University of Pretoria

COS 332 - C++
Feature : Authorization
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Roles(Sprint 1)

PV(Phumudzo) Ndou   - u19050993   - Project Manager/Tester

KC(Kudakwashe) Chivunga   - u19068752   - Business Analyst, API Engineer

H(Hamza) Allimia   - u18219919   - Designer

MG(Gift) Monwa   - u18196366   - UI Engineer

KM(Khotso) Bore   - u19180642   - Services Engineer

R(Raymond) Boonzaier   - u19014725   - Data Engineer, Dev Ops.

Product description and Functional Requirements

1. Introduction

1.1. Purpose of Product

With the graduate portal being made available to students, graduates and company owners, there is a need to distinguish between the two by giving each group its own access/permission rights. These rights will determine what each type of user will and will not be allowed to do - Eligibility.

1.2. Scope of Product

Authorization will be implemented as a library that will be made available to certain feature groups. Accessible online as the entire system will be online based. These feature groups may include teams that will need to authorize a user to do something on the site or check if someone is authorized to do a certain thing on the site. This library will be implemented using a number of technologies namely, graphQL, Nest Js, Angular etc.

1.3. Acronyms, Abbreviations and Definitions

    1.3.1. Abbreviations
- ➔ *UP* - University of Pretoria

    1.3.2. Definitions
- ➔ *Users* - graduates, students and company representatives.These are people who will be using the system.

1.4. References
1.5. Outline of document
    1.5.1. General Description
    1.5.2. Specific requirements

2. General Description of Product

2.1.1 Context of Product

The authorization system will be based around the University of Pretoria's domain, under computer science platforms. It will also be online based. It will be used by users in the Computer science department, specifically computer science students and graduates, as well as companies/company representatives who are actively looking for these students to work for and/or with them.

2.2.1 Product Function

To provide an easy,fast and secure way of giving users permission to access different resources on the site. Users(described below) will request for access/authorisation by clicking on the different buttons on the user interface.

2.3.1 User/Role characteristics & Their Use cases

2.3.1. *Users* - Users who either have a Computer Science qualification or not but are not University of Pretoria based.

A student and/or graduate can:
- Edit their profile
- Delete their profile

2.3.2. *Students* - Users who are still on their way to obtain their first qualification, BSc Computer Science degree. These users would also be willing to work in the industry, and thus will be actively looking for job opportunities. Students may choose to make it known to companies that they are looking for job opportunities as some students want to work whilst studying(to be handled by the Student profile team). Companies may not view a student's profile that is not ready to work.Students can also be graduates .Graduates - Users who have their basic qualification (BSc Computer Science degree) and have either stopped learning or working on prostgrade qualifications. This group of users can either choose to make themselves known that they are looking for a job(to be handled by the Graduates profile team) or not. Companies may not view a graduate's profile that is not ready to work.

A student and/or graduate can:
- Edit their profile details
- Delete their profile
- View other student's profiles
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2.3.3. Company - These users are the general companies that will search for employees and the STUDENT role will be able to search for employment at the listed companies. These companies will have to be thoroughly investigated as to not make it possible for malicious users to acquire the users of the

systems information. These users will only have a very limited set of permissions before and during the vetting process.

Company profiles can:
- ● Requested for access

- Company profiles can only be edited and deleted by admins, as they may be linked to many student's private and confidential information. This is to make sure the system is **SECURE**

2.3.4. Company representatives - Company employee(s) that have been given the task to create and maintain an online profile as well as scout for potential employees on the site. They will play the admin roles for their individual companies.

Company representatives **can:**
- ● Edit their profile details
- ● Delete their profile
- ● Request to access Student/ graduate's profile(to be handled by 'Request for access' team)

2.3.5. Admin - Users who can do tasks every user can do and more that the users can not do. This includes creating,editing and deleting information no other user can.

Company representatives **can:**
- ● Edit their profile details
- ● Edit any other user's profile
- ● Delete their profile
- ● Delete any other user's profile
- ● Get access to a Student's profile

2.3.6. Suspended - This group of users are those that have done some suspicious activities on the site. They can be students, graduates and company representatives.

Suspended users can:
- ● Not do anything besides browsing data that does not require any form of authorization.

Use cases
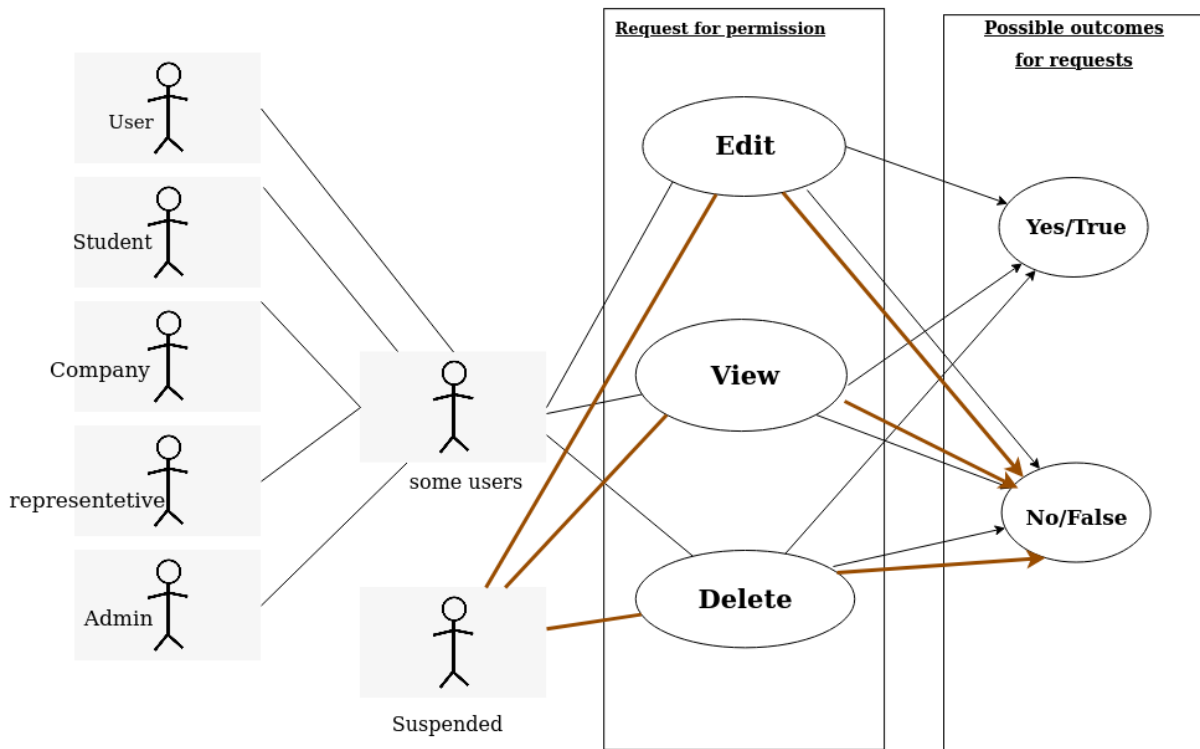
2.4.1   Constraints

➜ The Authorization library has to reside on the up.ac.za domain
➜ The Authorization library has to work based on the users specified above and what the users wish to do depending on whether they are eligible or not.

2.5.1   Assumptions and dependencies

➜ All users are registered and logged in
➜ Graduates to be authorized obtained their degree from the University of Pretoria
➜ Students to be authorized are working towards their Computer Science degree or have obtained their Computer science degree and continuing to postgraduate studies.
➜ Companies to be authorized are interested in actively recruiting students or graduates from the University of Pretoria.

3.   Specific Requirements
3.1.1.   Functional Requirements

➔ **FR1 -** The system will give Students/Graduates the permission to edit their profiles and delete their profiles.

Editing their profiles:

- **Constraints:**
  ! When editing profiles,Users will ONLY be authorized to edit changing attributes such as:
  - Contact details.
  - And/ Uploaded documents such as CVs, Profile Pictures etc.
  - Non-changing attributes will Not be tempered with.
  ! Users will only also be authorized to change ONLY their profile details.

Inputs: Click to the edit profile button
Process: - Check if the user is authorized to edit the profile.
Outputs: Edit profile page(s).

➔ **FR2 -** The system will authorize or give company representatives permission to scout for prospective employees and view student's/graduate's profiles. By:

– Allowing company representatives(users) to request for profile viewing.
– Once the student/graduate has accepted the request, the company will be given further access rights.

Rights to:
! Potentially communicate further details on their recruitment process
! AND/OR query for missing information.
Constraints:
– Company representatives can Only view the student's profile once the user(student/graduate) has given them access to.
– Company representatives will NOT be authorised to change any student's or graduate's details.

Inputs: Click 'view student's profile' button or related button
Process: - Check if the user is a company's profile.
    - Allow for request to be sent to the specific student(Student)
Outputs: View to Student's profile.

➔ **FR3 -** The system will permit authenticated Admins:

! to create, edit and delete users(student's ,graduates and company's) profiles, posts etc.

➔ **FR4** - The system should be able to inform users that they are not authorized to access certain pages/resources when they are not authorized.

Inputs: Clicks on permission buttons on the User Interface
Process: Check if the user is authorized to access the resource on site
Outputs: Pages or messages such as 403 error.

➔ **FR5** - The system will give users-Suspended the permission to edit their profiles and delete their profiles

Inputs: Clicks on buttons on the User Interface
Process: Check if the user is authorized to access the resource on site
Outputs: Pages or messages such as 403 error.

3.2.1 Non-Functional Requirements

NFR2 - Speed : Users who want to access certain resources on the site should access these resources instantly. This is to say authorization should take place instantly, or atleast the process should start instantly. This is to also say users can view/access any resources they are eligible for at any given day/time.

NFR3 - Capacity: The system should be able to cater/ authorize more or less students each year as the number of students registered in the system may increase/decrease each year.

NFR4 - Scalability: The resources which can be requested for can grow as new information sources are made available on the system.

3.3.1 External Interface Requirements

● **User Interfaces**

➢ Software requirements: Adobe xd, Angular, Nest Js, Typescript.

- ○ Error messages displayed when the user tries to access resources on the website that they are not authorized to view or use.
    - ★ 403 - Forbidden - You don't have permission to access this page/resource

- ○ Buttons that will allow the for authorisation process to begin :
    - ● Edit profile
        - ○ Admin (Button placed on each profile/ Links to page to edit)
            - ■ All fields Access
        - ○ Student (Button in profile page settings)
            - ■ Access
            - ■ Contact details
            - ■ Addresses
            - ■ Titles
            - ■ About
            - ■ No Access
                - ● ID Number
                - ● Grades/ Degree Information
        - ○ Company (Buttons placed in profile settings)
            - ■ Access
                - ● Contact Details
                - ● Addresses
                - ● About
    - ■ Create profile
        - ○ New users will create through registration, to be handled by authentication team
        - ○ Admin
            - ■ In admin portal, place button for creation, links to page for profile details
    - ■ Delete profile
        - ○ Admin
            - ■ Button placed on all profiles
        - ○ Students/Companies
            - ■ Button in account controls page
            - ■ Confirm deletion
    - ■ View Profile
        - ○ Admins
        - ○ Can view all profiles, no permissions needed
- ■ Students

- Viewing company profiles allowed
- Viewing other students, Place view button on listed profiles.
  - Companies
    - Place view button on student profiles
    - View button on Company profiles

- ## **Hardware Interfaces**

  - The user will interface with the system through the use of:
    - a display screen
    - Keyboard and mouse
    - alternatively the user may use a touch screen.

3.4.1 **Performance requirements**

- The system should be able to authorize all users who want to access a certain resource, even when they all request at the same time, ALL at optimum(fast) speed.

3.5.1 **Software System Attributes**

- The system should be available(uptime) 99% of the time to be considered reliable.

3.6.1 **Other requirements**

- All designs / designed pages need to be simple as the system should be user friendly.
- Designs need to be within the University of Pretoria's color codes too.

4. **Apandecies** - N/A

Acceptance Criteria

→ <u>AC1</u> - All users eligible to access any information/resources on the sites at any given time should be authorized to do so.

- ➔ <u>AC2</u> - All the different kinds of users permission rights can not be changed or swapped out with a different kind of user. This is to say user permissions are to stay constant
- ➔ <u>AC3</u> - Users will receive an error notification page with error '403-denied access' if they try to access or edit information they are not allowed to.
- ➔ <u>AC4</u> - Buttons to request for authorization are to be put on the user interface. As long as there is a need to authorize the user.