4

Sprint #4
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: March 6, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

- User Story 1 – Complete Module 11 of the AWS course
  - As a developer, I will complete module 11 so that I can learn about Orchestrating Serverless Functions with Step Functions.
  - Assigned to - Everyone

- User Story 2 – Complete Module 12 of the AWS course
  - As a developer, I will complete module 12 so that I can learn about Implementing Application Authentication Using Amazon Cognito.
  - Assigned to – Everyone

- User Story 3 – Complete Module 13 of the AWS course
  - As a developer, I will complete module 13 so that I can learn about Automating Application Deployment Using a CI/CD Pipeline.
  - Assigned to – Everyone

- User Story 4 – Complete Module 14 of the AWS course
  - As a developer, I will complete module 14 so that I can learn more about acquiring an AWS certification.
  - Assigned to – Everyone

- User Story 5 – Complete Task Distribution
  - As a developer, I will start planning task distribution for the project
  - Assigned to - Everyone

Sprint 5

Sprint #5
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: March 20, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
    - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

User Story 1 – UI Layout System
- As a developer, I will set up the UI of the app so that the app has a nice design.
- Assigned to - Everyone

User Story 2 – Set Up Email Notification System
- As a developer, I will set up an email notification system so that users can receive emails with important notifications.
- Assigned to - Everyone

User Story 3 – Amazon Cognito
- As a developer, I will utilize Amazon Cognito so that I can authenticate and authorize users.
- Assigned to – Everyone

User Story 4 – Authentication Dashboard
- As a developer, I will create the authenticated users dashboard so that users will be able to manage internship opportunities.
- Assigned to – Everyone

User Story 5 – Connect DynamoDB to Laravel
- As a developer, I will research how to connect DynamoDB to Laravel so I can utilize a database.
- Assigned to – Everyone

User Story 6 – Host Project on AWS
- As a developer, I will create a free AWS account so that I can host our project on an EC2 instance.

- Assigned to - Everyone

Sprint 6

Sprint #6
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: April 3, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

User Story 1 – UI Layout System
- As a developer, I will set up the UI of the app so that the app has a nice design.
- Assigned to - Everyone

User Story 2 – Create AWS pipeline
- As a developer, I will create an AWS GitHub pipeline and connect it to the Elastic Beanstalk environment so that our hosted project is always up to date.
- Assigned to - Everyone

User Story 3 – Create Poster
- As a presenter, I will create a poster to help showcase our project.
- Assigned to – Everyone

User Story 4 – Prepare Presentation Slides
- As a presenter, I will prepare presentation slides to help showcase our project.
- Assigned to – Everyone

User Story 5 – Create Introductory Video
- As a presenter, I will create an introductory video to introduce the team for the presentation.
- Assigned to – Everyone

User Story 6 – Create Demo Video
- As a presenter, I will create a demo video about the project to showcase the functionality of our project.
- Assigned to - Everyone

User Story 7 – Create Livewire Component
- As a developer, I will create a Livewire component to implement public list of

Sprint 7

Sprint #7
Sprint Planning Meeting Minutes:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: April 17, 2023
Start time: 8:30 pm
End time: 9:00 pm

After discussion, the velocity of the team was estimated to be:

- Velocity = 100 hours
  - 20 hours * 5 students = 100 hours

The product owner chose the following user stories to be done during the next sprint. They are ordered based on their priority.

User Story 1 – Finish Posters
- As a student, I will finish my poster so that I can display it at the showcase.
- Assigned to - Everyone

User Story 2 – Finish Demo Video
- As a student, I will finish the demo video of our project so that I can showcase the functionality.
- Assigned to - Everyone

User Story 3 – Finish Presentation Slides
- As a presenter, I will finish the presentation slides to help showcase our project.
- Assigned to – Everyone

User Story 4 – Finish Introductory Video
- As a presenter, I will finish the introductory video to introduce the team for the presentation.
- Assigned to – Everyone

User Story 5 – Finish Final Project Documentation
- As a student, I will finish the final project documentation to document everything involved in making the project.
- Assigned to - Everyone

User Story 6 – Prepare and Submit Final Deliverables
- As a student, I will prepare and submit the final deliverables so that all relevant files can be viewed in the zip file.
- Assigned to - Everyone

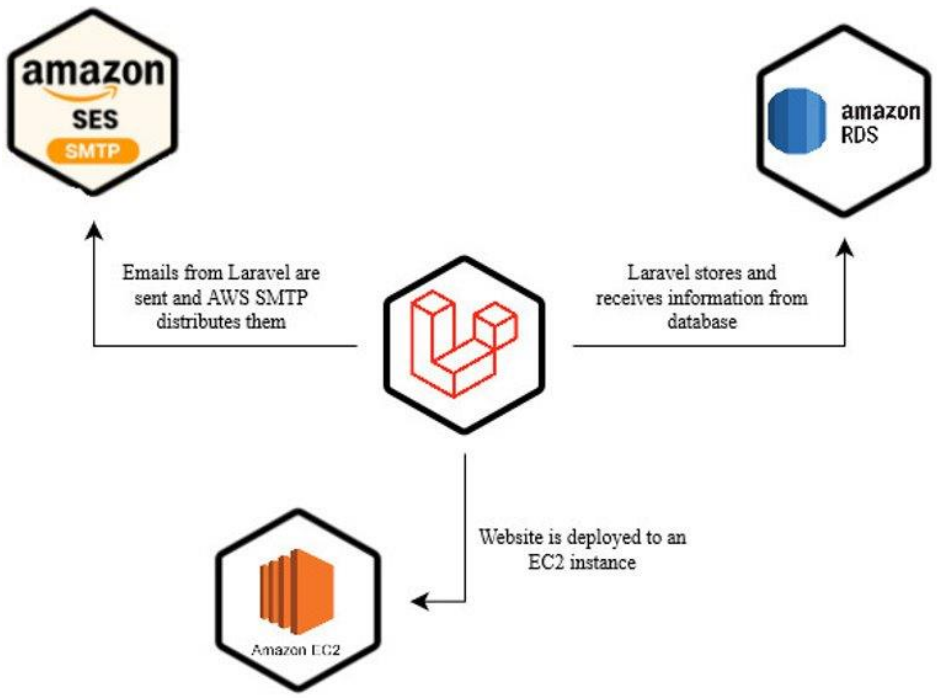
SYSTEM DESIGN

This section contains information on the design decisions that went into this project. The architecture patterns are outlined and explained. The entire system is shown in a package diagram and the subsystems are explained. Finally, the design patterns used in the project are discussed.

Architectural Patterns

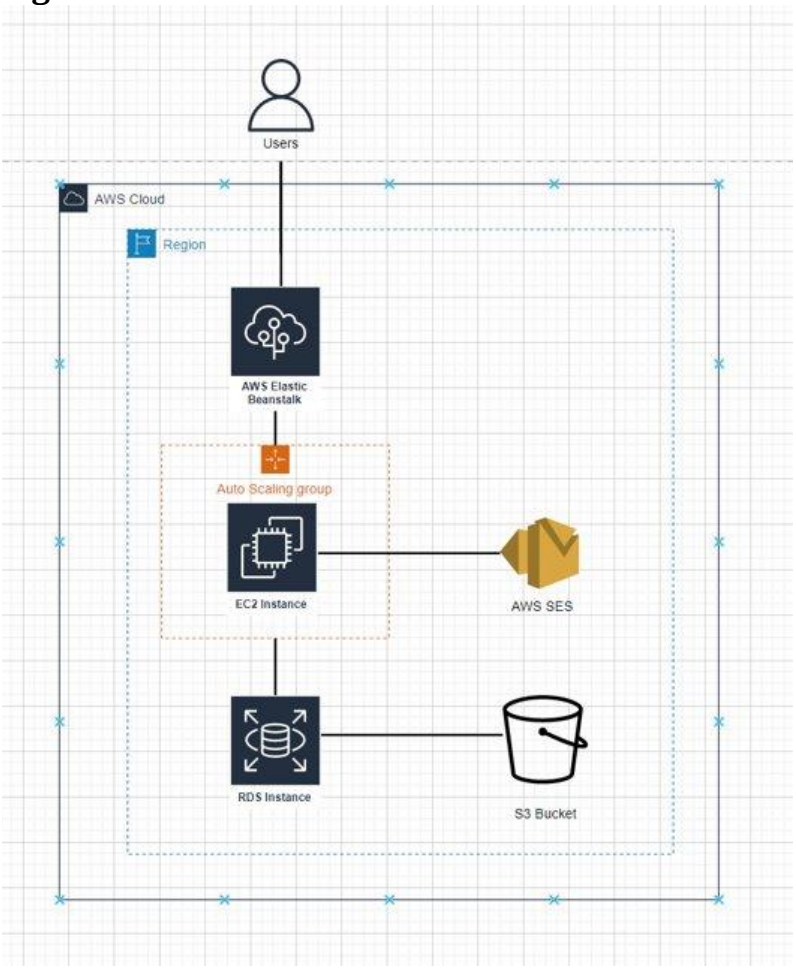
InternHub utlizes a monolithic Software-As-A-Service (SaaS) architecture design pattern. The entire application is hosted on AWS, our cloud service provider. There is no software that needs to be downloaded locally. All users have to do in order to receive the service is access the website.

System and Subsystem Decomposition



The current system consists of a website that was developed using the Laravel web application framework and is hosted on an AWS EC2 instance. Whenever a user creates an account, changes their password, or adds a new opportunity, this information is stored using Amazon RDS. Similarly, when a user accesses the all-opportunities page, all the listings are retrieved from RDS. Users also have the ability to subscribe to filters to these listings to refine their search.This is done locally through Laravel. There is also the option to subscribe to filters, which would send daily emails with new opportunities to students. These emails are distributed using AWS SES.

Deployment Diagram



Design Patterns

During the development process we utilized many different design patterns that allowed us to efficiently create features and complete tasks for Internhub. Being that Laravel was utilized heavility during this process, the design patterns that we followed were the ones most commonly associated with Laravel templates; Builder pattern, Facade pattern, and repository pattern. Builder pattern refers to the process of seperating complicated classes to more simpler objects that can be reused in other layers of the code. This allows for the creation of different objects by changing just the details of the class rather than creating a whole new class. Facade pattern is the pattern of combining multiple methods from different classes into a single structure. This means

that when calling for a method that belongs to another class, we instead can call the method through this facade class which makes refering to methods a lot simpler. Lastly the repository pattern was utilized to create a bridge between two different layers of our code. Since the Laravel template that we utilized contains lots of namespaces, this pattern allowed us to make the program more efficient by combining these namespace classes with other classes thus reducing resource consumption. All in all these design patterns provided us with ways to stay organized during our development process as well as ensure that the code itself can be easily followed and used.

SYSTEM VALIDATION

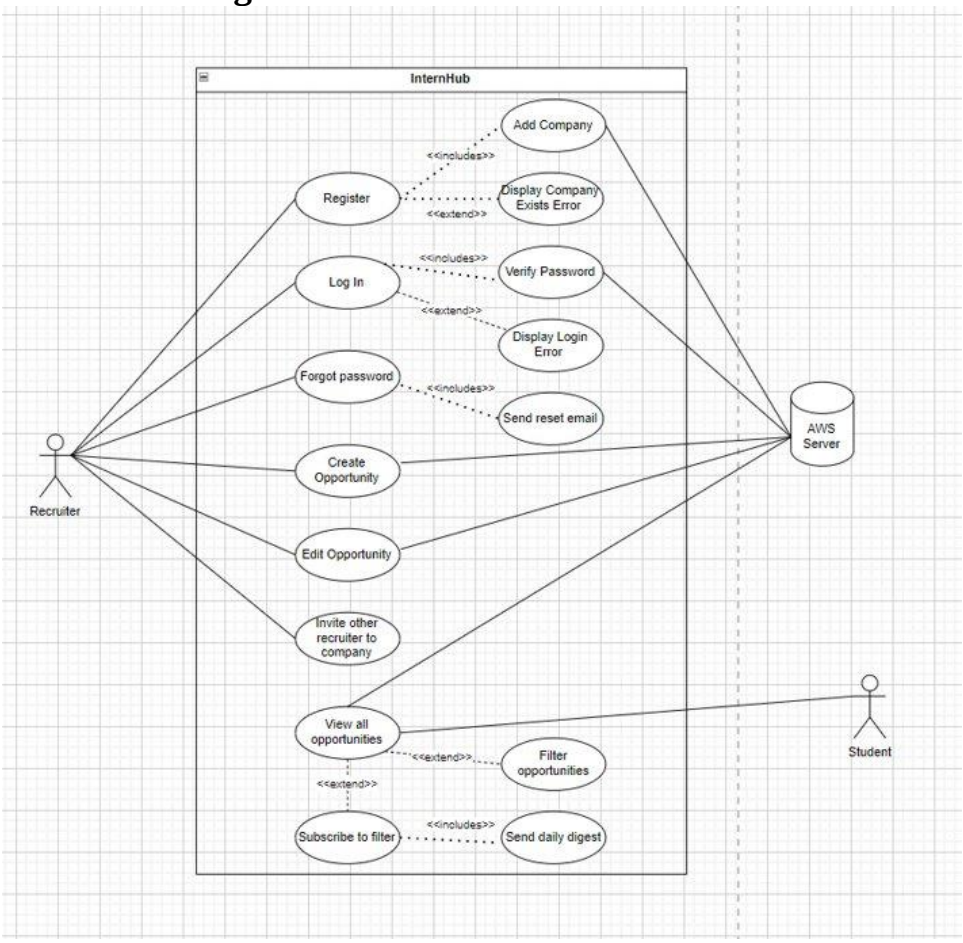
Throughout the development process, we used GitHub to distribute tasks amongst team members. While developing a feature, each team member would independently test on their IDE before uploading the code to a separate branch. Once the feature was ready, a pull request would be submitted. The pull request allowed other team members to review the code and required approval from at least one member. This ensured each feature was thoroughly reviewed before being merged into the master branch. After merging, the master branch would be tested to verify it was working as anticipated. When the project was complete and deployed to an EC2 instance, the team again tested to ensure functionality.

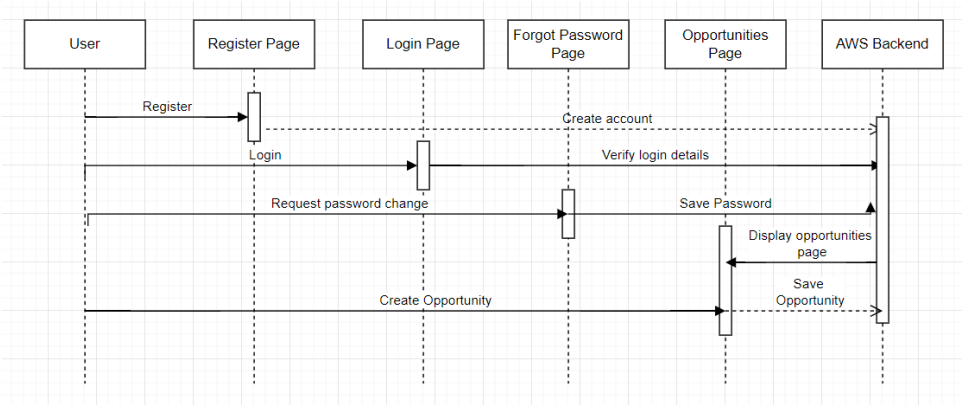
GLOSSARY

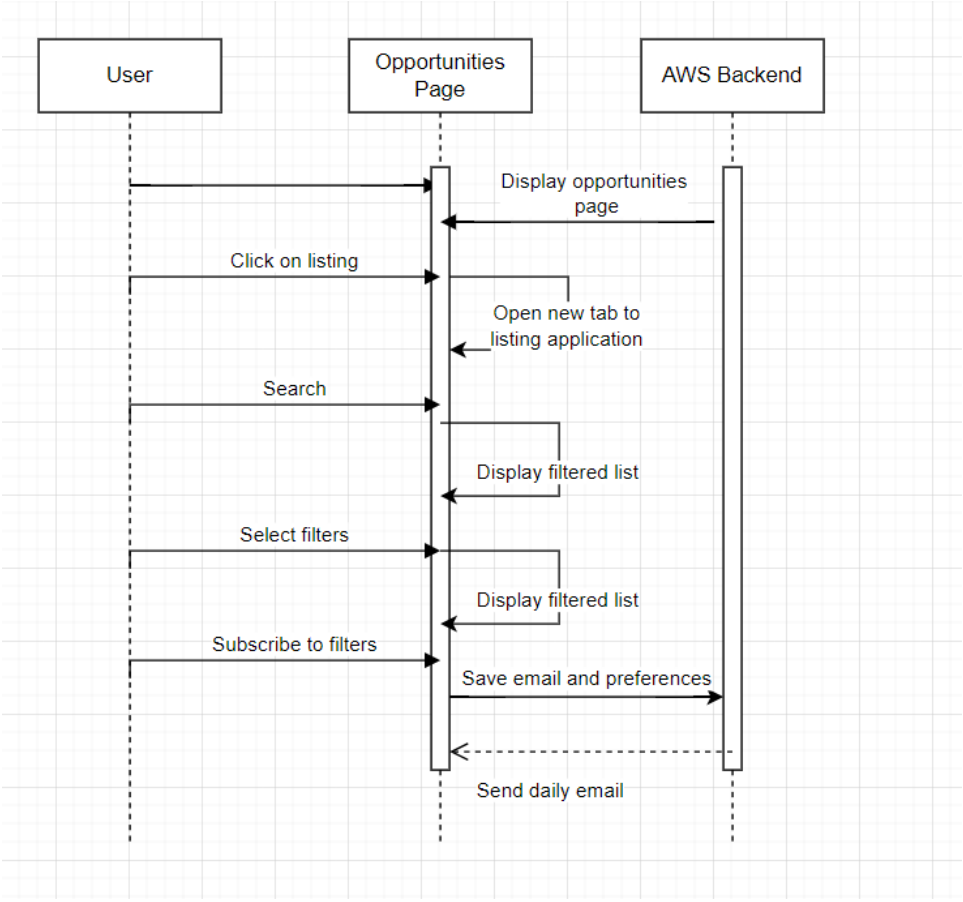
- AWS: Short for Amazon Web Services, it is our on-demand cloud provider
- IDE: An Integrated Development Environment, or IDE, is a code editor used for software development
- Laravel: An open-source PHP web framework
- Livewire: Laravel library used to build dynamic interfaces using Laravel Blade
- PHP: Scripting language mainly used in web development

APPENDIX

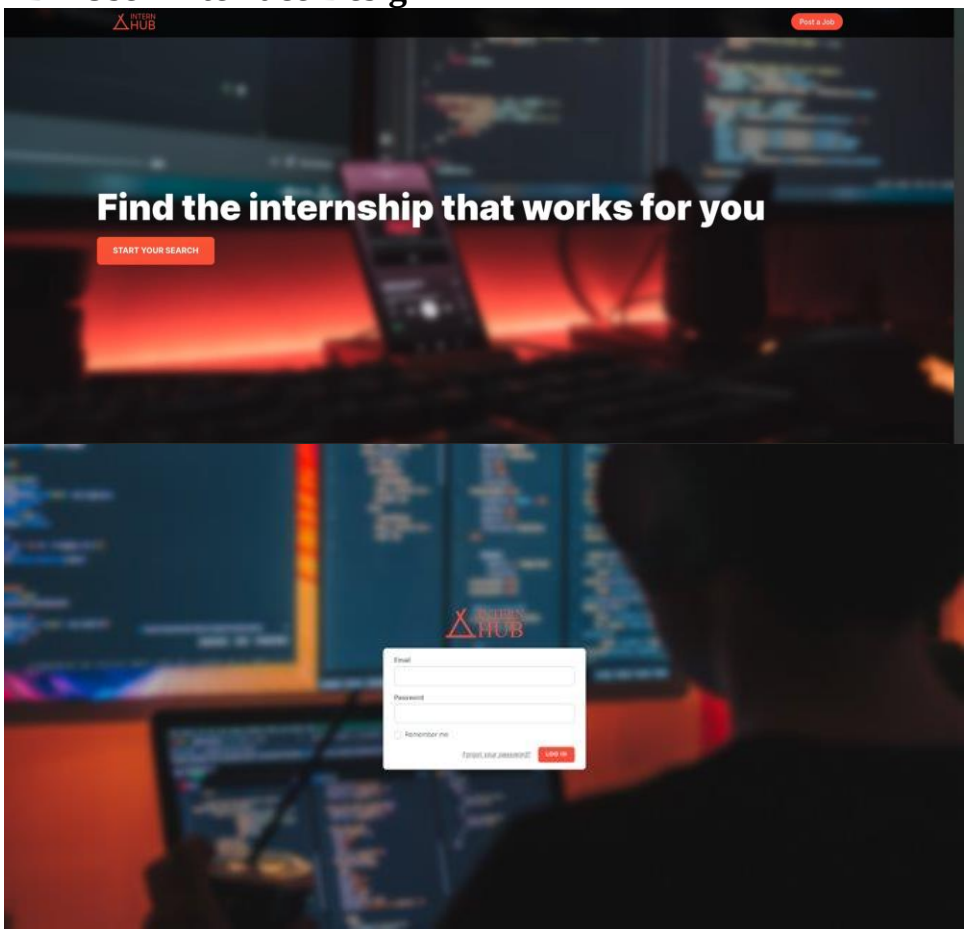
Appendix A - UML Diagrams

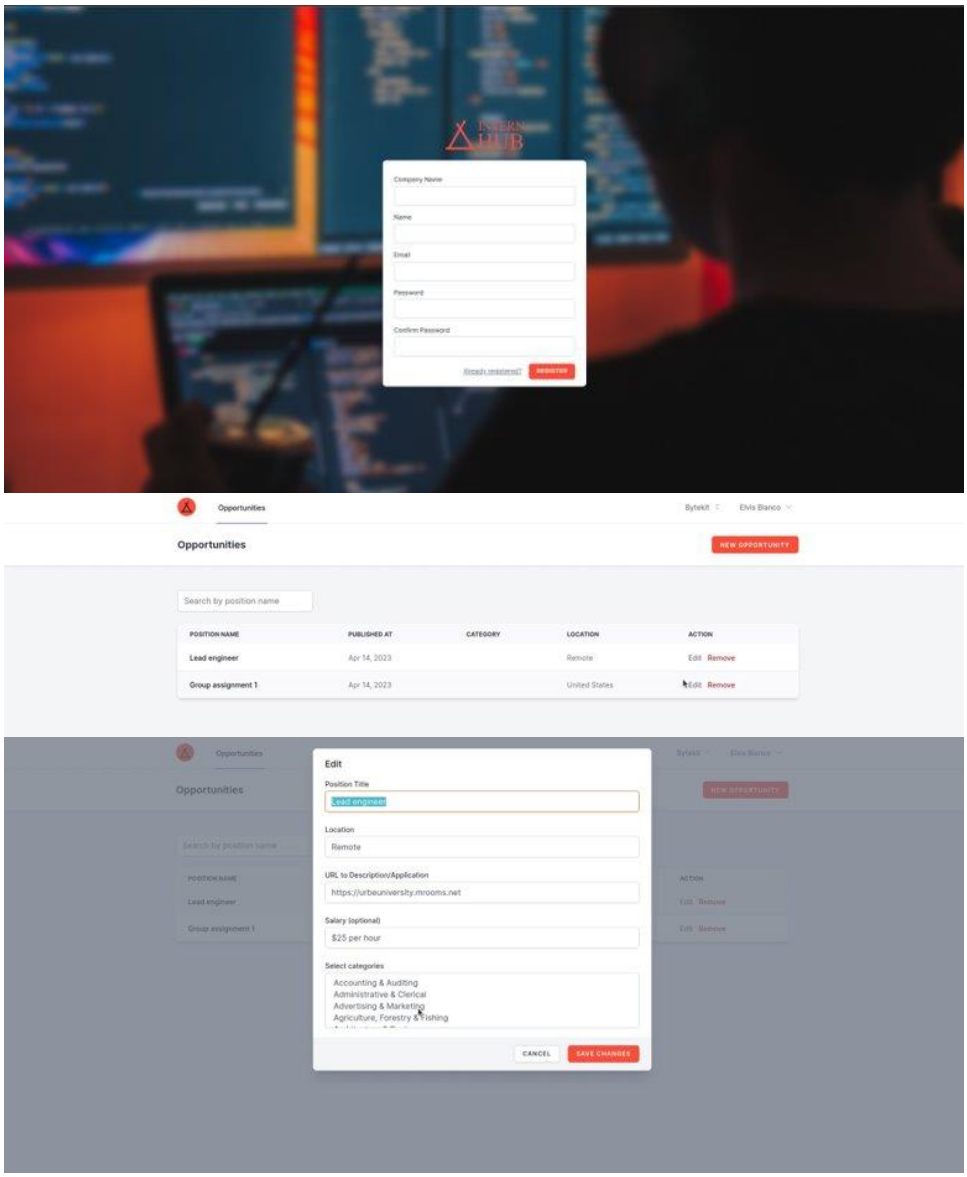


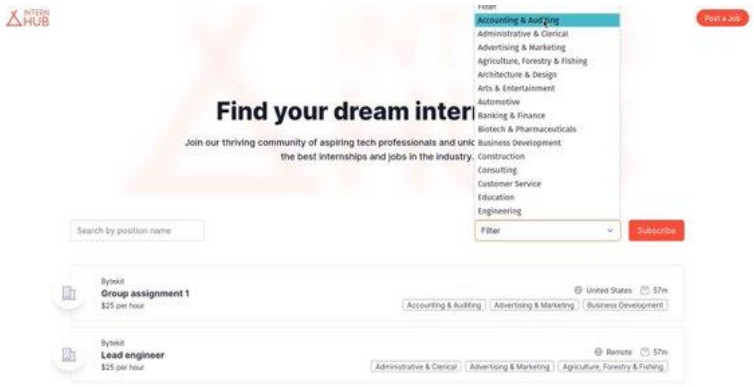

User
Register Page
Login Page
Forgot Password Page
Opportunities Page
AWS Backend
Register
Create account
Login
Verify login details
Request password change
Save Password
Display opportunities page
Create Opportunity
Save Opportunity


User
Opportunities Page
AWS Backend
Display opportunities page
Click on listing
Open new tab to listing application
Search
Display filtered list
Select filters
Display filtered list
Subscribe to filters
Save email and preferences
Send daily email

Appendix B - User Interface Design




Company Name
Name
Email
Password
Confirm Password
REGISTER
Opportunities
Bytekit
Elvis Blanco
Opportunities
NEW OPPORTUNITY
Search by position name
POSITION NAME
PUBLISHED AT
CATEGORY
LOCATION
ACTION
Lead engineer
Apr 14, 2023
Remote
Edit Remove
Group assignment 1
Apr 14, 2023
United States
Edit Remove
Edit
Position Title
Lead engineer
Location
Remote
URL to Description/Application
https://urbeuniversity.mrooms.net
Salary (optional)
$25 per hour
Select categories
Accounting & Auditing
Administrative & Clerical
Advertising & Marketing
Agriculture, Forestry & Fishing
CANCEL
SAVE CHANGES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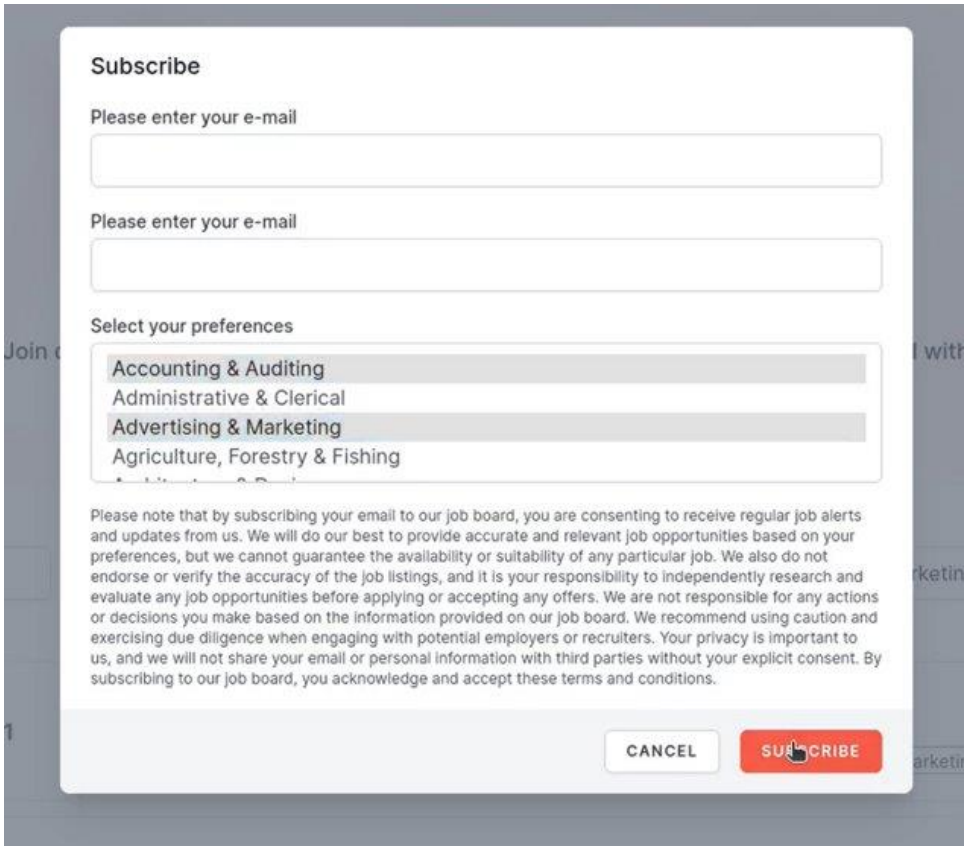
Join our thriving community of aspiring tech professionals and unlc
the best internships and jobs in the industry.
Post a Job
Accounting & Auditing
Administrative & Clerical
Advertising & Marketing
Agriculture, Forestry & Fishing
Architecture & Design
Arts & Entertainment
Automotive
Banking & Finance
Biotech & Pharmaceuticals
Business Development
Construction
Consulting
Customer Service
Education
Engineering
Search by position name
Filter
Subscribe
Bytekit
Group assignment 1
$25 per hour
United States
57m
Accounting & Auditing
Advertising & Marketing
Business Development
Bytekit
Lead engineer
$25 per hour
Remote
57m
Administrative & Clerical
Advertising & Marketing
Agriculture, Forestry & Fishing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CANCEL
SUBSCRIBE

Appendix C - Sprint Review Reports

Sprint #1
Sprint Review:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: January 29, 2023
Start time: 8:30 pm
End time: 9:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

- User Story 1 – Complete Module 1 of the AWS course
  - As a developer, I will complete module 1 so that I understand the AWS course objectives.
  - Assigned to - Everyone
- User Story 2 – Complete Module 2 of the AWS course
  - As a developer, I will complete module 2 so that I can learn how to get started developing on AWS.
  - Assigned to - Everyone
- User Story 3 – Complete Module 3 of the AWS course
  - As a developer, I will complete module 3 so that I can learn how the storage service of AWS works.
  - Assigned to – Everyone

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting:

- None

Sprint #2
Sprint Review:

Project: AWS Developing Project
Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: February 12, 2023
Start time: 1:30 pm
End time: 2:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

- User Story 1 – Complete Module 4 of the AWS course
  - As a developer, I will complete module 4 so that I understand how to secure access to AWS resources
  - Assigned to - Everyone

- User Story 2 – Complete Module 5 of the AWS course
  - As a developer, I will complete module 5 so that I can learn how to develop flexible NoSQL solutions
  - Assigned to - Everyone

- User Story 3 – Complete Module 6 of the AWS course
  - As a developer, I will complete module 6 so that I can learn how to develop REST APIs
  - Assigned to – Everyone

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting:

- User Story 4 – Complete Module 7 of the AWS course
  - As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
  - Assigned to – Everyone
- User Story 5 – Complete Module 8 of the AWS course
  - As a developer, I will complete module 8 so that I can learn about containers and container services
  - Assigned to – Everyone

Sprint #3

Sprint Review:

Project: AWS Developing Project

Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: February 26, 2023

Start time: 1:30 pm

End time: 2:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

User Story 4 – Complete Module 7 of the AWS course

- As a developer, I will complete module 7 so that I can learn about event-driven serverless solutions
- Assigned to – Everyone

User Story 5 – Complete Module 8 of the AWS course

- As a developer, I will complete module 8 so that I can learn about containers and container services
- Assigned to – Everyone

User Story 6 – Complete Module 9 of the AWS course

- As a developer, I will complete module 9 so that I can learn about caching strategies with AWS.
- Assigned to – Everyone

The following ones were rejected and moved back to the product backlog to be assigned to a future sprint at a future Sprint Planning meeting:

User Story 7 – Complete Module 10 of the AWS course

- As a developer, I will complete module 10 so that I can learn about developing with messaging services.

- Assigned to – Everyone

User Story 8 – Complete Module 11 of the AWS course

- As a developer, I will complete module 11 so that I can learn about defining workflows to orchestrate functions.
- Assigned to – Everyone

User Story 9 – Complete Module 12 of the AWS course

- As a developer, I will complete module 12 so that I can learn about developing secure applications on AWS.
- Assigned to – Everyone

User Story 10 – Complete Module 13 of the AWS course

- As a developer, I will complete module 13 so that I can learn about automating deployment using CI/CD Pipelines.
- Assigned to – Everyone

Sprint #4

Sprint Review:

Project: AWS Developing Project

Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: March 19, 2023

Start time: 1:30 pm

End time: 2:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

- User Story 1 – Complete Module 11 of the AWS course
  - As a developer, I will complete module 11 so that I can learn about Orchestrating Serverless Functions with Step Functions.
  - Assigned to - Everyone

- User Story 2 – Complete Module 12 of the AWS course
  - As a developer, I will complete module 12 so that I can learn about Implementing Application Authentication Using Amazon Cognito.
  - Assigned to – Everyone

- User Story 3 – Complete Module 13 of the AWS course
  - As a developer, I will complete module 13 so that I can learn about Automating Application Deployment Using a CI/CD Pipeline.
  - Assigned to – Everyone

- User Story 4 – Complete Module 14 of the AWS course
  - As a developer, I will complete module 14 so that I can learn more about acquiring an AWS certification.
  - Assigned to – Everyone

- User Story 5 – Complete Task Distribution
  - As a developer, I will start planning task distribution for the project
  - Assigned to – Everyone

Sprint #5

Sprint Review:

Project: AWS Developing Project

Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: April 2, 2023

Start time: 1:30 pm

End time: 2:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

- User Story 1 – UI Layout System
- As a developer, I will set up the UI of the app so that the app has a nice design.
- Assigned to - Everyone
-
- User Story 2 – Set Up Email Notification System
- As a developer, I will set up an email notification system so that users can receive emails with important notifications.
- Assigned to - Everyone
-
- User Story 3 – Amazon Cognito
- As a developer, I will utilize Amazon Cognito so that I can authenticate and authorize users.
- Assigned to – Everyone
-
- User Story 4 – Authentication Dashboard
- As a developer, I will create the authenticated users dashboard so that users will be able to manage internship opportunities.
- Assigned to – Everyone

- User Story 5 – Connect DynamoDB to Laravel
- As a developer, I will research how to connect DynamoDB to Laravel so I can utilize a database.
- Assigned to – Everyone
-
- User Story 6 – Host Project on AWS

- As a developer, I will create a free AWS account so that I can host our project on an EC2 instance.
- Assigned to - Everyone

Sprint #6

Sprint Review:

Project: AWS Developing Project

Attendees: John Gonzalez, Elvis Blanco Gonzalez, Elijah Khazzouh, Daniela Agueros, Michael Banegas

Date: April 2, 2023

Start time: 1:30 pm

End time: 2:00 pm

After a show and tell presentation, the implementation of the following user stories were accepted:

Progress was made on the following user stories as planned.

- User Story 1 – UI Layout System
- As a developer, I will set up the UI of the app so that the app has a nice design.
- Assigned to - Everyone
-
- User Story 2 – Create AWS pipeline
- As a developer, I will create an AWS GitHub pipeline and connect it to the Elastic Beanstalk environment so that our hosted project is always up to date.
- Assigned to - Everyone
-
- User Story 3 – Create Poster
- As a presenter, I will create a poster to help showcase our project.
- Assigned to – Everyone
-
- User Story 4 – Prepare Presentation Slides
- As a presenter, I will prepare presentation slides to help showcase our project.
- Assigned to – Everyone

- User Story 7 – Create Livewire Component
- As a developer, I will create a Livewire component to implement public list of opportunities so that users can view available opportunities.
- Assigned to - Everyone

Appendix D - User Manuals, Installation/Maintenance Document, Shortcomings/Wishlist Document and other documents

User Manual

When users first lauch Internhub they are prompted with a welcome screen that showcases the features that Internhub offers. These feature will vary depending on who the end user is; either a student looking for internship opportunities or a recruiter looking to create a job posting for their internship programs. If the end user is looking to create a job posting for the site, there is an orange button on the top right of the page labeled “Post a job”. If clicked, the user will be redirected to the create account page where they will have to create their own account to proceed with the feature. There is another button on the welcome page labeled “Start your search” and this is for the students looking for internship opportunities. When clicked, the page will redirect the user to our opportunities page which showcases all the current job postings that have been added by recruiters.

If the end user clicks the “Post a job” button, they are redirected to the create account page. Within this page the user must input the necessary information needed to create their account; Domain name, Name, Email, Password, and to confirm their password. If the user already has an account made, they can click the “Already registered” button that can be found next to the button labeled “register”. The user will then be sent to the login screen where the must input their login credentials, which consists of their email and password, to proceed. If the user has forgotten their password, they can click on the “forgot password” link which will redirect them to the forgot password page where they can recover their password. After, either the user creates an account or successfully logs into their account, they are then redirected to the opportunities page where they can then make their job posting. Within this page the user will have multiple options which includes looking at the other postings, creating a new posting, or editing an already made posting. If the user decides to create a job posting they must click the “new opportunity” button on the top right. Once clicked a popup screen will appear that contains all the neccessary fields needed to create the new job. The fields are, in order, Position title, location, URL to description/application, the salary, and the categories. Once the required fields are filled out the job posting is created and displayed on the opportunities page. If the user decides they need to edit an already made posting, there is an “edit” button under the actions column of the page. If clicked, the edit screen will pop up with the same information as the new opportunities screen and will allow the user to edit the posting. They can also remove the posting by clicking the remove button under the same column.

If the end user clicks on the “Start your Search” button, they will be redirected to the opportunies page where they will be shown all the job postings that have been made available on the site. In this page they can filter the postings being shown by pre assigned categories or they can search up positions by their name. If they choose to search up a posting by its name they must select the input box on top left labeled “Search by position name”. If they chose to filer the postings by selecting a category they must click on the drop down menu labeled “filter” which will prompt them all the categories available. Some of the categories on the website include, but are not limited to, Accounting & Auditing, Buisness Development, Administrative & Clerical, etc. Once selected, the postings that will be shown to the user will now correlate with the filter selected. Along with filtering the job postings the user can also subscribe to the

filter that they have selected and receieve email notifications to showcase all the job posting with the same filter that are present as well as when a new one is added to the site. In order to subscribe to a filter the user must click the “subscribe” button. Once clicked a pop up will appear where the user can input their email and select all the categories that they want to be notified and keep track of.

If subscribed, the user will receive emails in regards to the categories they have selected. For example, if a user decides to subscribe to “Administrative & Clerical”, whenever a job posting is added with the “Administrative & Clerical” category, the user will receive an email about the update. The email format consists a job feed that showcases the job postings that contain the categories that were selected during the subscribe process. The user can click on any of the job postings listed in the email and they will be redirected to the job postings page. The user can also unsubscribe to the email notifications by clickting the “unsubscribe here” link in the botton of the email message. If clicked, they will be taken to the unsubscribe screen where they must confirm the action. Once confirmed their subscription is canceled and they will no longer receive email notifications.

Installation/Maintenance

Before you start (for development environment only)
There are some things you will need before you can get started developing with **InternHub**.

- Apache/Nginx (This guide was built using Nginx on Ubuntu Server 22.04. You can also use MAMP or XAMPP, which are available for both macOS and Windows)
- MySQL server (database server)
- VS Code (code editor)
- Beekeeper Studio (database management software)
- Git (version control management)
- Composer (PHP package manager)
- NPM (JS package manager)

Preparing your server (production/development)

Install all the necessary dependencies:

sudo apt install -y composer npm git php-mbstring php-imagick php-bcmath php-xml php-fpm php-zip php-intl php-gd php-common php-fpm php-cli unzip curl php-curl nginx redis php-redis mysql-server php-mysql;

Getting InternHub up and running in your server

1. **Clone the repository into your development environment.**
   git clone https://github.com/elvisblanco1993/intern-hub.git
2. **Move into the project directory.**
   cd intern-hub
3. **Create the environment file.**
   cp .env.example .env for UNIX based systems, and *copy .env.example .env* on MS Windows
4. **Install back-end dependencies (this includes all packages InternHub depends on).**
   composer install
5. **Install front-end dependencies.**
   npm install
6. **Generate application key (this will help with encryption and security).**
   php artisan key:generate
7. **Create database.**
   a. Open a terminal window, and access your MySQL server
      sudo mysql -u root -p;
   b. Create your database and assign permissions
      CREATE DATABASE internhub;
      CREATE USER 'internhub'@'localhost' IDENTIFIED BY '{YOUR_PASSWORD}';
      ALTER USER 'internhub'@'localhost' IDENTIFIED WITH mysql_native_password BY '{YOUR_PASSWORD}';
      GRANT ALL PRIVILEGES ON internhub. to 'internhub'@'localhost' WITH GRANT OPTION;*
      FLUSH PRIVILEGES;
      EXIT;

   c. Replace {YOUR_PASSWORD} with a strong, secure password.

8. **Add your database credentials to InternHub.**
9. Now that you created your database, database username and password, it is time to connect your instance to it.
10. To do so, open your *.env* file, and modify the following lines.
    DB_CONNECTION=mysql
    DB_HOST=127.0.0.1
    DB_PORT=3306
    DB_DATABASE=internhub
    DB_USERNAME=internhub
    DB_PASSWORD=SET_YOUR_PASSWORD_HERE

11. **Run migrations (this will create your database tables).**
    php artisan migrate && php artisan db:seed
12. **Generate front-end assets.**
13. Run *npm run build* if you are deploying on production, or *npm run dev* if you are deploying on a staging site want live reload

14. **Fix filesystem permissions**
    sudo chgrp -R www-data . ;
    sudo chown -R www-data:www-data storage;
    sudo chown -R www-data:www-data bootstrap/cache;
    chmod -R 775 ./storage;
    chmod -R 775 bootstrap/cache;

15. **Add InternHub to your web server**
    Create Nginx File
    sudo nano /etc/nginx/sites-available/internhub

```
server {
    listen 80;
    server_name internhub.localhost;
    root /var/www/internhub/public;

    add_header X-Frame-Options "SAMEORIGIN";
    add_header X-XSS-Protection "1; mode=block";
    add_header X-Content-Type-Options "nosniff";

    index index.php;

    charset utf-8;

    client_max_body_size 100M;

    location / {
        try_files $uri $uri/ /index.php?$query_string;
    }

    location = /favicon.ico { access_log off; log_not_found off; }
    location = /robots.txt  { access_log off; log_not_found off; }

    error_page 404 /index.php;

    location ~ \.php$ {
```

```
        fastcgi_pass unix:/var/run/php/php8.1-fpm.sock; # Replace with correct PHP version
information
        fastcgi_param SCRIPT_FILENAME $realpath_root$fastcgi_script_name;
        include fastcgi_params;
    }

    location ~ /\.(?!well-known).* {
        deny all;
    }

    # Enable gzip compression
    gzip on;
    gzip_comp_level 5;
    gzip_min_length 256;
    gzip_proxied any;
    # Compress all output labeled with one of the following MIME-types.
    gzip_types
    application/atom+xml
    application/javascript
    application/json
    application/ld+json
    application/manifest+json
    application/rss+xml
    application/vnd.geo+json
    application/vnd.ms-fontobject
    application/x-font-ttf
    application/x-web-app-manifest+json
    application/xhtml+xml
    application/xml
    font/opentype
    image/bmp
    image/svg+xml
    image/x-icon
    text/cache-manifest
    text/css
    text/plain
    text/vcard
    text/vnd.rim.location.xloc
    text/vtt
    text/x-component
    text/x-cross-domain-policy;
}
```

16. **Enable NGINX Site**
    sudo ln -s /etc/nginx/sites-available/internhub /etc/nginx/sites-enabled/;
    sudo rm /etc/nginx/sites-enabled/default;

17. **Restart Nginx Server**
    sudo systemctl restart nginx;

18. **Setup automated daily diggest emails**
    Lastly, since we will be sending a daily diggest email, we need to set up a cron job in our server. We will do this like so:

a. Open your cron file by running crontab -e and add the following line at the end of the file:
   **/10 * * * * cd /path-to-your-project && php artisan schedule:run >> /dev/null 2>&1*

   Make sure you replace '/path-to-your-project' with the actual path to your project.

19. Save your changes.

You are all set!
Now your InternHub site should be up and running.

What's next?
If you are deploying your site on a production environment, you will need to enable SSL certificates to ensure all traffic from and to your server is fully secure. You can follow this guide on how to get a free certificate from Let's Encrypt.

ShortComings

One major shortcoming we have identified relates to our software engineering process, which is centered on developing a minimum viable product primarily for demonstration

purposes. However, this approach has led us to the realization that there is significant room for improvement in terms of optimizing the software engineering product development and integration across a range of Amazon Web Services. As a result, we have created a Wishlist of enhancements to build upon the existing minimum viable product and improve its overall functionality.

Wishlist

Our Wishlist considerations are focused on optimizing the application's security, performance, and features.

TODO: AWS Cognito to handle sign up and sign in

As our web application platform's active user base grows, it's wise to transition from our current Laravel-based authentication and authorization approach to AWS Cognito's version. The primary reason for this optimization is to ensure scalability as the number of users increases. In addition, this optimization also enhances security as our application may contain various forms of personally identifiable information (PII). AWS Cognito's abundance of security features, such as multi-factor authentication and data encryption at both rest and transit, would be beneficial to us.

TODO: AWS Gateway Api to query job post ings + caching optimization

We can enhance the initial minimum viable product's feature set by transitioning to AWS Gateway and integrating an internship job board API. This will increase the visibility of job opportunities on the web application, thereby attracting more users to the site. Additionally, by implementing caching optimization related to AWS Gateway, we can significantly improve the application's performance.

TODO: CI/CD pipelines with AWS CodePipeline

Incorporating this DevOps methodology into our building, testing, and software deployment process will significantly improve our efficiency in launching our product on the market. It will result in enhanced velocity and better quality.

TODO: AWS CloudFront lazy loading and edge location caching

By implementing these two aspects into our application, we can optimize its performance. It will load relevant job information only when necessary and cache frequently accessed information closer to users.

REFERENCES