



Mentorship System for undergraduate IT student

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Our fantastic team

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Problem

disconnection from Labor market

undergraduate IT students are the most affected, why?

since they don't know the labor market wants them from skills, programming language, technology stack, etc..., not only that they probably don't know what they proficiency in what role they could be most efficient such as full-stack, front-end, back-end or quality assurance.

Solution

Mentorship System

we chose a mentorship System so the students could have a window into the labor market, what to expect from them, and have a link with the companies, In the end, they will create a network with multiple companies, then they will be ready to face the labor market, after they graduate.

and this will be beneficial for the companies, they could create a strong foundation for these students in what a good software engineer should be like, with that they could decrement the time necessary for training them, and create links with students who they deemed to have a good potential.





Goals & Objectives

01

connection student to the labor market

02

a recommendation system for student

03

creating network between student and mentors/companies

Mentor Permissions	Student Permissions
can send a request to student	can accept a request from mentor
can cancel a request	can refuse a request from a mentor
view a table of student sorted depend on their quality	can rate a mentor
add a task	upload a solution to mentor task
delete a task	send a request to mentor
edit a task	can fill the form
grade a task for student	delete a mentor
delete a student	



How Are We
Doing This?

RECOMMENDATION SYSTEM



Recommendation system

recommendation for the mentors who are looking for students and training them through their university life so they can have a fully qualified fresh graduated student and also help the student to know what field they good at and the field they don't.

the recommendation system is driven by the fuzzy logic technique, and it important is to the mentor when he wants to link up with a student in a certain category such as back-end, front-end, full-stack, and quality assurance.

FUZZY

LOGIC SYSTEMS

Fuzzy logic

as we said before to build a good Recommendation system we have to find a robust system to calculate every category that exists in the system, and for every student, so we can compare students between each other, so we ended using fuzzy logic.

Depending on Fuzzy logic we build our system using some techniques that can be divided in steps:

- 1. Evaluation Criteria**
- 2. Add Rating**
- 3. Evaluation**

Evaluation Criteria

To calculate the percentage for prediction we put a three criteria that all student have in common to be fair and these criteria is :

01

University subject (optional subject):

02

Programming courses

03

Programming language and skills.

Add Rating

After collecting all criteria that we want to use in our formula or prediction we want to give it a rating to using it to produce a result as percentage.

These rating present who much the course or language is related to the field like Front End.

To give a very accurate rating as possible we use three ways or method:

- 1- Asking expert like university student who graduated and working in these field and university doctor.
- 2- Analyzing the description of university subject.
- 3- Searching in internet looking for previous data in similar project.

Registration Form

1

2

3

Universty
Subject

Courses

Laguage

بيئة وأدوات يونيكس

برمجة متقدمة

أنظمة وتطبيقات الوسائط المتعددة

الرسوم بالحاسوب

المحاكاه

معالجة الصورة الرقمية

مقدمة الى نظم المعلومات الجغرافية

تطبيقات الأجهزة المحموله

التشفير وأمن الحاسوب

نظام التشغيل 2

قاعدة البيانات

برمجة الشبكات

الشبكات اللاسلكية

الذكاء الآلي

موضوعات خاصة

Registration Form

1

2

3

Universty
Subject

Courses

Laguage

Full Stack course

Front-End course

Back-End course

android application

Software QA

Web Api

Database

flutter

Asp.net course

laravel course

software testing

mobile testing

web design

Registration Form

1

2

3

Universty
Subject

Courses

Laguage

Html

Css

Java Script

Bootstrap

Ajax

Php

Spring

My Sql

Oracle

MonogDB

Postegress

No Sql

Java

C#

React

Node.js

JQuery

Python

Bug tracking

Bug writing

White,Black,Gray Testing

XML

English

Previous

Next

Previous

Submit

Evaluation

After student sign up he will fill form of three part

- University subject
- Programing courses
- Programing language and skills

When the student press submit this form will show as a check box that will set a binary result to the algorithm (if the checkbox is checked it will send 1 else 0).The value that come from the form will be part of equation or formula:

$$\text{FEP} = \sum_{i=0}^n \frac{b_{if} \times r_{if}}{100} \quad \text{BEP} = \sum_{i=0}^n \frac{b_{ib} \times r_{ib}}{100}$$

$$\text{FSP} = \sum_{i=0}^n \frac{b_{if} \times r_{if}}{100} \quad \text{QAP} = \sum_{i=0}^n \frac{b_{iq} \times r_{iq}}{100}$$

where :

- FEP is Front End percentage
- BEP is Back End percentage
- FSP is Full Stack percentage
- QAP is Quality assurance percentage
- Bi is the binary value from the form
- Ri is the rate that we give

Evaluation

And for the final result (percentage)

Front end final percentage $= (FEP_{(subject)} + FEP_{(course)} + FEP_{(language)}) / 3$

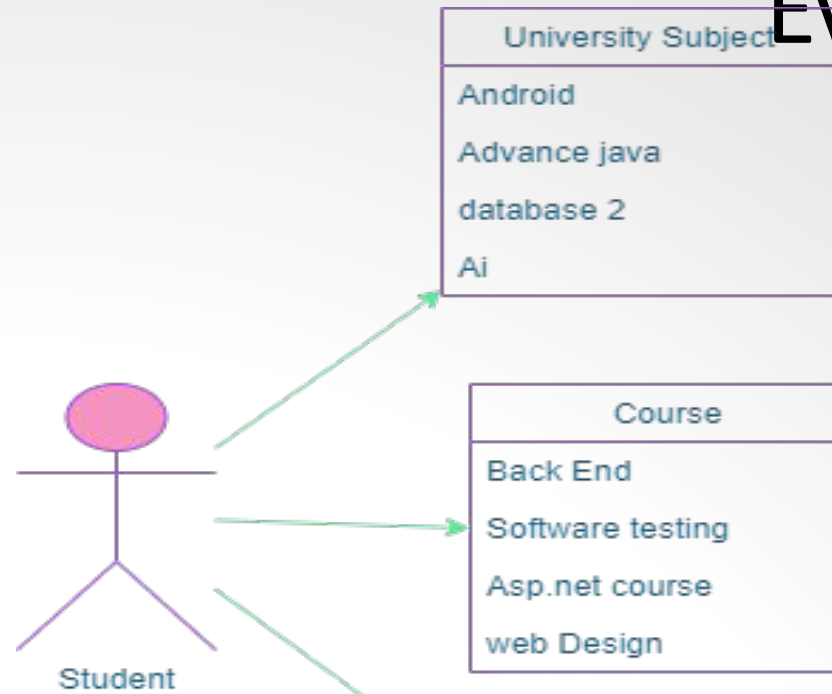
Back end final percentage $= (BEP_{(subject)} + BEP_{(course)} + BEP_{(language)}) / 3$

Full Stack final percentage $= (FSP_{(subject)} + FSP_{(course)} + FSP_{(language)}) / 3$

Quality assurance final percentage $= (QAP_{(subject)} + QAP_{(course)} + QAP_{(language)}) / 3$

So, with this equation each student has a 4 percentage that stored in his table in database.

Evaluation (Example)



$$\text{BEP} = ((7*1)+(1*10)+(1*17)+(1*15))/100=.49$$

$$\text{BEP} = ((1*25)+(1*13)+(1*0)+(1*0))/100=.38$$

$$\text{BEP} = ((1*12)+(1*11)+(1*12)+(1*0)+(1*0)+(1*0))/100=.35$$

$$\text{Final Back End Percentage} = (.49+.38+.35)/3 = 40.6\%$$

Request System

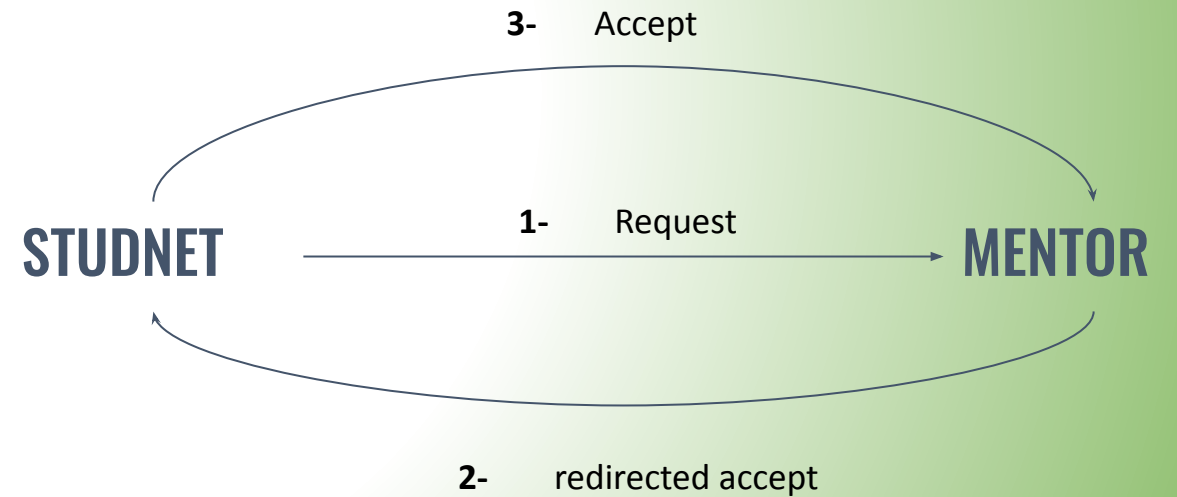
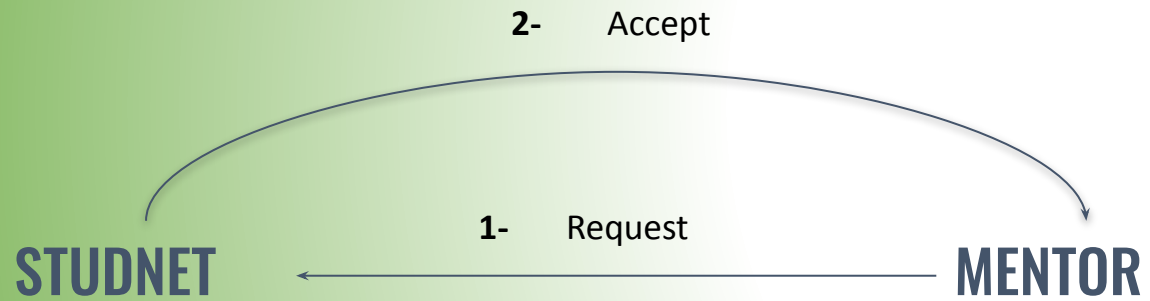
The request system can go two ways either the mentor sends a pending request to the student or the student can send a received request to the mentor.

There is a relation to the system we have to apply that is the mentor could have multiple students under his supervision but students can only have one mentor under their supervision.

With these requirements, there will be problems that will pop up, like what if a student sends received request for three mentors and two of them accepted or when multiple



Request Accept





Task System

we have a fundamental requirement for the tasks system, for the mentor :







1. add tasks.
2. delete tasks.
3. edit tasks.
4. grade a task for the student.
5. view student grade percentage for the total task.

and the student only can submit an answer by uploading a file.

Submission status

Project file	Q1.asm
Project description	this is a task
Submission status	Submitted
Grading status	Not Graded
Time remaining	2 days : 0:58:36
Last modified	Final-2022-.docx <input type="button" value="Choose File"/> No file chosen

Projects

Id	Name	Status	edit	delete
411	OOP	submission status		
414	C++	submission status		
420	Database	submission status		

Student-Table

Student Name	Project Id	Project Name	Submission Status	Submission File	Grade/50.0
Samer Ahmad	472	OOP	false		<input type="text" value="0.0"/> <input type="button" value="Submit"/>
Rahaf Rami	472	OOP	true	modernFile.pdf	<input type="text" value="30.0"/> <input type="button" value="Submit"/>

Student-Table

Student Name	Project Id	Project Name	Submission Status	Submission File	Grade/30.0
Rahaf Rami	32	Task2	true	modernFile.pdf	<input type="text" value="15.0"/> <input type="button" value="Submit"/>
Samer Ahmad	32	Task2	false		<input type="text" value="0.0"/> <input type="button" value="Submit"/>

Student-grade

No	Student Name	Total Grade/100
128	Samer Ahmad	0.0
417	Rahaf Rami	55.0

Development

Technologies & Services

back-end



front-end

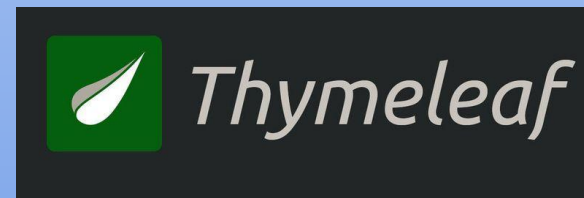
HTML



CSS



JS



Spring (Back-End)

What?

The Spring Framework is an application framework and inversion of control container for the Java platform. The framework's core features can be used by any Java application, but there are extensions for building web applications on top of the Java EE

Why?

- Light Weight.
- Flexible.
- Loose Coupling.
- Powerful Abstraction.
- Declarative Support.
- Portable.
- Dependency Injection:

Spring Security

Spring Security is a Java/Java EE framework that provides authentication, authorization and other security features for enterprise applications.

Thank
you!