ETHERA

Multifaceted Student Industrial Placement System
Version 1.00

Software Requirement Specification

Rajarata University of Sri Lanka
Faculty of Applied Sciences
Information & Communication Technology

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1. INTRODUCTION

1.1. PURPOSE

This document focuses on describing the software requirements of project ETHERA, a multifaceted student industrial placement system. This project would be carried out to meet the software development requirements of the ICT-3411 module conducted by the Faculty of Applied Sciences Rajarata University of Sri Lanka. The document focuses on all the functional, non functional, performance and security requirements of the project ETHERA and will also serve as a document discussing the scope, design and the development plans of the project.

1.2. DOCUMENT CONVENTIONS

Heading Style	Font Size (pt)	Font Type	Font Color
Master Headings	13	Calibri	White
Sub Headings	12	Calibri	Black
Other Headings	11	Calibri	Black
Body	10	Calibri	Black

1.3. INTENDED AUDIENCE AND READING SUGGESTIONS

This Requirement Specification document of the project ETHERA will serve as a primary reference material by all the developers of the project ETHERA. This document will be used as the reference material for all the academic staff members of ICT course in Faculty of Applied Sciences for the purpose of supervising and evaluating the project. It is also intended to provide as a legal document on ETHERA project with the Career Guidance Unit. Other than above mentioned categories, it will also serve as a great resource for anyone who is interested in this project.

1.4. PROJECT SCOPE

ETHERA is a portal that facilitates the students' industrial placement process of the faculty of Applied Sciences, by providing a better student assessing, selection and communication process in between University, industry and students. The implementation would provide a shared space to store students' profiles, so that all the users can access them according to user levels and perform relevant actions on them such as adding marks, approval etc.

The system would have the ability to integrate the CGU, industry, students and the staff together by providing a portal. All the necessary details for student assessment are provided in a single place in a profile after hierarchy of approvals. There will be an automated student grading mechanism with some limitations based on both academic and extra performances. Student selection process is automated in a manner that considers all student performance, preference and available opportunity. System use LinkedIn profile details to update student information. Google calendar API is used to help event scheduling in the CGU.

And also there would be a sophisticated mechanism to communicate to all the users with each other by e-mail or SMS. Project ETHERA will focuses on making efficient student industrial placement process. Issues such as

data losses, entering wrong data, and amount of duplication would be addressed in the implementation. Security issues should be handled in higher level according to the user requirements. Number of approval levels is used to output only the correct details to the industry.

2. OVERALL DESCRIPTION

2.1. PRODUCT PERSPECTIVE

Project ETHERA is a web service oriented application that will act as a supporting tool for the entire student assessment and industrial placement process within the Career Guidance Unit (CGU). It consists with a set of interconnected service components which altogether provide framework for supporting an entire student selection process for industry placement. Service components are basically addressing the fields of user authentication, industry experience sharing, student selection and communication between University, industry and students.
The system act as a portal where students can meet industry under the guidance of the CGU. Details on students' academic and extra activities are maintained as profiles and also get the support from LinkedIn to update each and every student's profile data. The key functionality of the system is the automation of student selection process for industry, based on each student's performance, preference and available opportunities. SMS and e-mail service reduce the communication gap in between University, Industry and students. Google calendar API manages the event scheduling related to CGU.

2.2. PRODUCT FEATURES

ETHERA is working as a portal where University students can meet Industry. It fills the communication gap and facilitates Carrier Guidance Unit (CGU) with assessing and automated student selection for industrial training in Faculty of Applied Sciences. Listed below are the main features of ETHERA. Detailed descriptions of the features can be found in coming chapters.

- Web application that supports the Carrier Guidance Unit which provides all necessary details in one place and formal method of handling CGU functions.
- Automated selection process of students to industrial placement by using a newly developed algorithm.
- Integration of LinkedIn API to query students' accounts and their specific details.
- Emails and SMS provide a sophisticated communication method and will fill the communication gap.
- Student filtering system that can be used to filtered students in various constrains such as GPA, Extra activities, Team performance etc will help industry to pre assess students before calling for interviews.
- Industry experience sharing component for helping students to know about companies before industrial placement.

2.3. DESIGN AND IMPLEMENTATION CONSTRAINS

The web based system shall be implemented from PHP as the sever-side scripting language. AJAX, J-query for the validation and user experience enhancement. MYSQL as the database management system. Eclipse shall be used as the development interface. CakePHP, the rapid application development framework will be used to develop the MVC pattern web application of the system. We are planning to use other open-source products that would suit our requirements & the licensing issues, whenever possible. Therefore project ETHERA may inherit some of the limitations that are there in those products. Due to the fixed time period enforced on the project, we will initially focuses on that high priority & the must have features of the project.

2.4. USER DOCUMENTATION

A complete & detailed user manual will be made available with each ETHERA distribution. We are using GIT repository for collaborative coding and proper version controlling. So that anyone can view the source code. The user manual will constitute of all the necessary information that is required for installing, configuring &

using the ETHERA distribution with complete set of examples. Since the project ETHERA is an open-source project we will follow the open source principles whenever possible. Currently we are maintaining a public mailing list of our project in Google-groups

2.5. ASSUMPTIONS AND DEPENDENCIES

Due to the distributed nature of the users , there should be network connectivity among nodes in order to communicate, retrieve data, write data, notify the availability of data, etc.

The environment shall be hosting the system should contain minimum software requirement as Enterprise 6 Linux operating system. Apache web server version 2.2, PHP version 5.3, Postfix mail transport agent version 2.6

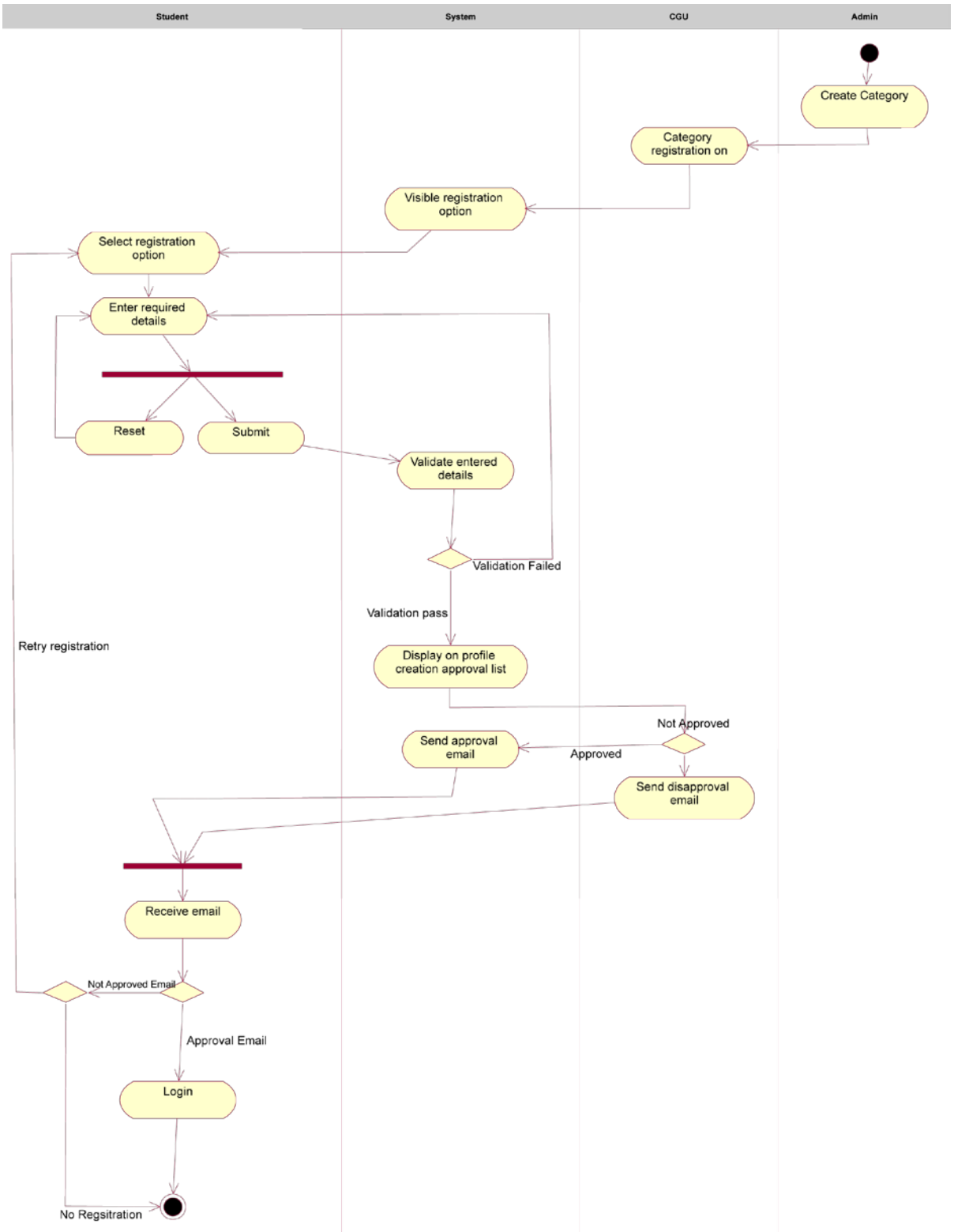
The environmental that shall be hosting the system should contain minimum hardware requirement as a workstation with AMD or Intel compatible dual core processor with at least 2.0Ghz, 1024 MB of RAM, 5 GB of free hard disk space and an Internal connection with 2 Mbps uplink and 1 Mbps download bandwidth.

Form the internet gateway there should be a port forwarding to the port no 80 of the system workstation IP address.

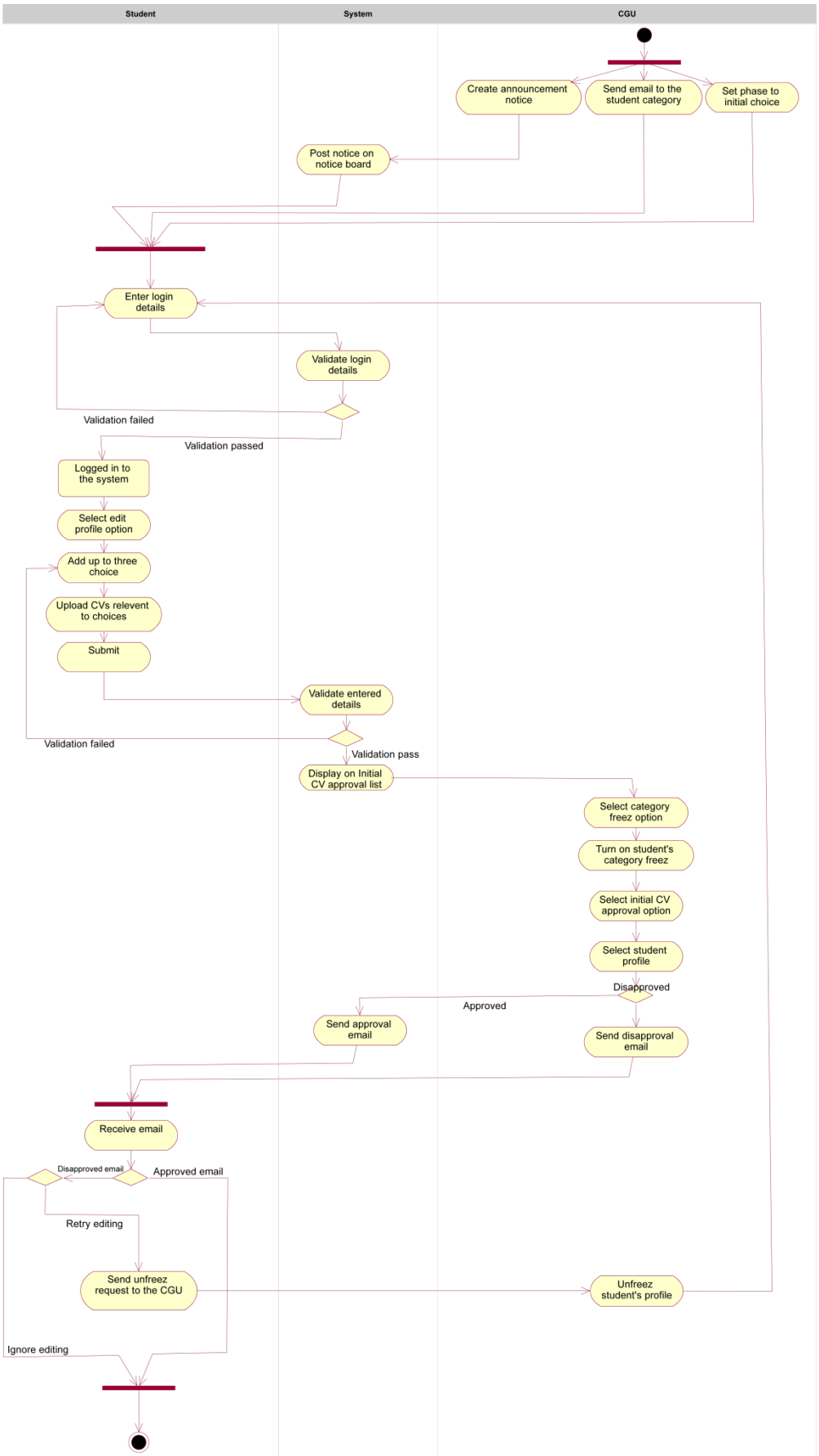
3. SYSTEM FEATURES

3.1. ACTIVITY DIAGRAMS

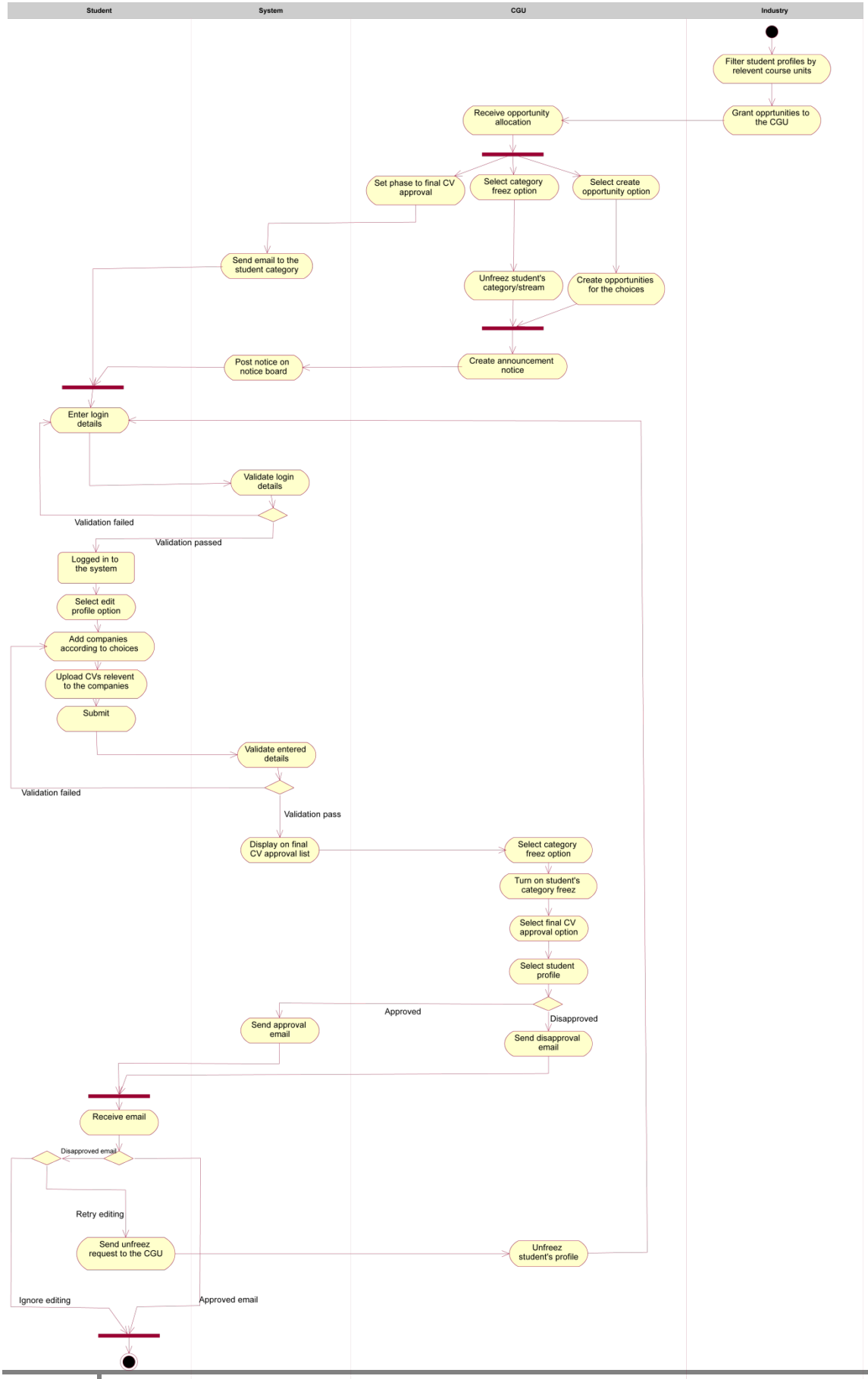
3.1.1. Registration Approval process



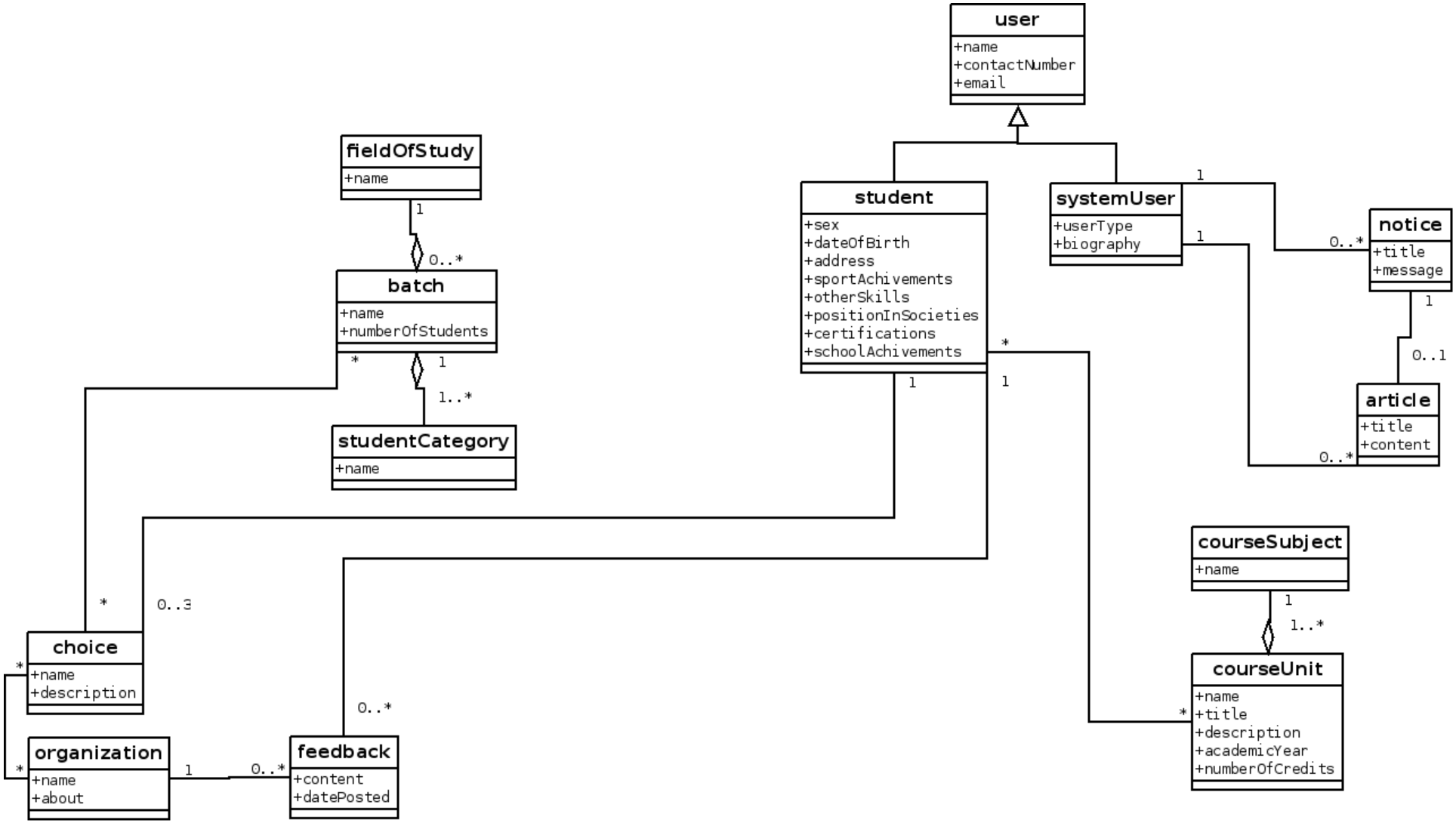
3.1.2. Initial CV uploading process



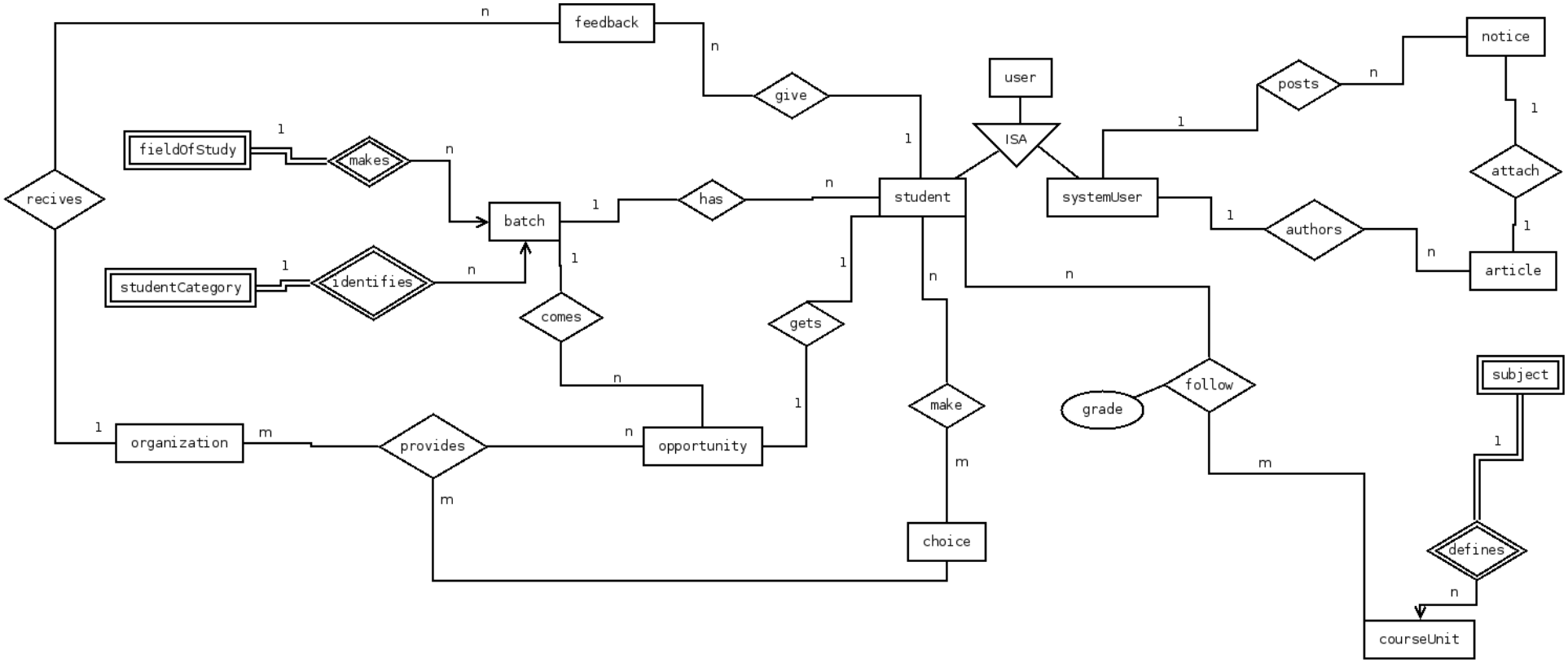
3.1.3. Final Profile approval process



3.3. CLASS DIAGRAM



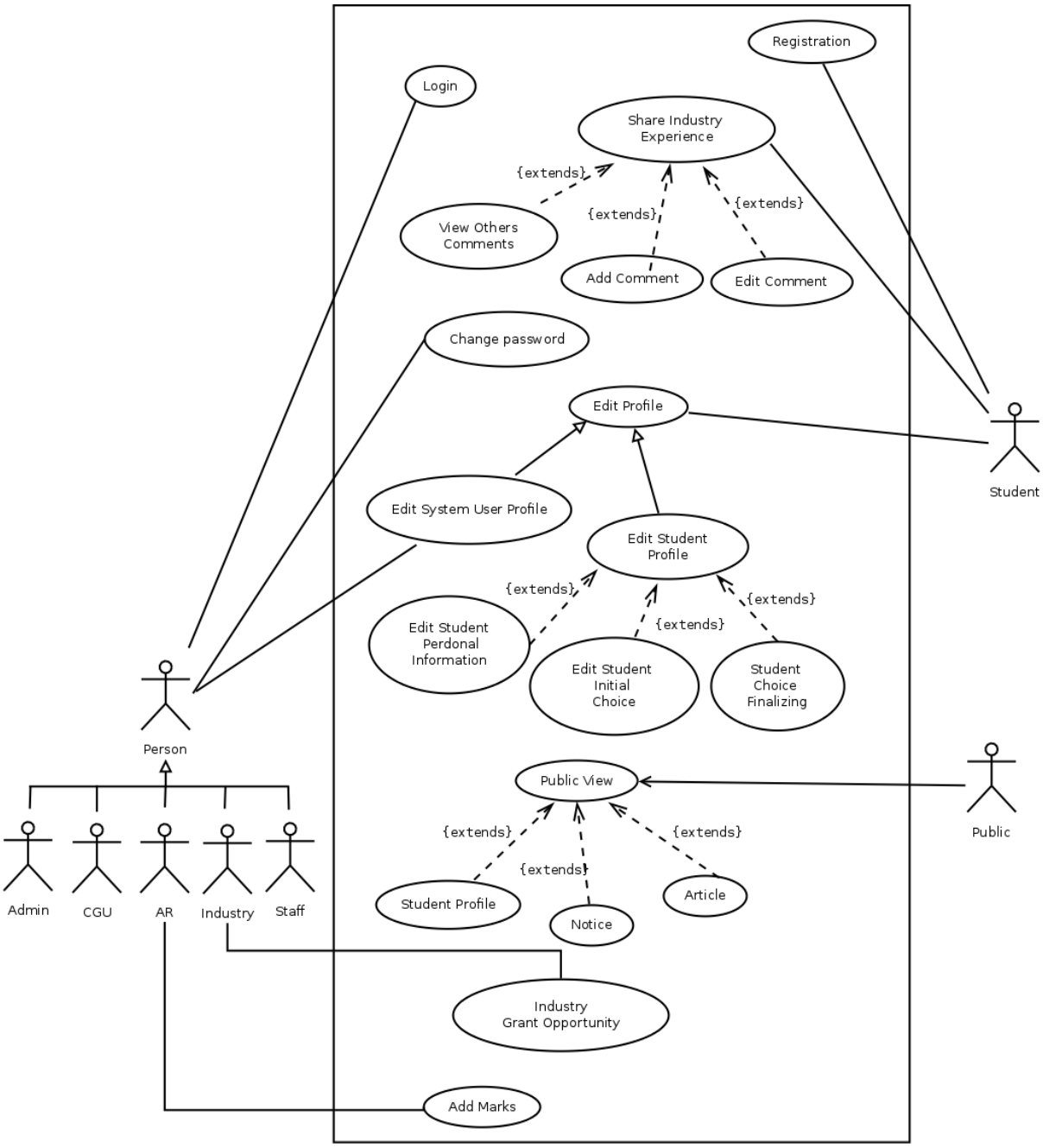
3.4. ENTITY-RELATIONSHIP DIAGRAM

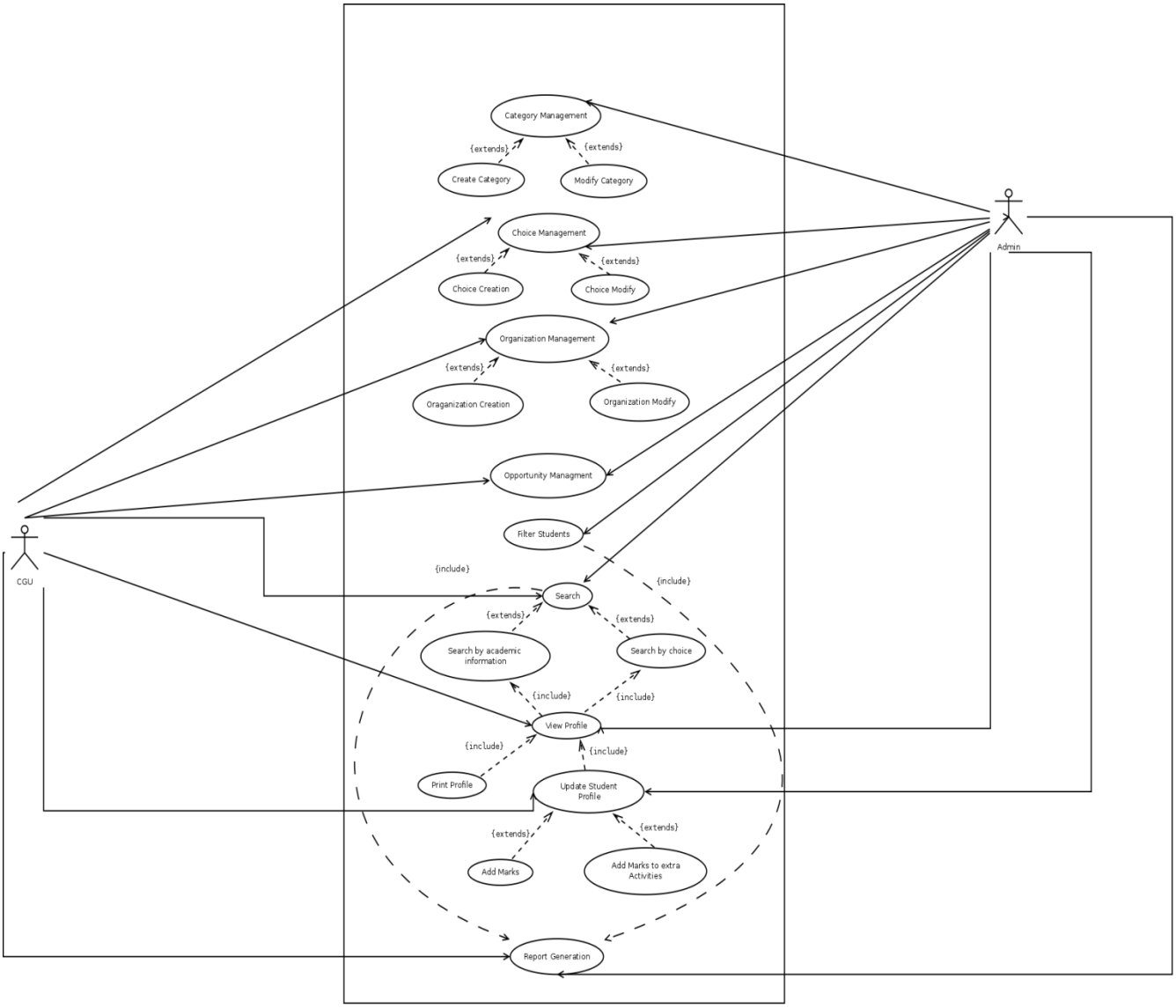


3.4.1. Attributes for the ER Diagram

studentCategory	fieldOfStudy	batch	choice	organization	User	systemUser	student	courseSubject	courseUnit	feedback	notice	article	opportunity
categoryName	streamName	categoryName	choiceId	organizationId	name	user id	student id	subjectName	courseUnitId	feedbackId	noticeId	articleId	opportunityId
openForRegistration	streamAbbrv	streamName	choiceName	organizationName	email	userType	email	subjectDescription	subjectName	feedbackBody	noticeTitle	articleTitle	opportunityCount
		industryReady			phone(ho)	contactNo	name		courseUnitName	date	dateStart	articleContent	
		Freez			phone(mob)	email	sex		credits		dateEnd		
		approvalPhase			hash password	hashPassword	dob		academicYear		noticeDescription		
					image	bio	phoneHome		courseUnitSyllabus		published		
						image	phoneMobile						
							address						
							hashPassword						
							freezed						
							industryReady						
							approvedState						
							registrationDate						
							approvedState						
							linkedInReference						
							serializedData						
							sports						
							scoolAchievements						
							certifications						
							positions						
							other						

3.5. SYSTEM USE CASE DIAGRAMS

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Modify Category
Choice Management
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{extends}
Choice Creation
Choice Modify
Organization Management
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{extends}
Oraganization Creation
Organization Modify
Opportunity Managment
Filter Students
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{include}
Search
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Search by academic information
Search by choice
{include}
{include}
View Profile
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{include}
Print Profile
Update Student Profile
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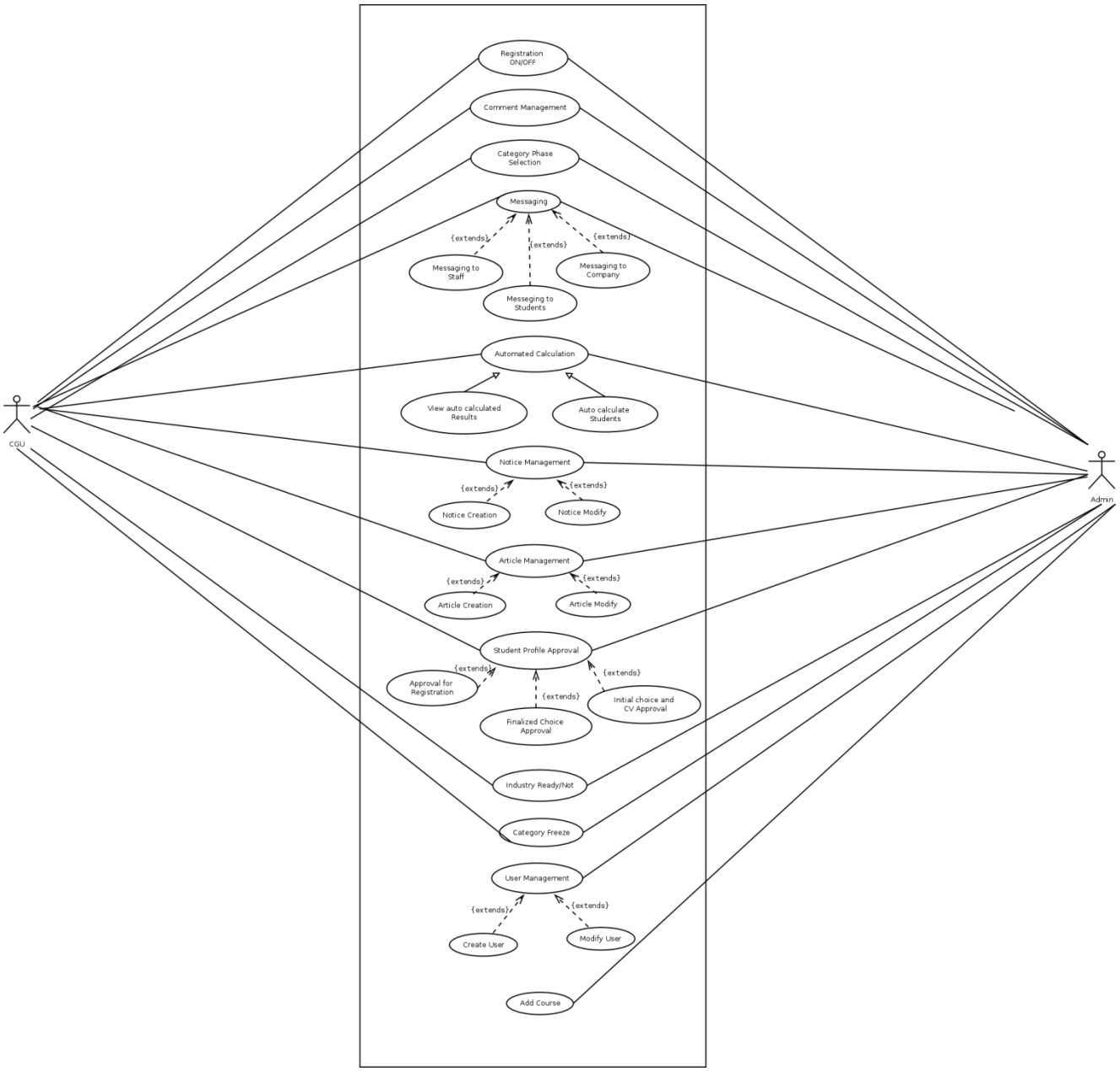
{extends}
Add Marks
Add Marks to extra Activities
Report Generation
CGU
Admin


Registration ON/OFF
Comment Management
Category Phase Selection
Messaging
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{extends}
{extends}
Messaging to Staff
Messaging to Company
Messeging to Students
Automated Calculation
View auto calculated Results
Auto calculate Students
Notice Management
{extends}
{extends}
Notice Creation
Notice Modify
Article Management
{extends}
{extends}
Article Creation
Article Modify
Student Profile Approval
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{extends}
{extends}
Approval for Registration
Initial choice and CV Approval
Finalized Choice Approval
Industry Ready/Not
Category Freeze
User Management
{extends}
{extends}
Create User
Modify User
Add Course
CGU
Admin

3.6. USER INTERFACES

Since the project ETHERA is a more of a framework that is mainly intended to be used by the CGU most of the time not very much familiar with computers all the interfaces should be simple and in a user friendly manner to get the required work done easily. User interfaces should be formal since it reflects the image of the University to the industry. Since there are number of user types with different access levels, user interfaces should be change based on user type. The user type will manage,

- The scope of the space they are using
- Managing the visibility of the data.
- Set other configuration parameters as needed.

3.7. USE CASES

3.7.1 Use case 1 : Login

Overview : Person can login to the system and perform relevant action
Actors : Person
Precondition : User accounts must have been created
Main Success Scenario

1. Person select login option
2. System display login interface
3. Enter username and password
4. System validate username and password
5. System determines user type
6. Direct to the relevant interface

Post condition: Person can perform action relevant to the user type
Alternatives

3a.1. Person enter incorrect username or password
2. System notify incorrect login information
3. System prompt username and password interface to re-enter

3b.1.Person select forget my password option
2. System notify “send to e-mail”
3. Person confirm action
4. System send password to the e-mail

Exceptions

4a.1. No such user in the system
2. System notify invalid user login

3.7.2 Use case 2 : Change password

Overview : Person can change login password
Actors : Person
Precondition : Person must be logged in to the system
Main Success Scenario

1. Person select change my password option
2. System display change password interface
3. Person enter current password
4. Person enter new password
5. Person re-enter new password
6. Person confirm changes
7. System notify password change successfully

Post condition: System save password changes and person can use new password to login to the system.

Alternatives

3a.1. Person enter incorrect password

2. Go to step 4 -6
3. System notify the password is incorrect

4a.1. Enter invalid password
2. Go to step 5-6
3. System notify the password is invalid

Description
Refer to business rule 1 for password validation in step 4

3.7.3 Use case 3 : Edit System User Profile

Overview : Can edit information[1] in the profile
Actors : CGU,AR,Staff,Industry
Precondition : Must be logged in to the system
Main Success Scenario

1. Actor select edit profile option
2. System display editable view of the profile
3. Change profile information[1]
4. Confirm save changes
5. System notify the successfully save changes

Post condition: User profile is updated with new details

Alternatives
3a.1. Enter invalid e-mail address
2. Confirm save changes
3. System display invalid e-mail address notification

Description

Information[1] → Actor: CGU, AR,Staff
Mandatory - name ,designation ,e-mail address
Optional - photo, address, contact no. , biography

Actor: Industry
Mandatory - Company name ,e-mail address
Optional - Logo, address, contact no. , company description

Refer to business rule 2 for e-mail validation in 3a.1

3.7.4 Use case 4 : Edit Student Profile

Overview : Student can edit information[1] in the profile base on the phase and the state of the profile
Actors : Student
Precondition : Student must be logged in to the system. Student profile must be approved from "initial approval" phase.
Main Success Scenario

1. Select edit my profile option.
2. System displays the editable view of the profile interface.

Post condition: Student can edit their profile system save changes.

Exceptions

Precondition: student profile not approved from " initial approval" phase
2a.1. System deactivate edit my profile option

2. System display cannot be edited notification

Post condition: Student cannot edit profile.

Description

Information[1] → Personnel information
Initial Choices
Company names

3.7.5 Use case 5 : Edit Student Personal Information

Overview : Student can edit personal information[1] in the profile
Actors : Student
Precondition : Student must be logged in to the system
Particular student's category must be in "primary" phase
student profile must be approved from "initial approval" phase
student profile must be in "unfreeze" state

Main Success Scenario

1. Student edits personnel information[1]
2. Confirm save changes action
3. System display successfully save changes notification

Post condition: System saves changes

Alternatives

3a.1. Enter invalid e-mail address
2. Confirm save changes
3. System display invalid email notification

Description

information[1] →Mandatory-- Name in full, e-mail,
Optional -- phone (mob), phone(home),address, skills

Refer to business rule 2 for e-mail validation in 3a.1

3.7.6 Use case 6 : Edit Student Initial Choices

Overview : Student can edit initial choices of employment areas in the profile
Actors : Student
Precondition : Student must be logged in to the system
Particular student's category must be in "initial choices" phase
student profile must be approved from "initial approval" phase
student profile must be in unfreeze state

Main Success Scenario

1. System display extended view of the profile with initial choice selection option.
2. Student selects 3 initial choices based on interest
3. Upload CVs for each initial choice
4. Confirm save changes action
5. System display successfully save changes notification.

Post condition: System save initial choices and CVs then send profile for "Initial choice approval"

Alternatives

2a.1. Student select less choices (<3)
2. Go to step 3- 5

3a.1. Student upload single general CV to all choices
2. Go to step 4-5

3b.1. Student does not upload any CV
2. System display incomplete submission notification
3. Student confirm action
4. System notify successfully uploaded

Description
Refer to business rule B3-B6 for CV uploads.

3.7.7 Use case 7 : Student Choices Finalizing

Overview : Student can select companies for initial choices of employment areas in the profile
Actors : Student
Precondition : Student must be logged in to the system
Particular student's category must be in "Finalize choices" phase.
Student profile must be approved from "industry preview" phase.
Student profile must be in unfreeze state.

Main Success Scenario

1. System display extended view of the profile with company selection option for initial choices
2. Student add companies to their initial choices based on interest
3. Upload new CVs
4. Confirm save changes action
5. System display successfully save changes notification.

Post condition: System saves companies selected for initial choices and send profile for "Approval for calculation" phase

Alternatives

3a.1. Student do not upload any new CV
2. Go to step 4-5

Description

Refer to business rule B7 and B8 for selection of companies

3.7.8 Use case 8 : Registration

Overview : Students can register to the system by creating a profile
Actors : Student
Precondition : Student category should be created
Registration should be open

Main Success Scenario

1. Launches the system
2. Select register option
3. System display registration interface
4. Entre details[1]
5. entre password
6. retype password
7. accept user policy
8. enter challenge- response text
9. submit details
10. system send an e-mail to student notifying profile is under pending approval

Post condition: Create a student personal profile and send to approval

Alternatives

4a.1.Does not fill all mandatory details[2]
2. Go to step 5 to 9
3. System display message “required fields are empty”
4. System highlights empty mandatory fields.

4b.1. Enter incorrect e-mail
2. Go to step 5 to 9
3. System display message “invalid data”
4. Highlight error fields

4c.1.Enter existing email
2. Go to step 5 to 9
3. System display message “the e-mail address is already exists”
4. Highlight e-mail field

6a.1. Incorrectly re-enter password
2.Go to step 7 to 9
3. System display message “password incorrect”
4. Empty password and re-enter password fields.

7a.1. Do not accept user policy
2. Go to step 8 to 9
3. System display message “user policy not accepted”

8a.1. incorrectly enter challenge –response text
2. System notify incorrect text and refresh the text field.

Description

Details[1] →Name, Reg No, Stream,Gender, date of birth, e-mail, Phone, Address,Photo,Skills
Mandatory Details[2] →Name, Reg No, e-mail

3.7.9 Use case 9 : Share Industry Experience

Overview : Students can view others’ feedbacks, edit or add feedbacks on industry experience.
Actors : Student
Precondition : Student should be logged in to the system.
Main Success Scenario

1. Select share industry experience option
2. System displays 3 sub options.

Post condition: Student can share Industry experience based on selected sub option.

3.7.10 Use case 10 : View others experience

Overview : Students can view others feedbacks on industry experience
Actors : Student
Precondition : There should exist feedbacks on industry experience
Main Success Scenario

1. Select view others experience option
2. Select a company
3. System display feedbacks

Post condition: Display feedbacks on the company.

3.7.11 Use case 11 : Add feedbacks

Overview : Students can add feedbacks on industry experience
Actors : Student
Precondition : Company should have been registered on the system.
Main Success Scenario

1. Select add my feedbacks option
2. System display add feedbacks interface
3. Select a company name
4. Write a feedback
5. Submit the feedback

Post condition: Students can view the feedback. Particular student can change the feedback

3.7.12 Use case 12 : Edit feedback

Overview : Students can edit his own feedbacks
Actors : Student
Precondition : Student should have already posted an feedback
Main Success Scenario

1. Select edit my feedbacks option
2. System display edit feedbacks interface
3. Select a company name
4. Select edit option in a feedback
5. View feedback in an editable interface
6. Make changes to the feedback
7. Save changes

Post condition: System updates the feedback

Alternatives

4a.1. No feedbacks posted
2. System display no feedbacks message
3. Cancel the action
4. Re-direct to the previous page

3.7.13 Use case 13 : Registration on/off

Overview : Registration option on the system can be turn on
Actors : CGU, Admin
Precondition : None
Main Success Scenario

1. Select registration mode change option
2. Select registration on option
3. Confirm the action
4. System display registration is on notification.

Post condition: System display register now open message in the notice board**.**
Students can register to the system.

Alternatives

Precondition: Registration should be on
2a.1. select registration off
Post condition: Registration option is not available. Students can't get registered.

3.7.14 Use case 14 : Feedback management

Overview : Authorized person can edit and delete students' feedbacks

Actors : Admin, CGU
Precondition : Feedbacks should have been posted
Main Success Scenario

1. Actor select feedback management option
2. Select company
3. System display all feedbacks related to the company
4. Select edit feedback option in a particular feedback
5. System display editable view of the feedback
6. Change the feedback
7. Save changes

Post condition: system save changes to the feedback
Alternatives

3a.1. No feedbacks are posted
2. System display no feedbacks posted message
Precondition: There should be a feedback posted

4a.1. Select delete option in the particular feedback
2. System display confirmation message
3. Confirm the action
Post condition: System delete the feedback

3.7.15 Use case 15 : Industry Grant Opportunity

Overview : Industry can send request suggesting students or granting opportunities to the CGU
Actors : Industry
Precondition : Industry must be registered
Main Success Scenario

1. Select send request option
2. System display send request interface
3. Enter no of training opportunities allocated
4. Enter no of interview opportunities provided
5. Mention special students required, by name or Reg No.
6. Industry send the request
7. System display successfully sent message

Post condition: CGU receives suggested students and opportunities granted from industry.

Alternatives

3a.1. Do not enter any opportunity
2. Go from step 4 to 7

4a.1. Do not enter interview opportunities
2. Go from step 5 to 7

5a.1. Do not mention students
2. Go from step 6 to 7

3.7.16 Use case 16 : Category phase selection

Overview : Can change phase of a category
Actors : Admin, CGU
Precondition : Category must be created and default phase should set to primary phase.

Main Success Scenario

1. Select a category
2. Select a stream
3. Select "initial choice"
4. Confirm changes

Post condition: Extend student profile content by adding initial choice selection section to student profile.
Unfreeze the profile for edit.

Alternatives

3a.1. Select "finalizing choice" phase
2. Confirm change

Post condition: Extend student profile content by adding "Select Company" option for each initial choices selected.
Unfreeze the profiles for edit.

Description

Refer to business rule B9 regarding selection of "initial choice".
Refer to business rule B10 regarding selection of "finalizing choice".

3.7.17 Use case 17 : Messaging

Overview : Send messages to system users
Actors : CGU, Admin
Precondition : User must be registered to the system

Main Success Scenario

1. Select messaging option
2. System display messaging interface
3. Select an option[1]

Post condition: System display messaging interface based on the option actor has selected

Description

Option → Student , Staff , Company

3.7.18 Use case 18 : Messaging to students

Overview : Send messages to individual student or a category.
Actors : CGU, Admin
Precondition : Select student option. To send a message student must be registered to the system .

Main Success Scenario

1. Select "send to an individual" option
2. Include "View Profile" use case
3. Select the student
4. Display student profile
5. Select send message option
6. Compose the message
7. Confirm send message.
8. System display successfully sent message notification.

Post condition: System sends the message to the appropriate student

Alternatives

1a.1. Select" send message to a category"
2. Select a category
3. Select a stream
4. Select a subject
5. Go to step 6 to 8

Post condition: Send message to students belongs to specific subject group.

1a.1.a1. Select "all" option
2. Go to step 5

Post condition: Send message to all the students of a stream.

3.7.19 Use case 19 : Messaging to staff

Overview : Actors can send message to staff members
Actors : CGU, Admin
Precondition : Select staff messaging option.
Staff member must be register to the system.

Main Success Scenario

1. Select a staff member
2. Enter message title
3. Enter message content
4. Send message
5. System display successfully sent message

Post condition: Send message to a staff member

Alternatives

1a.1. Select multiple staff members
2. Go to step 2 to 5
Post condition: Send message to multiple staff members.

1b.1. Select "all" option
2. Go to step 2 to 5
Post condition: Send message to all staff members.

Pre condition: Select multiple or all staff members.
1b.1.a1 Deselect all.
Post condition: Deselect all staff members who have been selected
Allow to select new members .

Exceptions

5a.1.Notify an error occurred and message did not send.

3.7.20 Use case 20 : Messaging to company

Overview : Send message to companies.
Actors : CGU, Admin
Precondition : Select company messaging option.
Company must be registered.

Main Success Scenario

1. Select a company
2. Enter message title
3. Enter message content
4. Send message
5. System notify successfully send message.

Post condition: Send message to a company.

Alternatives

1a.1. Select multiple companies
2. Go to step 2 to 5
Post condition: Send message to multiple companies.

1b.1. Select "all" option
2. Go to step 2 to 5
Post condition: Send message to all companies registered.

Pre condition: Select multiple or all companies.
1b.1.a1 Deselect all.
Post condition: Deselect all company names selected
Allow to select new company names .

Exceptions

5a.1.Notify an error occurred and message did not send.

3.7.21 Use case 21 : Auto calculate student

Overview : Calculate each student's overall mark and select appropriate student for each opportunities
Actors : CGU, Admin
Precondition : Student profile must be approved from finalized choice approval phase.

Main Success Scenario

1. Select a category
2. Select calculate option
3. System display list of students selected for each company.

Post condition: Selected students are removed from the pool for calculation.
No of slots allocated are reduced by number of selected student.

Alternatives

3a.1. System displays there are no students available

Precondition: Company request for a student
2a.1. Actor manually selects students.
Post Condition: Selected students are removed from the pool for calculation.
No of slots allocated are reducing by number of selected student.

Description

Refer to the business rule B11 for calculation method

3.7.22 Use case 22 : View auto calculated result

Overview : Can view all students selected for a company
Actors : CGU, Admin
Precondition : Students' auto calculation should have been done
Main Success Scenario

1. Select a company
2. Select view result
3. System display list of students, no of opportunities granted and no of opportunities available

Post condition: None

Alternatives

3a.1. System display no result available

3.7.23 Use case 23 : Add marks to extra activities

Overview : Add marks to students extra activities
Actors : CGU, Admin
Precondition : Students profile must be approved from initial approval
Main Success Scenario

1. Select "marking student profile"
2. Include "view profile" use case
3. Select a student
4. Select edit option
5. System display editable view of the profile
6. Add marks to the extra activities fields[1]
7. Save changes
8. System display successfully updated profile

Post condition: System get the total mark and add to relevant student's marks field.

Description

Fields[1] → School achievements
Sports
Certification
Position
Other

3.7.24 Use case 24 : Notice management

Overview : Actors can create or modify notices.
Actors : CGU, Admin
Precondition : Actor must be logged in to the system
Main Success Scenario

1. Select notice management option
2. System display notice management interface

Post condition: Authorized users can create or modify notices
Notices are posted in the main dash board.

3.7.25 Use case 25 : Notice creation

Overview : Create notice
Actors : CGU, Admin
Precondition : Select notice creation option

Main Success Scenario

1. Add notice title
2. Set date range for the notice
3. Write notice
4. Select publish option
5. Select add article option
6. Include “article creation”
7. Confirm save action

Post condition: System posts notice to the notice board interface and update the calendar.

Alternatives

4a.1. Select unpublished option
2. Go to step 5 to 7

Post condition: System save notice do not post to the notice board

5a.1.Do not select article option
2. Go to step 6 to 7

Post condition: Post notice to notice board without an article

3.7.26 Use case 26 : Notice modify

Overview : Can edit or delete previously created notices
Actors : CGU, Admin
Precondition : Notice must be created and select notice modify option

Main Success Scenario

1. Select a notice title
2. Select edit option
3. System display editable view of “notice creation interface”
4. Change notice details[1]
5. Save changes
6. System notify successfully updated message.

Post condition: System updates the notice.

Alternatives

2a.1. Select delete option
2. System display confirmation notice
3. Actor confirm action
4. System notify the deletion of the notice

Post condition: System delete notice from the system

Description

Detail[1] → Notice title
Date range
Description
Publish/ unpublished
Article name
Article content

3.7.27 Use case 27 : Public view notice

Overview : Any one can view notices in notice board
Actors : Public
Precondition : Should access the system
Main Success Scenario

1. Access the home interface
2. Read notices in the notice board

Post condition: None

Alternatives

2a.1.Select read more option
2. View the article related to the notice

3.7.28 Use case 28 : Public view members

Overview : Any one not logged in to system can view member profile with limited details.
Actors : Public
Precondition : Should access the system
Main Success Scenario

1. Access the home interface
2. Select member option
3. System display member category[1]
4. Select a category
5. System display list of members
6. Select a member
7. Display member profile with limited details[1]

Post condition: None

Description

Category[1] → CGU, Staff, Student
Detail [1] → Photo, Name, Designation, Biography, interested areas

3.7.29 Use case 29 : Public view articles

Overview : Read articles
Actors : Public
Precondition : Articles must be published
Main Success Scenario

1. Access home interface
2. Select read article option
3. System display list of articles
4. Select an article
5. System view the full article

Post condition: None

3.7.30 Use case 30 : Category Management

Overview : Administrator can create , edit and delete student category
Actors : Admin
Precondition : Must be logged in to the system
Main Success Scenario

1. Select category management option
2. System display category management interface
3. Admin select an option[1]

Post condition: System display interface based on the option admin has selected.

Description

Option[1] → category creation , category modify

3.7.31 Use case 31 : Create Category

Overview : Create Student Categories for the newbie students
Actors : Admin
Precondition : Select category creation option
Main Success Scenario

1. Enter the category name
2. Submit the category
3. System notify successful submission message.

Post Condition: System will add new category to the category list.

Exceptions

3a.1. Enter existing category name
2. Submit the category
3. System display error notification

3.7.32 Use case 32 : Category Modification

Overview : Edit / Delete Student categories
Actors : Admin
Precondition : Administrator must logged in to the system .
Select the Category Modification Option.
Category must have been created.
Main Success Scenario

1. Select the category that need to modify
2. Select edit category option
3. System will display current category details[1]
4. Change current details

5. Select update option
6. System notify successful update message.

Post Condition: System will modify the category details according to changes.

Alternatives

2a.1. Select Delete Option
2. System display successful delete message

Exceptions

6a.1. System determines that category name field is empty
System display an error message
6b.1. System determines that no stream is selected
System display an error message

Description

Category details[1] → Category Name, Subject Stream , Registration On

3.7.33 Use case 33 : Choice Management

Overview : Create, edit and delete choices associated with the students' employment areas
Actors : CGU, Admin
Precondition : Actor must be logged in to the system

Main Success Scenario

1. Select the choice management option
2. System display choice management interface
3. Select an option[1]

Post condition: Actor can create new choices or edit and delete choices based on selected option.

Description

Option[1] → Choice Creation, Choice Modify

3.7.34 Use case 34 : Choice Creation

Overview : Create choices of job areas for a particular category and a stream
Actors : CGU, Admin
Precondition : There must be pre-created categories
Select Choice creation option

Main Success Scenario

1. Select the category name and the stream which the choice should be added
2. Select "new choice" option
3. Enter the choice name
4. Confirm choice creation
5. System notify successful choice creation

Post condition: System create a new choice

Alternatives

2a.1. Select "select from existing choice" option
2. System display all existing choices
3. Select a choice from the list
4. Go to step 4 to 5

Exceptions

2a.3.a1. Do not select a choice
2. Confirm choice creation
3. System notify error

3a.1. Do not enter new choice name
2. Confirm choice creation
3. System notify error

3.7.35 Use case 35 : Choice Modify

Overview : Edit current choices associated with the student category and stream
Actors : CGU, Admin
Precondition : Select Choice Modify option
There must be pre-created choices

Main Success Scenario

1. Select category name and stream
2. Select the choice that need to be edited
3. Edit choice name
4. Select update option

Post Condition : The particular choice will replace by the new name in the system.

Alternatives

4a.1. Select "delete" option
2. System display confirmation notification
3. Actor confirm the action
4. System notify successful deletion.

Exceptions

3a.1. Do not enter a choice name
2. Select update option
3. System notify an error

3.7.36 Use case 36 : Organization Management

Overview : Create and modify companies related to student choices
Actors : CGU, Admin
Precondition : Actor must be logged in to the system

Main Success Scenario

1. Actor select the Organization management option
2. System display organization management interface
3. Select an option[1]

Post condition: Actor can create new organizations or edit and delete organizations based on selected option.

Description

Option[1] → Organization Creation, Organization Modify

3.7.37 Use case 37 : Organization Creation

Overview : Creates companies related to choices .
Actors : CGU, Admin
Precondition : Select "organization creation" option
There must be pre created companies

Main Success Scenario

1. Select the category name from the category list
2. Select a stream according to the category
3. Select a choice according to the stream
4. Select "create new " from the Organization selection option
5. Enter company name
6. Confirm creation
7. System notify successful creation

Post Condition : A new company is created within choice of a category stream

Alternatives

4a.1. Selects the " Add from existing option " from the Organization selection option
2. System will display a list of current companies
3. Select one company from the list
4. Go to step 5 to 7.

Exceptions

5a.1. Do not enter a company name
2. Confirm creation
3. System notify an error

3.7.38 Use case 38 : Organization Modify

Overview : Edit current Organization within the choices of category streams
Actors : CGU, Admin
Precondition : There must be Organization created under a choice
Select "organization modify" option

Main Success Scenario

1. Select a category from the category list
2. Select a stream according to the category and choice according to the stream
3. Select the Organization from the list display by system
4. Actor enter the new name of the Organization
5. Actor select the Update option
6. System notify successful update message

Post condition: The Organization name updated accordingly.

Alternatives

5a.1. Select delete option
2. System display confirmation message
3. Confirm deletion
4. System notify successful deletion

Exceptions

4a.1. Do not enter a new name
2. Actor selects the Update option
3. System notify an error

Description

Organizations are the companies grant opportunities for job or training

3.7.39 Use case 39 : Opportunity Management

Overview : Add the Number of opportunities received from an Organization
Actors : CGU, Admin
Precondition : There must be an Organization under a particular choice
Main Success Scenario

1. Select a category,stream,choice and an organization
2. Enter no of opportunities granted from the organization
3. Select save option

Post condition: Number of opportunities will be added in to the organization

Alternatives

2b.1. System display no of opportunities already exists
2. Change no of opportunities
3. Save changes
4. System notify successful updating

Post Condition: System update no of opportunities

Exceptions

2a.1. Do not enter any number
2. Save changes
3. System notify successful updating

Post Condition: System update no of opportunities to "zero"

Description

Students select to each company from automated calculation based on No of opportunities granted.

3.7.40 Use case 40 : Filter Students

Overview : System will display dynamic results on student lists according to the GPA[1] for course units selected
Actors : Industry , CGU , admin
Precondition : Student must be enrolled in to particular subjects[1]
Main Success Scenario

1. Actor select category, stream
2. Select required subjects[1]
3. System displays a interface with course units[1] according to the subjects
4. Select appropriate course units
5. Select filter option
6. System will display list of students

Post condition: None
Alternatives

4a.1.Select "all" course units
2. Select filter option
3. System display list of students based on GPA order.

Exceptions

2a.1.No subject selects
2. System will not display course units to select
3. Select filter option
4. System notify an error

Description

Subjects[1] → ICT,MAA,MAP,MAT,ZOO,BIO,CHE,PHY,COM,HPT,HPF,MIB
Course units[1] → Subjects under each course unit

- Students are filtered by selected course units and calculate GPA mark only including selected course units then list according to new GPA mark order.

GPA[1] → Calculate a new GPA only for selected course units.

3.7.41 Use case 41 : Search

Overview : Search students and system will output a list of students according to the search options.
Actors : Admin,CGU,Industry
Precondition : Should be logged In to the system
Need to have at least one category, stream, student in the system.

Main Success Scenario

1. Select search option
2. System display search interface
3. Select a searching attributes[1].

Post condition: System will output a list of student according to the attribute combination

Description

Attributes[1] → by academic information
- Reg No, Name, Stream, Subject enrollment

by choice

3.7.42 Use case 42 : Search by academic information

Overview : Seach students by academic information .
Actors : Admin,CGU,Industry
Precondition : Select search by academic information option

Main Success Scenario

1. Select "subject enrollment" attribute
2. Select category and stream from the list given by the system
3. Select subject from the subject selection interface
4. Select search option
5. System display list of students .
6. Include "View Profile" use case

Post condition: System will output a list of student according to the academic information attribute combination(Ref D1).

Alternatives

1a.1. Select" Registration No" attribute
2. Enter registration no:
3. Search students
4. System display list of students.
5. Include "view profile " use case

1b.1. Select Name option
2. Actor enter part of a name of a student
3. System will list matching students
4. Select a student from the list
5. Select search option
6. System will display student's profile

1b.6a.1. System identifies that no matching student

2. System notify no student found message

3a.1.Select all from the subject section interface
2.Select search option
3.System display list of students who have enrolled to at least one subject from the subjects[1].

Description

Attributes[1] → by academic information

- Reg No, Name, Stream, Subject enrollment

Ref D1: Can select any combination of above information to search a student/ students

Subjects[1] → Refer to subjects in the glossary.

3.7.43 Use case 43 : Search by choice

Overview : Search by students' choices in job areas and outputting a list of students according to their choices and organizations.
Actors : CGU, Admin, Industry
Precondition : Choice has to be created. Select search by choice option

Main Success Scenario

1. Select category from the list
2. Select stream according to the category
3. Set the choice from the list generated by the system
4. Select a organization from the list given by the system
5. Select search option
6. System will display a list of students

Alternatives

4a.1.Select all from the organization list
2.Select search option
3.System will display list of students who selected at least one organization

4b.1.Select none from the organization list
2.Select search option
3.System will display student list only according to the choice. But not with organizations.

3.7.44 Use case 44 : Article management

Overview : User can create and publish articles, edit and delete articles
Actors : CGU, Admin, staff
Precondition : Actor must be logged in to the system

Main Success Scenario

1. Actor select article management option
2. System display article management interface
3. Actor selects one of 2 options[1].

Post condition: Article modification can be done based on selected option

Description

Option[1]→ Article creation
Article Modification

3.7.45 Use case 45 : Article creation

Overview : User can create and publish articles
Actors : CGU, Admin, staff
Precondition : Select "Article Creation" option
Main Success Scenario

1. System display article create interface
2. Actor add article title
3. Actor add article content
4. Actor select publish option
5. Actor select save option

Post condition: Article published in the journal

Alternatives

4a.1. Actor select un-publish option
2. Actor select save option

Post condition: System don't publish article, System saves the article

3.7.46 Use case 46 : Article modify

Overview : User can edit and delete articles
Actors : CGU, Admin, Staff
Precondition : There should be published or saved articles and system should provide authority to users to modify articles according to user types.
Select "Article Modify" option.
Main Success Scenario

1. System display article modify interface
2. Actor select edit option for particular article
3. System display article edit interface
4. Actor edit article title
5. Actor edit article content
6. Actor select publish option
7. Actor select save option

Post condition: System save modified article

Alternatives

2a.1. Actor select delete option
2. System notify confirmation message
3. Actor confirm deletion
4. System notify successful delete message

Post Condition: System deletes the article

6a.1. Actor select unpublish option
2. Actor select save option

Post condition: System don't publish article , System saves the article

3.7.47 Use case 47 : Student profile approval

Overview : Approve student profile
Actors : CGU, Admin
Precondition : System should provide a list of student profiles submitted for approval
Main Success Scenario

1. Actor select approval option
2. System display approval interface
3. Actor select approval category[1]

Post condition: Update the profile status to "Approved"

Description
Approval category[1] → Approval for Registration
Initial choice and CV approval
Finalizing choice approval

3.7.48 Use case 48 : Approval for Registration

Overview : Approve student profile for register to the system
Actors : CGU, Admin
Precondition : System should provide a list of student profiles submitted for Approval.
Select "Approval for Registration" option
Main Success Scenario

1. System displays list of profiles waiting for approval
2. Actor select particular student
3. System displays student profile approval view
4. Actor approve profile

Post condition: Update the profile status to "initial approval"

Exceptions
4a.1. Incorrect details[1] provided
2. Actor select not approved option
3. System send e-mail to the student notifying not approved

Description
Details[1] →Name, Reg No, Stream, date of birth, e-mail, Address, Photo, Skills

3.7.49 Use case 49 : Initial choice and CV approval

Overview : Approve student's initial choices and CVs
Actors : CGU, Admin
Precondition : System should provide a list of registered students waiting for CV approval.
Select "Initial choice and CV approval" option.
Main Success Scenario

1. System display list of profiles waiting for approval
2. Actor select particular student
3. System display student's profile
4. Actor select approve option

Post condition: System save changes and set profile to approved from "industry preview approval" phase
Profile can be viewed by Industry
Exceptions
7a.1. Incorrect details[1] provided
2. Actor select not approved option
3. System send not approved e-mail message to the student
Description
details[1] → CV details

3.7.50 Use case 50 : Finalized choice approval

Overview : User can approve students finalized CVs and choices with companies
Actors : CGU, Admin
Precondition : System should provide a list of registered students waiting for finalized CV approval.
Select "Finalize choice approval" phase

Main Success Scenario

1. System display list of profiles waiting for finalized CV approval
2. Actor select particular student
3. System display student's profile
4. Actor select approve option

Post condition: System save finalized profiles and set profiles to approved from "approval for calculation"

Exceptions

7a.1. Incorrect details[1] provided
2. Actor select not approved option
3. System send not approved e-mail message to the student

Description

details[1] → CV details

3.7.51 Use case 51 : Industry ready or not

Overview : Set students category ready for industry view
Actors : CGU, Admin
Precondition : Category must be created

Main Success Scenario

1. Actor enter category
2. Actor enter stream
3. Actor select "industry ready" option
4. Actor confirm changes

Post condition: System include category to industry ready list

Alternatives

Precondition: Category must be set to" industry ready"
4a.1. Actor select "not industry ready" option
2. Actor confirm changes
Post condition: System remove category from industry ready list
Industry can't view the student profile.

3.7.52 Use case 52 : Category freeze

Overview : User can freeze category for not editable state
Actors : CGU, Admin
Precondition : Category should be created

Main Success Scenario

1. Actor select category freeze option
2. System display category freeze interface
3. Actor select category
4. Actor select stream
5. Actor select yes option for freeze
6. Actor select submit option

Post condition: students can't change the profiles

Alternatives

5a.1. Actor selects no option for freeze
2. Actor select submit option
Post Condition: Students can make changes to their profiles

3.7.53 Use case 53 : User Management

Overview : Admin can create, edit or delete users
Actors : Admin
Precondition : User should be logged in as an administrator
Main Success Scenario

1. Admin select user management option
2. System display user management interface

Post condition: None

3.7.54 Use case 54 : Create users

Overview : Admin can create users according to user type
Actors : Admin
Precondition : User should be logged in as administrator
Main Success Scenario

1. Admin select create users option
2. System display create users interface
3. Select user type
4. Admin enter name
5. Admin enter e-mail
6. Admin enter password
7. Select create option
8. System display successfully created message

Post condition: system keep list of users according to user types

Exceptions

5a.1. Admin enter incorrect e-mail
2. Go to step 7
3. System notify “invalid e-mail” message

Description

Refer to business rule 2 for e-mail validation in step 5a.1

3.7.55 Use case 55 : Modify users

Overview : User can edit or delete users
Actors : Admin
Precondition : User should be logged in as an administrator
Main Success Scenario

1. Admin select modify users option
2. Admin select user type
3. System display list of users according to user type
4. Admin select edit option correspond to a particular user
5. System display editable view of user details[1]
6. Admin changes user details[1]
7. Admin select update option
8. System display successfully updated massage
9. System send profile update message to the particular user

Post condition: System save updated information

Alternatives

4a.1. Select delete option

2. System display confirmation message
3. Confirm the action

Post condition: System delete the user from the system

Description

Details[1] → name, type, e-mail and password

3.7.56 Use case 56 : View profile

Overview : View the current student profile details in a single interface.
Actors : CGU, Admin, AR
Precondition : Actor must log in with an authorized user account to the system.

Main Success Scenario

1. Include "search" use case.
2. Actor selects the view option for a particular student from list.
3. System will display student's profiles.

Post condition: Display the student's profile.

3.7.57 Use case 57 : Update student's profile

Overview : Update data in the student profile
Actors : Admin
Precondition : Profile must be in freezed state

Main Success Scenario

1. Includes" view profile" use case.
2. Select edit option
3. Edit details in the students profile
4. Select save option

Post condition: System save changes to students' profiles.

3.7.58 Use case 58 : Report Generation

Overview : Genarate reports based on requirement
Actors : Admin,CGU
Precondition : Actor must log in with an authorized user account to the system.

Main Success Scenario

1. Includes "Filter" use case
2. Select print option
3. Print the generated report

3.7.59 Use case 59 : Print Student Profile

Overview : Print generated reports based on requirement
Actors : Admin, CGU
Precondition : Actor must log in with an authorized user account to the system.

Main Success Scenario

1. Includes "view profile" use case
2. select print option
3. print the generated profile information

3.7.60 Use case 60 : Add Course

Overview : Admin include new course units to the system
Actors : Admin
Precondition : Should be logged in as Admin
Main Success Scenario

1. Select Add Course unit option
2. Select course subject
3. Add course unit relevant details[1]
4. Select save option

Post condition: System include new course units to the course unit list

Description
Details[1]→Course unit name, credits, academic year, description (syllabus)

3.7.61 Use case 61 : Add Marks

Overview : Add marks related to course units for each year
Actors : AR
Precondition : Student must approved from initial approval
Main Success Scenario

1. Include “Search by academic information” use case
2. System view the student profile
3. Select ”Add Marks” option
4. Select subjects[1] student follow
5. Add marks for each course unit
6. Submit changes

Post condition: System will save marks for each year

Exceptions

4a.1. Deselect a selected subject
2. System notify confirmation message
3. Actor confirms
4. System notify successful deletion

Description
Subjects[1] --> Refer to the subjects in the glossary

4. NONFUNCTIONAL REQUIREMENTS

4.1 PRODUCT REQUIREMENTS

4.1.1 Usability Requirements

1. All system users' should be able to login into the system by entering their e-mail as the user name and their preferred password.
2. An administrator shall be able to use all the system functions after 10 hours of training.
3. CGU staff shall be able to use the given system feature after hours of training.
4. SAR office staff shall be able to use the given system features after 4 hours of training.
5. The rate of errors done by a trained system user will be an average of 2 per hour from 100 actions.
6. If a password is forgotten by a system user or a student they shall be able to recover their password using their email address within not greater than 2 minutes.

4.1.2 Efficiency Requirements

4.1.2.1 Performance Requirements

1. A page load time in the backend shall not be exceeded 100ms.
2. A page load time in the frontend shall not be exceeded 80ms.
3. System generated and user generated email dispatch time shall not be exceeded 200ms.
4. Database query processing time shall not be exceeded 50ms.
5. J-query lazy loading used for on demand image loading over scroll for fast page loading.

4.1.2.2 Space Requirements

1. The space provision for the document root and profile image hosting should greater than 1 GB.
2. The space provision for the database must greater than 500mb.
3. The location of the doc root directory and database must be on a LVM logical volume so that they can grow on demand.
4. The system shall remove the older CV when a new CV has been uploaded in to the same choice slot.

2.1.3 Dependability Requirements

1. System shall be up with down time not more than 1 hour per day.
2. System shall be able to deliver requested content in a 150 concurrent connections.
3. System shall be run on the apache web servers on low memory conditions below 512mb.
4. System shall generate the student GPA in a precision of 2 decimal points.
5. System shall maintain a file renaming mechanism for CVs with 4 character hash for each document that being uploaded.

4.1.4 Security Requirements

1. System shall use SHA-1 hashing algorithm to store password in the database.
2. System shall never grant the direct access to CV upload directories from the URL.
3. All the form in the system shall be written in a way that prevents SQL injection.
4. Use Google Re-captcha challenge response mechanism to the student registration form.
5. Enforce strong password to the student in their registration and system users to their first time login.

4.2 ORGANIZATIONAL REQUIREMENTS

4.2.1 Environmental Requirements

1. The environmental that shall be hosting the system should contain minimum hardware requirement as a workstation with AMD by or Intel or serve IA by compatible dual core processor 1024 MB of RAM and 5 GB of free hard disk space. Internal connection with 2 Mbps uplink and 1 Mbps download bandwidth.
2. The environment shall be hosting the system should contain minimum software requirement as Enterprise 6 Linux operating system. Apache web server version 2.2, PHP version 5.3, Postfix mail transport agent version 2.6
3. From the internet gateway there should be a port forwarding to the port no 80 of the system workstation IP address.
4. A Jetty/Tomcat server should host the Dialog IdeaPro SMS system which is providing an SMS API
5. LinkedIn RESTapi should be accessible to perform LinkedIn profile API queries.

4.2.2 Operational Requirements

1. There shall be an initial administrator user in the system database who can login in to the system.
2. Initial system use shall create by the administrator with a random password.

4.2.3 Development Requirements

1. Every development system shall contain with a GIT local repository.
2. Pre setup remote GIT repository shall be there for the collaborative coding and proper version controlling.
3. The web based system shall be implemented from PHP as the sever-side scripting language. AJAX, J-query for the validation and page enhancement. MYSQL as the database management system.
4. Eclipse shall be used as the development interface.

4.3 EXTERNAL REQUIREMENTS

4.3.1 Regulatory requirements

1. The system shall not disclose any personal information about members to unauthorized users or public
2. Student industry experience shall not disclose to industry.
3. Student selection is fully automated. Only use manual method when the industries ask for a specific student.
4. Academic performance is calculated through GPA based on university regulations.
5. System shall not harm any university regulation.

5. BUSINESS RULES

B1. Password validation

- Password should contain at least 6 characters including a number and a symbol. Cannot have any blank spaces

B2.e-mail validation

- Input e-mail address must contain an @ sign and at least one dot (.). Also, the @ must not be the first character of the email address, and the last dot must be present after the @ sign, and minimum 2 characters before the end.

B3.Max choices allow for a student

- Max choices allow for a student to select is 3, not more than that
- No of choices may change based on no of companies grant opportunities

B4. Max no of CV a student can upload

- Less or equal to number of choices.

B5. Upload a CV not essential.

B6.Can uploads a general CV for all the choices.

B7. Max no of companies a student can select

- For a choice is equal to 3

B8. No of companies for selection may vary based on # of companies grant opportunities

B9. Initial choice selection is open for a student category at the end of their 2nd year 2nd semester

B10. Finalize choice is open for students from 3rd year 1st semester, after industry grant opportunities

B11. Method of Student calculation for Industrial selection (Not yet defined by CGU)

GLOSSARY

Student profile phase	After each approval phase student profiles are given a phase ID to identify from which phase profiles are approved.
Approval phases	1.Initial approval 2.Industry preview approval 3.Approval for calculation
Initial Approval	Profiles are approved after registration
Industry preview approval	Profiles are approved after initial choice selection
Approval for calculation	Profiles are approved for send to automated selection process
Category phases	Categories are given phase ID , for each phase the content of the student profiles are different
Category phases: primary	Name, Reg No, Stream,Gender, date of birth, e-mail, Phone, Address,Photo,Skills
Category phases : initial choice	extend by adding initial choice of job areas selection part to the profile
Category phases : finalizing choice	extend by adding option to select companies for each choice
Freeze/unfreeze state	Profiles can't be edit at freeze state To edit a profile state must be set to unfreeze
Category	Special student group in an academic year Ex: AS/08/09/ , ICT/08/09 ,HPT/08/09
Stream	Special ID to identify separate groups under same category Ex:AS/08/09 has 2 streams ; Physical , Bio
Subject	ICT,MAA,MAP,MAT,ZOO,BIO,CHE,PHY,COM,HPT,HPF,MIB,CMP
Course unit	Courses under each subject Ex: ICT course units:- ICT1201-Introduction to Programming ICT2305-Computer Networks
Choice	Job areas
GPA	Grade Point Average; Special student academic performance calculation method
RESTapi	Representational state transfer application programming interface

Subjects

ICT	Information and Communication Technology
MAA	Applied Mathematics
MAP	Pure Mathematics
MAT	Pure Mathematics
ZOO	Zoology
BIO	Biology
MIB	Microbiology
CHE	Chemistry
PHY	Physics
COM	Computer Science
HPT	Health Promotion Theory
HPF	Health promotion Practical
COM	Common Compulsory