

University of South Carolina Internship Database Design Document

Structural Design Documentation and Models

Team: We Stand “Commit”ed
Vidhee Patel, Brent Hopkins, Zack Young, Joshua DuPuis

September 26th, 2021
Version 1.0

Table of Contents

Introduction	3
System Overview	3
Environment Overview	3
References	3
User Interface	4
Data Storage	12
Examples	12
UML Class Diagram	15
UML Breakdowns	16
Dynamic Models	21
Scenario 1	21
Scenario 2	22
Scenario 3	23

Introduction

System Overview

The purpose of this system is to provide a database for employers to post internship opportunities that students can search through and apply for. The system also allows employers to review students and students to review companies and gives specified administrator users the tools needed to handle non-system issues if they arise. This application will be available to UofSC students as well as employers partnered with the university.

Environment Overview

The internship database will use the Java programming language for implementation. The user will be prompted via a console to enter input in order to interact with the system.

References

- Team We Stand “Committ”ed Requirements Document:

<https://docs.google.com/spreadsheets/d/1ITWay3DvOdqScbXPiDo80cDYJgksJwNnOi586Jj65YI/edit?usp=sharing>

User Interface

System Interfaces

Scenario 1

Create a Job Listing

```
>login
Enter email: benjg@megacorp.com
Enter password: *****

Hello, Ben
You have 4 listings with new applicants.

What would you like to do?
  1. Edit personal information
  2. Create a company profile
  3. Create a job listing
  4. Edit a job listing
  5. Remove a job listing
  6. Review a student
Please enter the number of your preferred action: 3

>create listing

Confirm new listing(Y/N): Y
Enter title: Web Developer Intern

Enter description: This internship will provide you with the real-world experience you need to
take the next steps in your web development career. Your role will be vital in making a
difference in our company as you learn what it takes to be successful in your chosen career
path. You will also be exposed to corporate culture, develop intern comradery, and gain
hands-on experience in the web development industry.

Is this a paid position(Y/N): Y
What is the pay rate? $15/hr
Would you like to add required skills?(Y/N): Y
How many? 3
Enter skill: Javascript
Enter skill: React
Enter Skill: Node.js
Would you like to publish this listing now?(Y/N): Y
Listing Published!
```

Scenario 2

Write a Review of an Internship

```
>login
Enter email: artb@email.sc.edu
Enter password: *****

Hello, Arthur

What would you like to do?
  1. Edit personal information
  2. Search for Internship
  3. Review an internship
  4. Create your resume
  5. Edit your resume
Please enter the number next to your preferred action: 3

> write review
Please enter the title of the internship you would like to review: Rock Crusher
1 internship found:
  - Rock Crusher @ Hodgkins' Quarry
Is this the correct internship (Y/N)? Y
Enter a rating of the internship on a scale of 1 to 5: 4
Enter any comments you have about the internship: This internship was great! I learned all about the
different types of rocks used in everyday construction and worked two cranes throughout the summer!
Although it did get boring at times from doing the same task over and over, I enjoyed working at
Hodgkins' Quarry and think you will too! There is so much to learn about construction and rocks.
Rating posted! Thank you for your feedback.
```

Scenario 3

Create an Account

```
>create account
What type of account would you like to create? ([S]tudent or[E]mployer): S
Enter first name: Joe
Enter last name: Smith
Enter email: jsmith@email.sc.edu
Please enter a password for your account: *****
Thank you Joe! Your student account has been created.
```

Scenario 4: Create a Resume

>login

Enter email: judBama@email.sc.edu

Enter password: *****

Hello, Jud

What would you like to do?

1. Edit personal information
2. Search for internship
3. Review an internship
4. Create your resume
5. Edit your resume

Please enter the number next to your preferred action: 4

> Create Resume

Please enter your year in school: Sophomore

What would you like to add to your resume?

1. Acquired Skill
2. Previous Work Experience
3. Class
4. Previous or Current Education
5. Go back

Please enter the number of your preferred action: 1

Please enter a skill: Java programming

Would you like to add another skill (Y/N): Y

Please enter a skill: Expert with Microsoft Word

Would you like to add another skill (Y/N): N

What would you like to add to your resume?

1. Acquired Skill
2. Previous Work Experience
3. Class
4. Previous or Current Education
5. Go back

Please enter the number of your preferred action: 2

Enter the title of the job: Programming intern

Enter the company you worked for: WellWorksProgramming

Enter the date range of your employment in the form MM/DD/YYYY - MM/DD/YYYY: 06/21/2020 - 08/22/2020

Enter a description of your job: I programmed with the java language, studied databases, and swept the breakroom

Would you like to add another work experience (Y/N)? N

What would you like to add to your resume?

1. Acquired Skill
2. Previous Work Experience
3. Class
4. Previous or Current Education
5. Go back

Please enter the number of your preferred action: 3
Please enter the name of the class you took: Linear Algebra
Would you like to enter another class (Y/N)? Y
Please enter the name of the class you took: Algorithmic Design I
Would you like to enter another class (Y/N)? N
What would you like to add to your resume?
1. Acquired Skill
2. Previous Work Experience
3. Class
4. Previous or Current Education
5. Go back
Please enter the number of your preferred action: 4
Please enter the name of the college you attended: Virginia Commonwealth University
Please enter your major: Fine arts
Please enter your overall GPA: 3.23
Please enter your (expected) graduation date in the form of MM/YYYY: 05/2022
Would you like to add another education (Y/N)? N
What would you like to add to your resume?
1. Acquired Skill
2. Previous Work Experience
3. Class
4. Previous or Current Education
5. Go back
Please enter the number of your preferred action: 5

Scenario 5: Create a Company Profile

```
>login
Enter email: rparker@redRockAnalysts.com
Enter password: *****

Hello, Richard
You have 0 listings with new applicants.

What would you like to do?
1. Edit personal information
2. Create a company profile
3. Create a job listing
4. Edit a job listing
5. Remove a job listing
6. Review a student

Please enter the number of your preferred action: 2
Please enter the name of your company: Red Rock Analysts
Please enter the headquarters address of your company:
Please enter a description of your company: Red Rock Analysts analyzes the week's latest sporting
news, giving fresh opinions every three hours.
Profile created! Returning to home screen.
```

What would you like to do?

1. Edit personal information
2. Create a company profile
3. Create a job listing
4. Edit a job listing
5. Remove a job listing
6. Review a student

Scenario 6: Search Internship Listings

>login

Enter email: judBama@email.sc.edu

Enter password: *****

Hello, Jud

What would you like to do?

1. Edit personal information
2. Search for internship
3. Review an internship
4. Create your resume
5. Edit your resume

Please enter the number next to your preferred action: 2

What criteria would you like to search by?

1. Internship Title
2. Pay Rate

Please enter the number next to your desired search method: 1

Please enter the title of the internship: Social Media Coordinator

2 Results found!

1. Social Media Coordinator

Company: Bob's Arcade

Pay Rate: \$9.75/hr

2. Social Media Coordinator

Company: Dave's Roofing and Window Supplies

Pay Rate: 11.05/hr

Please enter the number of the internship you would like to learn more about or 0 to go back: 0

Scenario 7: Apply for an Internship

>login

Enter email: judBama@email.sc.edu

Enter password: *****

Hello, Jud

What would you like to do?

- Edit personal information
- Search for internship
- Review an internship
- Create your resume
- Edit your resume

Please enter the number next to your preferred action: 2

What criteria would you like to search by?

1. Internship Title
2. Pay Rate

Please enter the number next to your desired search method: 1

Please enter the title of the internship: Window Washing Intern

1 Result found!

1. Window Washing Intern

Company Randy's Washing Company

Pay Rate: \$9.00/hr

Please enter the number of the internship you would like to learn more about or 0 to go back: 1

Window Washing Intern

Company: Randy's Washing Company

Pay Rate: \$9.00/hr

Skills required: Must know how to use dish soap properly, must have experience using a washcloth and a squeegee

Description: In this exciting internship, you will learn how to clean all types of windows. From square to rectangular to circular, you will learn different washing techniques that best clean specific types of windows. You will also get a special lesson on how to clean tinted windows.

Type "Apply" to apply for the internship, otherwise type "0" to go back: Apply

Scenario 8: Hide a Job Listing

>login

Enter email: Johnms@megacorp.com

Enter password: *****

Hello, John

What would you like to do?

1. Edit personal information
2. Create a company profile
3. Create a job listing
4. Edit a job listing
5. Remove a job listing
6. Review a student

Please enter the number next to your preferred action: 4

Choose a listing

1. Web Developer Internship
2. Application Developer Internship

Please enter the number next to the listing you wish to edit: 2

What would you like to edit ?

1. Edit contents
2. Edit visibility

Please enter the number next to your preferred action: 2

Would you like the listing to be [V]isible or [H]idden:

Please select the desired visibility(V/H): H

The listing "Application Developer Internship" is now hidden

Scenario 9: Remove an Account

>login

Enter email: kylelp@sysadmin.com

Enter password: *****

Hello, Kyle

What would you like to do?

1. Edit personal information
2. Search for an internship
3. Remove user account
4. Remove employer account
5. Remove company profile
6. Edit Job listing visibility
7. Edit review visibility
8. Create new admin account

Please enter the number next to your preferred action: 3

Do you know the email of the user you want to remove?(Y/N): Y

Please enter the email of the account you wish to remove: jasonps@email.sc.edu

Account removed!

Error Cases

Welcome to the UofSC internship application

What would you like to do?

1. Search listings
2. Create account

Please enter the number next to your preferred action: **create account**

Please enter a valid option: 2

What type of account would you like to create? ([S]tudent or[E]mployer): S

Enter email: jakesmith@gmail.com

Please enter a .edu email address: jakeps@email.sc.edu

Enter your first name: Jake

Enter your last name: Smith

Enter a password: *****

Thank you Jake! Your student account has been created.

Welcome, Jake

Data Storage

Each user and job listing will be stored in their respective database classes during program use. Outside of active use, this data will be stored in JSON files which the program will read to populate the database classes. A different JSON file will exist for each type of user (Student, Employer, Administrator), for all job listings, and for all company profiles. If any data has been updated during program use, then the JSON files will be updated on exit.

JSON File Examples

Student

```
[
  {
    "userID": 1986,
    "firstName": "Ferris",
    "lastName": "Bueller",
    "email": "btotheueller@school.edu",
    "password": "password",
    "permission": 0,
    "resume": null,
    "reviews":
      [{ "firstName": "Ben",
        "lastName": "Stein",
        "rating": 1,
        "message": "He just showed up expecting money!",
        "hidden": false } ]
  }, {
    "userID": 777,
    "firstName": "Lucky",
    "lastName": "Labanowski",
    "email": "blessedRNG@lucky.edu",
    "password": "LadyLuck54321",
    "permission": 0,
    "resume":
      [{ "firstName": "Lucky",
        "lastName": "Labanowski",
        "email": "blessedRNG@lucky.edu",
        "yearInSchool": "junior",
        "skills": ["Lucky"],
        "classes": ["Probability for Engineers"],
        "workExperiences":
          [{ "title": "Junior Blackjack Dealer",
            "company": "Blackjack-4-Kids",
            "dateRange": "7/7/21 – 8/7/21",
            "description": "Definitely legal." } ],
        "education": [{ "universityName": "Lucky University", ... } ]
      } ]
  }
]
```

Employer

```
[
  {
    "userID": 404,
    "firstName": "Guy",
    "lastName": "McReal",
    "email": "autogeneratedemail@business.com",
    "password": "qwerty",
    "permission": 1,
    "associatedCompanyID": 75
  }, {
    "userID": 123,
    "firstName": "Ben",
    "lastName": "Stein",
    "email": "benstein@images.com",
    "password": "dragon",
    "permission": 1,
    "associatedCompanyID": 24
  }
]
```

Administrator

```
[
  {
    "userID": 1,
    "firstName": "Dee-ad",
    "lastName": "Mon",
    "email": "deeadmonAdmin@admin.com",
    "password": "admin",
    "permission": -1
  }, {
    "userID": 21,
    "firstName": "Adam",
    "lastName": "Ministrator",
    "email": "adammin@admin.com",
    "password": "An1!Actually2!Strong3!Password4!",
    "permission": -1
  }
]
```

CompanyProfile

```
[
  {
    "companyID": 24,
    "associatedEmployerIDs": [12, 13, 43],
    "companyName": "Mages of the Mountain",
    "hqAddress": "123 Mountain Dwarf Drive",
    "description": "Adventure Awaits!",
    "currentListingIDs": [35, 36],
    "reviews":
      [ { "firstName": "Ferris",
          "lastName": "Bueller",
          "rating": 1,
          "message": "Not my style.",
          "hidden": false } ]
  }, {
    "companyID": 75,
    "associatedEmployerIDs": [56],
    "companyName": "Legit Corp",
    "hqAddress": "111 One-ty-One Street",
    "description": "We are a legit company, trust us. We have plenty of opportunities!",
    "currentListingIDs": [15],
    "reviews": []
  }
]
```

JobListing

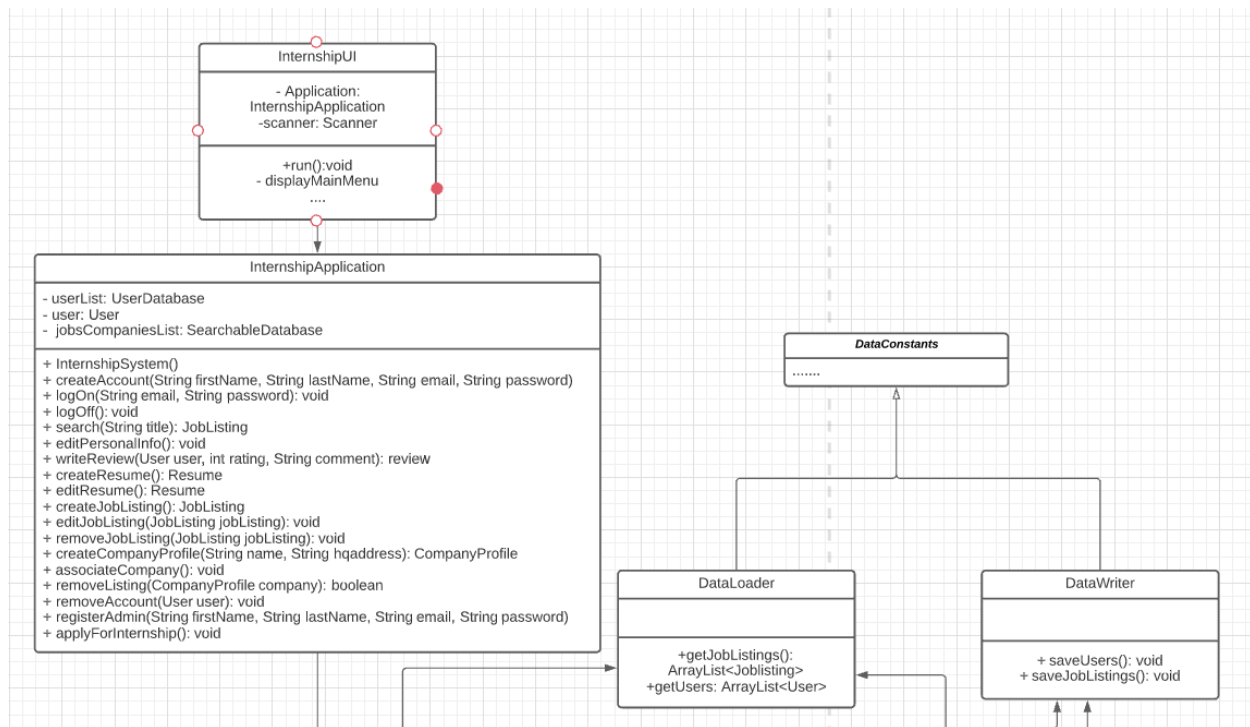
```
[
  {
    "listingID": 15,
    "title": "TOTALLY REAL INTERNSHIP",
    "description": "A fresh opportunity to build your work experience!",
    "paid": false,
    "payRate": 0.00,
    "requiredSkills": ["Hardworking", "Generous", "Willing to work for free"],
    "companyName": "Legit Corp",
    "hidden": false,
    "applicantIDs": [777]
  }, {
    "listingID": 35,
    "title": "Creative Development Assistant",
    "description": "We'd like a new dungeon master for our sponsored games!",
    "paid": true,
    "payRate": 10.00,
    "requiredSkills": ["Creative", "Quick-witted", "Well-organized", "Tech Savvy"],
    "companyName": "Mages of the Mountain",
    "hidden": false,
    "applicantIDs": [1986]
  }
]
```

Structural Design

Overall UML Diagram:

https://lucid.app/lucidchart/fe4f7331-c30c-482d-9cd0-b37759c46826/edit?viewport_loc=-87%2C-513%2C1848%2C1341%2C0_0&invitationId=inv_a712ecee-4fd6-412b-91a8-21d7fb75b57e

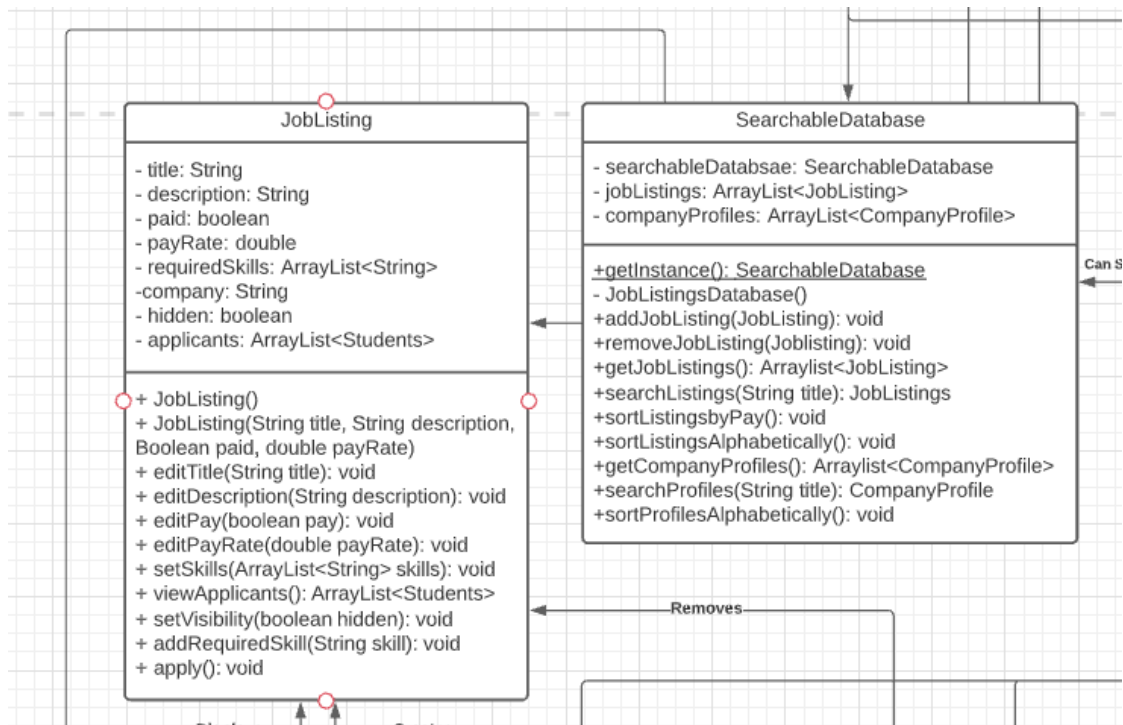
InternshipUI and InternshipApplication Breakdown



Description:

The InternshipUI class will run the user interface for our internship application and display all of the ways the user can interact with the program. The InternshipApplication class acts as a facade for the program, which will run every function that is available for a user to engage with. When the program is in use, it prompts the user to log in and then displays each function that is available to that specific user. The facade is the focus point of the entire program and controls everything within it. The facade has access to a database which contains all of the users who have created an account with the system so that it can log a user in or help them create an account. It also has access to a database with all of the job listings so that an employer can create one and a student can search and apply for any internship they want.

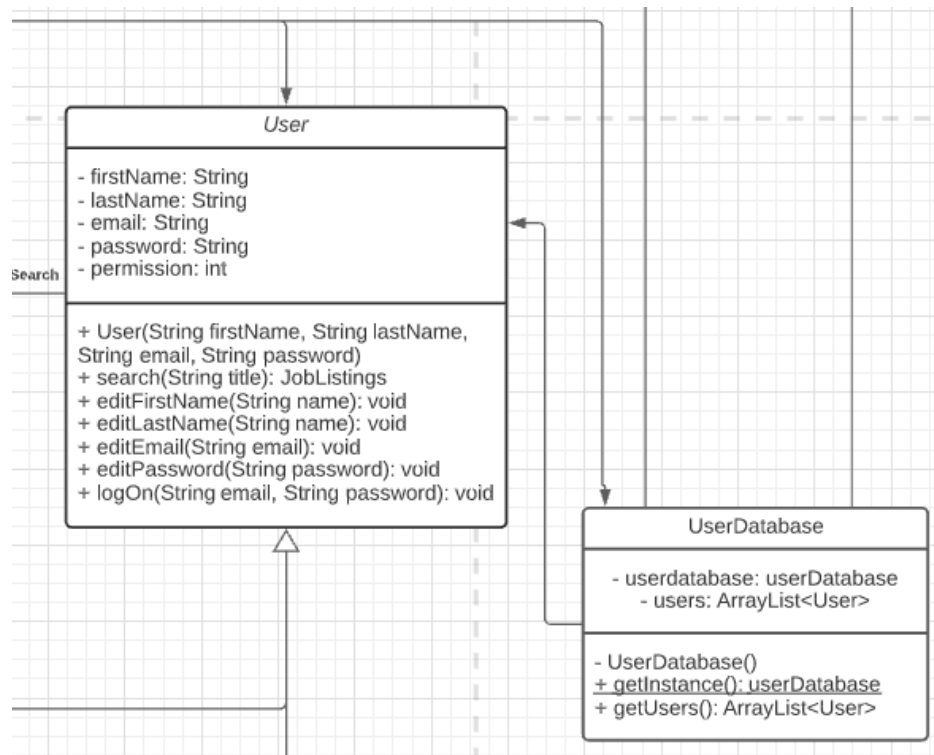
JobListing and SearchableDatabase Breakdown



Description:

The **JobListing** class defines the attributes that need to be included when an employer creates a job listing. All of the **JobListings** are added to the **SearchableDatabase**, which users can use to search listings with various filters. Students can apply to any visible listing. The **SearchableDatabase** also contains every **CompanyProfile** created, allowing users to find information about any company in the database. Users can search these profiles and sort them alphabetically, similar to the job listings.

User and UserDatabase Breakdown

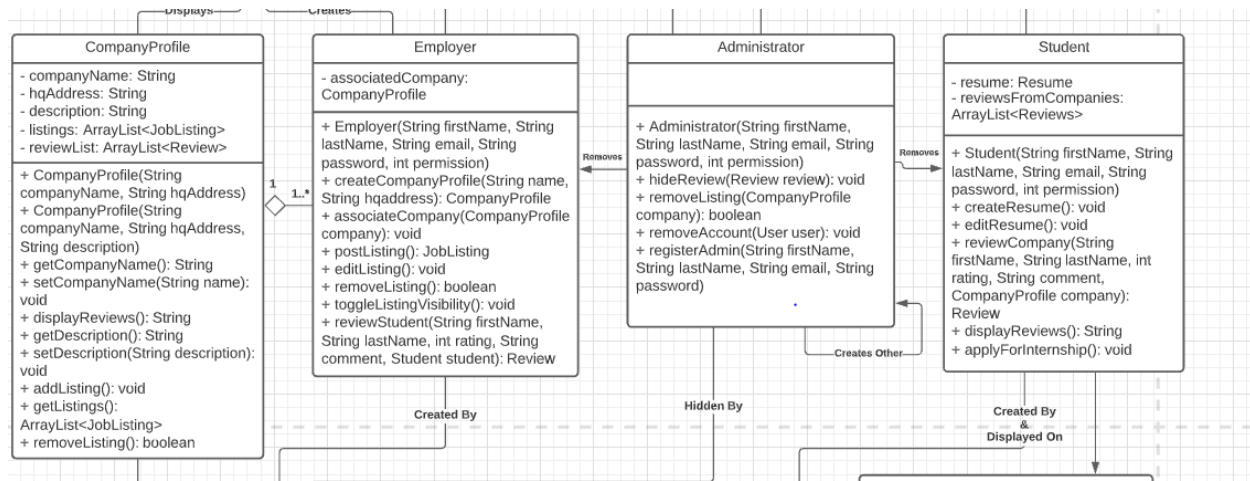


Description:

The `User` class serves as the parent of the `Administrator`, `Employer`, and `Student` classes. We defined `User` as an abstract base class because it contains methods that all three of its children incorporate, allowing any user to edit their personal information and search for internship listings.

We also created a `UserDatabase` class to store all of the user accounts created on the system. We chose to define a user database so that we could keep track of each account as it is created and search for an account when a user tries to log in. This allows the system to easily log a user in or prompt them to create an account if they don't already have one.

Company Profile, Employer, Administrator, and Student Breakdown

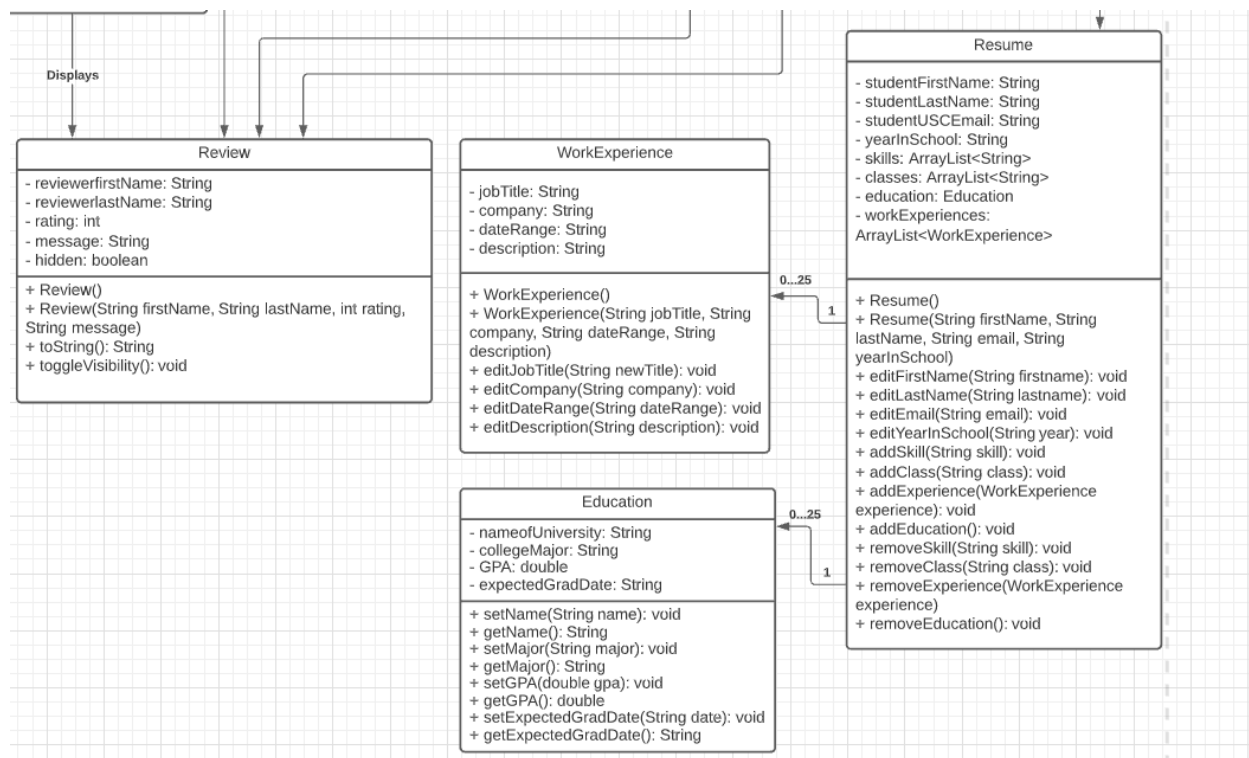


Description:

The Administrator, Student, and Employer classes use methods from the User class defined on the previous page while also implementing their own specific methods that only a user of one type can call. The Student, for example, inherits the editFirstName method from the user, which both Employers and Administrators can use as well. However, the Student class also defines a method to create a resume, something that neither the Employer nor the Administrator classes need to do.

In addition to these three classes, the CompanyProfile class defines a CompanyProfile object that can be created by an employer. Employers can create a profile about their company or associate with one that already exists. Every time a profile is created, it is stored in an ArrayList in the SearchableDatabase class so that students, employers, and administrators can search companies.

Review, WorkExperience, Resume, and Education Breakdown



Description:

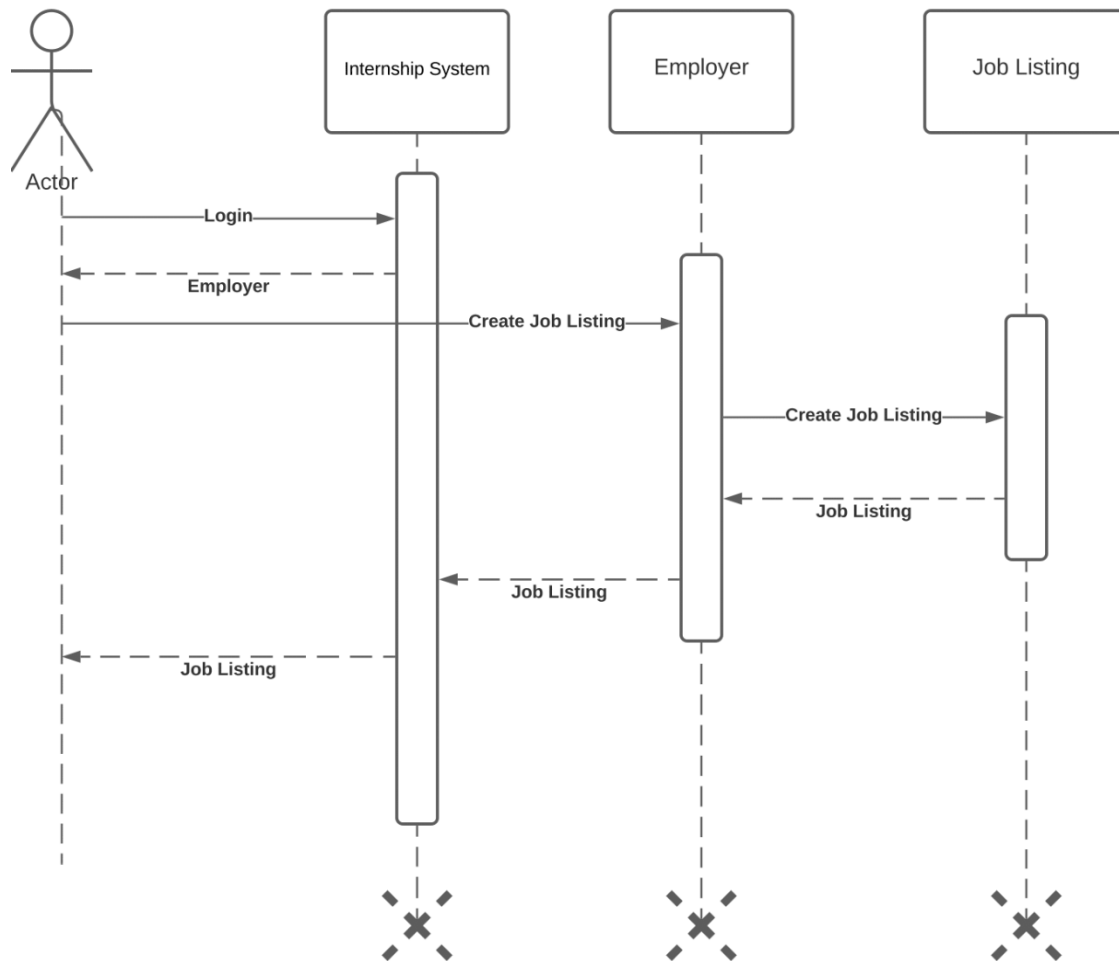
The Review class serves as an object representation of a review, including reviewer name, the rating, and the text of the review. Students can leave reviews on CompanyProfiles, and Employers can leave reviews on individual Students. Reviews are publicly displayed for both CompanyProfiles and Students unless hidden, and only Administrators can hide reviews.

The Resume class stores resume information for students. Each resume contains pertinent information such as the student's name, contact info, skills, classes, and more. Additionally, resumes contain an ArrayList for WorkExperiences and an ArrayList for Educations. WorkExperiences, as the name suggests, represent any prior work experiences the student has accomplished and contain the job title, the company worked for, the date range, and description of the experience. Each education represents an institution the student has attended or is attending and includes the name of the university/college, the student's major, the student's GPA, and the student's expected or actual graduation date. A Student can include up to 25 skills, classes, WorkExperiences, and Educations each on a Resume. Every element of the Resume can be modified and/or removed once created.

Dynamic Models

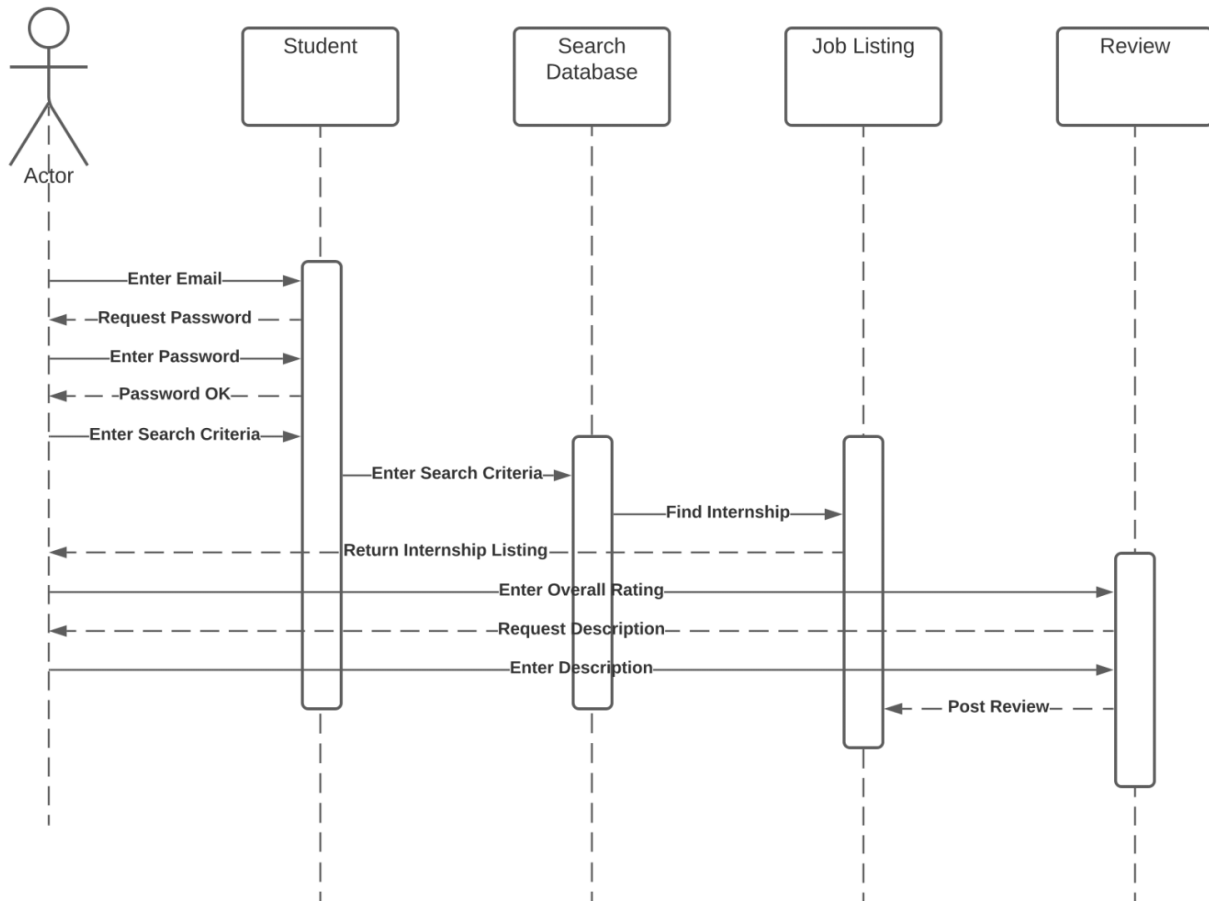
Scenario 1:

- **Scenario Name:** Post a Job Listing
- **Scenario Description:** - This scenario depicts how an employer will log into the internship system and post a job listing that students can apply for.
- **Diagram:**



Scenario 2:

- **Scenario Name:** Write a Review of an Internship
- **Scenario Description:** This diagram shows how a student user will log into their account and search for an internship they recently completed and would like to review. The user will be able to rate the internship and enter a description as part of their review.
- **Diagram:**



Scenario 3:

- **Scenario Name:** Create a Student Account
- **Scenario Description:** This diagram illustrates how a student will create an account in the internship system. When creating an account, a student will be prompted to enter their first and last name as well as their school email. The system will check to make sure the student entered an email containing “.edu” before asking them to enter a password. The system will then use the information entered by the user to create their account.
- **Diagram:**

