

Project Report

Principles of Database Systems

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PART 1 Introduction

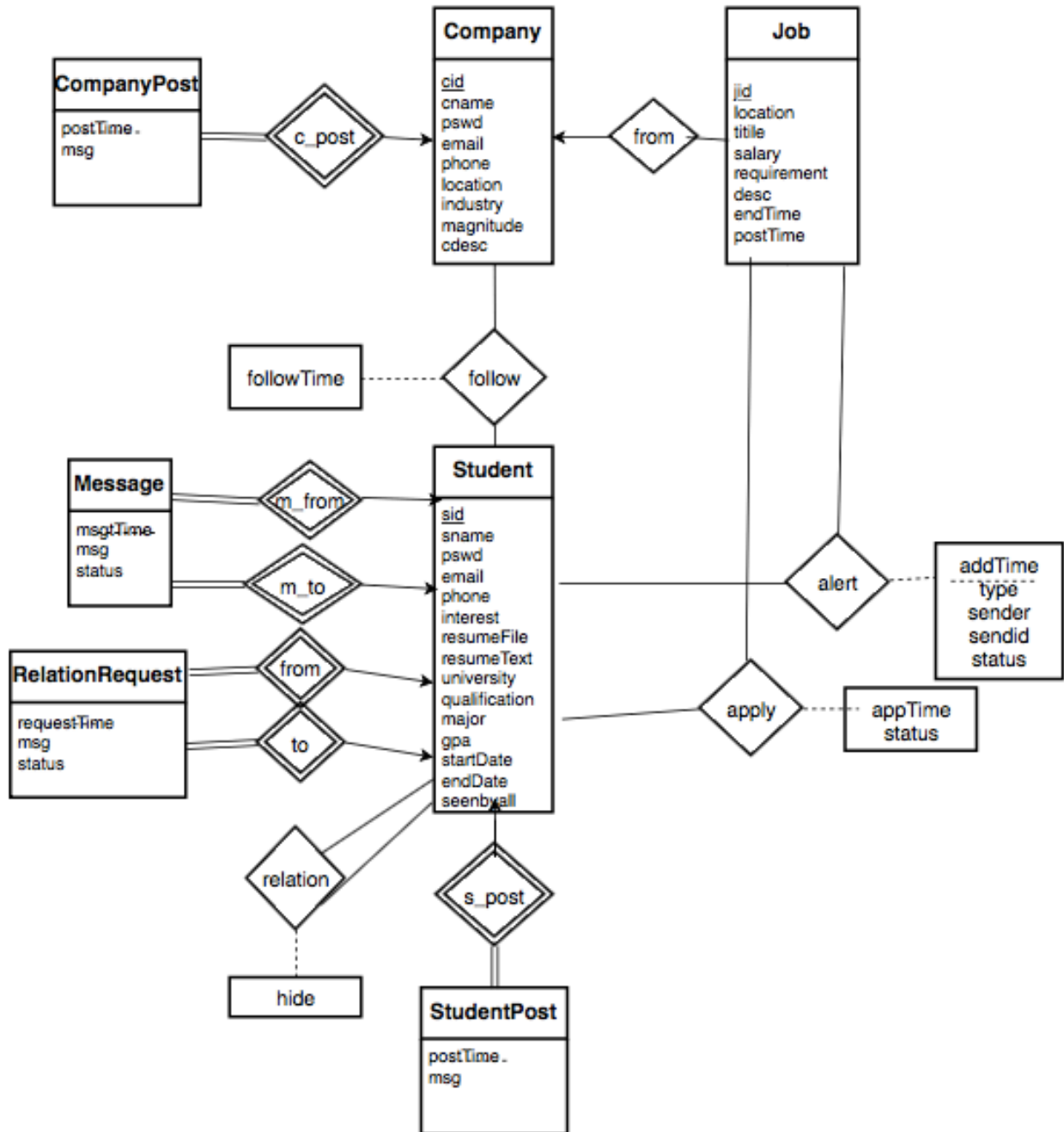
This document is to illustrate the design of our website “Jobster” mainly including two parts: database design and front end web page design.

“Jobster” is a website for both students who are looking for jobs and companies which are planning to hire students. Users as student could sign up, login, search jobs and apply, search companies and follow, add friends and chat with them, post blogs, share a job to a friend and so on. For users who are signed up as company, they can login to post job announcements which would be pushed to followers automatically, or run a filter to advertise a job to any suitable students. Company users can also check applicants’ information and accept or reject.

In this project, we use MySQL as relational database and Apache as web server. The front end and back end are implemented by PHP, Javascript and HTML/CSS, JQuery and AJAX by which could make the Web applications can send and retrieve data from a server asynchronously.

PART 2 Database Design

a. E-R diagram



b. Tables

Student								
sid	sname	pswd	email	phone	interest	resumeFile	resumeText	university

gpa	startDate	endDate	qualification	major	seenbyall

PK: sid

Constraints: email is unique, sid is generated by mysql using auto_increment

Description: email is used for logging in, and phone number is not madatory.

resumeText is used for detailed information about relative experience, and resumeFile , which is of type BLOB, is used for uploading a full resume. Seenbyall is 1 by default meaning the information can be seen by any user. If it is updated as 0, only the company the user is following can see the information.

StudentPost		
sid	postTime	msg

PK: sid, postTime

FK: sid references Student.sid

Description: students can post daily info about themselves

Relationrequest				
sid1	Sid2	requestTime	status	msg

PK: sid1,sid2, requestTime

FK: sid1,sid2 references Student.sid respectively

Description: students can send relationship request to be a friend of another student with a message. If not replied, a student can send request several times later. If this request has been read, status will be 1, otherwise 0.

Relationship		
sid1	sid2	hide

PK: sid1,sid2

FK: sid1,sid2 references Student.sid respectively

Description: if Relationship Request is accepted, a relationship is added in this table. For example, if student A with sid 1 send a relationship request to student b with sid 2, and the request is accepted, there will be two entries stored in this table: (1,2) and (2,1) which makes it easier for future queries. And hide is 0 by default. It can be set as 1 by user sid1, then user sid2 could not see sid1's complete information.

Message				
sid1	sid2	msgTime	msg	status

PK: sid1,sid2,msgTime

FK: sid1,sid2 references Student.sid respectively

Description: msg is sent from student with sid1 to student with sid2 at msgTime. Status will be 1 after the message has been read, otherwise status is 0 by default.

Follow		
sid	cid	followTime

PK: sid,cid

FK: sid references Student.sid; cid references Company.cid

Description: Students can decide to follow certain companies (which means they will get all job announcements by those companies)

Company								
cid	cname	pswd	email	phone	location	industry	magnitude	cdesc

PK: cid

Constraints:

email is unique, cid is generated by mysql using auto_increment

Description:

email is used for logging in, and phone number is not madatory.

magnitude means how many employees in that company

CompanyPost		
cid	postTime	msg

PK: cid, postTime

FK: cid references Company.cid

Description: companies can post daily info

Job								
jid	cid	location	title	salary	requirement	desc	endTime	postTime

PK: jid

FK: cid references Company.cid

Constraints:

jid is generated by mysql using auto_increment

Description:

a company can post job positions which have unique jid respectively

JobAlert						
sid	jid	addTime	type	sender	sendid	status

PK: sid,jid,addTime

FK: sid references Student.sid; jid references Job.jid

Description: the table means student with sid will be notified of the job with jid, and this alert is added at addTime; type is one of:0(from followed companies), 1 (from friend forwarding),2 (company notification, which means the company is not followed by this student); one student could be notified of one specific job several times. Sender is the sender's name of this job alert and sendid is the id of the sender. Status is 0 by default meaning unread. It will be updated as 1 after been read.

Application			
sid	jid	appTime	status

PK: sid,jid

FK: sid references Student.sid; jid references Job.jid

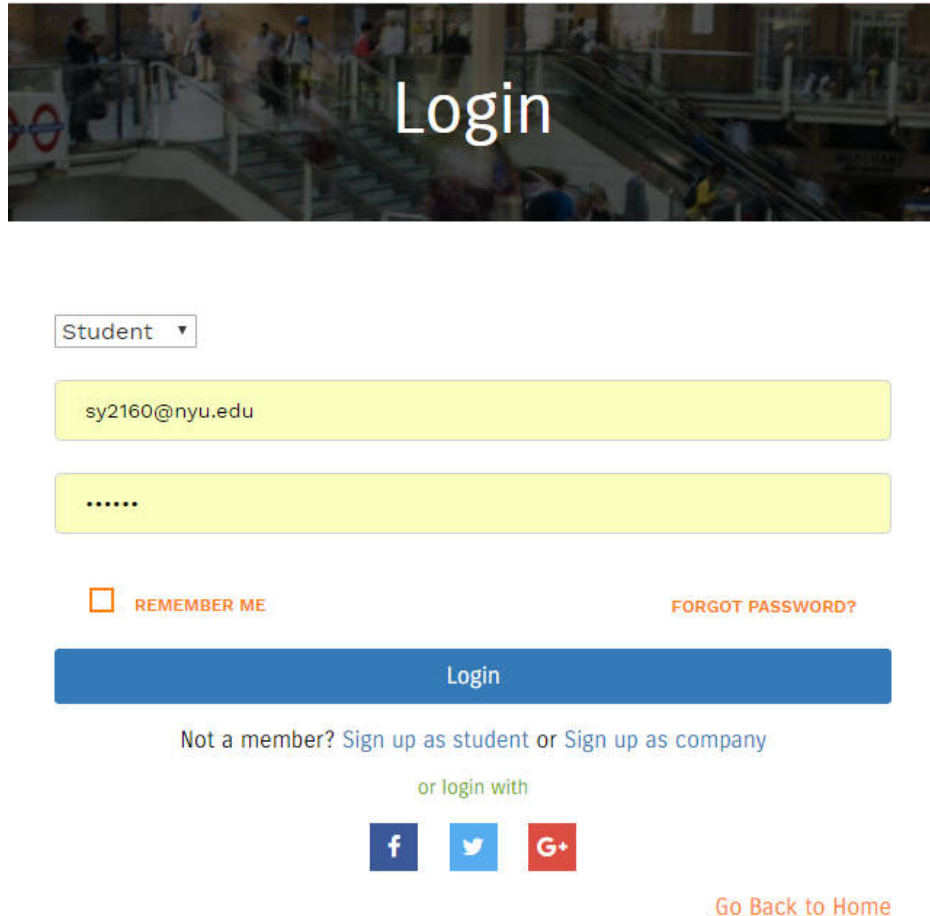
Description: one student could only apply for a job once. Status is one of:0 (unreviewed),1 (accept, which means the student might be notified of later interview),2 (reject),3 (unreplied, which means the application is reviewed by hr but not replied yet)

PART 3 Web Design

a. Page design

I. Login page:

You can login as student or company at this page by your email and password. If you have not signed up yet, click 'sign up as student' or 'sign up as company' to the sign up page. Students can upload resume files in sign up page.



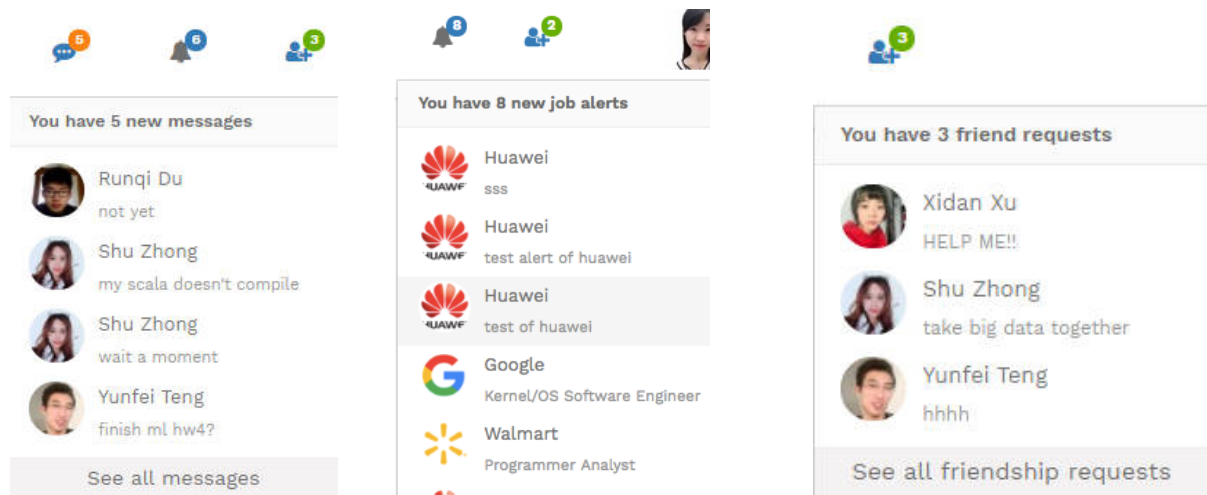
The login page features a background image of a busy subway station with the word "Login" overlaid in large white text. Below the image is a form with a "Student" dropdown menu, an email input field containing "sy2160@nyu.edu", and a password input field with masked characters. There is a "REMEMBER ME" checkbox and a "FORGOT PASSWORD?" link. A blue "Login" button is centered below the form. Underneath the button, it says "Not a member? Sign up as student or Sign up as company" and "or login with" followed by Facebook, Twitter, and Google+ icons. At the bottom right is a "Go Back to Home" link.

II. After login successfully, below are headers for student and company separately.

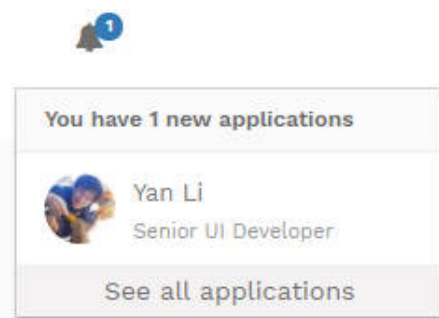


The header for student users on the Jobster website. It includes the "Jobster" logo, a search bar with the placeholder "Search Job..." and a magnifying glass icon, three notification icons (messages, job alerts, friend requests) with numbers, and a user profile section for "Shangwen Yan Student" with a profile picture.

Above is header for student users. Users could search jobs in the search field. The header also shows unread messages, unread job alerts and unread friend requests with numbers. By clicking the three icons, they will show detailed unread messages/alerts/requests as below.

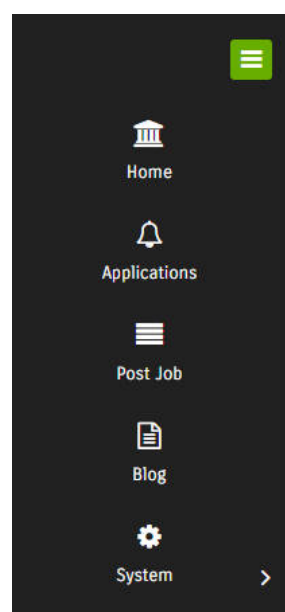


Above is header for company users. Users could search students in the search field. And the header also shows unread applications. Clicking this icon, it will show the unread application as below.

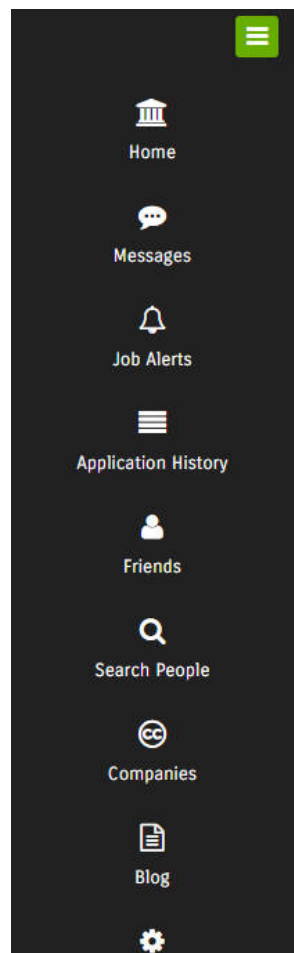


III. Side bar:

Side bar for company users is shown below:



Side bar for student users is shown below:



IV. Home page

After student users login, it will jump to home page which lists all the jobs. Users could click the ‘open’ button of any job to see the job announcement and also apply it by pressing the ‘apply’ button.

Jobster Search Job...

Shangwen Yan Student ✓

Jid	Company	Title	Salary	Detail
14	Google	Front End Software Engineer	11 k	open
29	Google	Kernel/OS Software Engineer	12 k	open
2	Amazon	Software Developer	15 k	open
12	Facebook	PhD Recruiting, Intern Recuite	11 k	open
13	Facebook	Marketing Science Research	15 k	open
15	Walmart	Programmer Analyst	11 k	open
1	Microsoft	Data & Applied Scientist	11 k	open
3	Microsoft	Post Doc Researcher	7 k	open
4	Huawei	Staff Engineer - Machine Learning	6 k	open
5	Huawei	New Graduate Software Engineer	5 k	open

Google

Front End Software Engineer

Location: New York City, NY, US
Salary: 11k/month
Requirement: BS in CS
endTime: 2019-01-19 00:00:00
Description: Experience with one or more general purpose programming languages including but not limited to: Java, C/C++, C#, Objective C, Python, JavaScript, or Go

[apply](#)

After company users login, it will jump to home page which lists all the students. Users could click the 'open' button of any student to see the information of this student and push a job by jid to this student.

The screenshot shows the Jobster application interface. On the left is a dark sidebar with navigation icons for Home, Applications, Post Job, Blog, and System. The main content area has a header with the Jobster logo, a search bar, and a notification bell. Below the header is a table titled 'STUDENTS' with columns for Name, University, Major, and Detail. The table lists several students, including Shangwen Yan, Ruochen Fang, Xinyu Ma, Linya Gong, Runqi Du, Yan Li, Xidan Xu, Shu Zhong, and Yunfei Teng. Each row has an 'open' button in the Detail column. To the right of the table is a detailed view of Shangwen Yan, showing their University (New York University), Start Date (2017-09-01), End Date (2019-05-01), Major (CE), Qualification (MS), GPA (3.8), and Resume (Machine Learning Related Labs). At the bottom of the detailed view is an input field for 'input jid...' and a 'notify' button.

Name	University	Major	Detail
Shangwen Yan	New York University	CE	open
Ruochen Fang	Carnegie Mellon University	SE	open
Xinyu Ma	New York University	CE	open
Linya Gong	Nankai University	EE	open
Runqi Du	Tianjing University	MOT	open
Yan Li	New York University	CE	open
Xidan Xu	New York University	CS	open
Shu Zhong	New York University	CS	open
Yunfei Teng	Tongji University	EE	open
Test name	New York University	ee	open

Shangwen Yan
University: New York University
Start Date: 2017-09-01
End Date: 2019-05-01
Major: CE
Qualification: MS
GPA: 3.8
Resume: Machine Learning Related Labs (Python3, JupyterNotebook, Tensorflow, Keras, PyTorch) 09/2017-Present
 [notify](#)

b. Basic function

I. Post jobs:

After company users clicking 'post jobs' in the side bar, posted jobs will be listed as below. 'Apps' means the total number of applicants for the job.

The screenshot shows the Jobster application interface with the 'POSTED JOBS' section active. The sidebar is the same as in the previous screenshot. The main content area has a header with the Jobster logo, a search bar, and a notification bell. Below the header is a table titled 'POSTED JOBS' with columns for Jid, Title, End Time, Apps, and Detail. The table lists several jobs, including Senior HRBP Huawei France R&D Center, Software Engineer, Staff Engineer - Machine Learning, New Graduate Software Engineer, Cloud Solution Architect, Senior UI Developer, PV Solar Inverter Sales Executive, Chief Data scientist for R&D, and test alert of huawei. Each row has an 'open' button in the Detail column. To the right of the table is a detailed view of the Senior HRBP Huawei France R&D Center position, showing its Location (Paris Area, France), Salary (11k/month), Requirement (MS in CS), endTime (2019-05-19 00:00:00), and Description (Partner with Hiring Managers to support the hiring demand of the organization as well as with HQ (China) regarding staffing activities).

Jid	Title	End Time	Apps	Detail
9	Senior HRBP Huawei France R&D Center	2019-05-19	2	open
11	Software Engineer	2019-01-19	1	open
4	Staff Engineer - Machine Learning	2018-10-19	4	open
5	New Graduate Software Engineer	2018-09-01	2	open
7	Cloud Solution Architect	2018-07-19	2	open
8	Senior UI Developer	2018-05-29	2	open
6	PV Solar Inverter Sales Executive	2018-05-19	2	open
10	Chief Data scientist for R&D	2018-05-19	1	open
27	test alert of huawei	2018-05-03	0	open

Senior HRBP Huawei France R&D Center
Location: Paris Area, France
Salary: 11k/month
Requirement: MS in CS
endTime: 2019-05-19 00:00:00
Description: Partner with Hiring Managers to support the hiring demand of the organization as well as with HQ (China) regarding staffing activities

Scroll down, then the POST JOB area will be found. Users can post jobs here and the job announcements will be pushed to all followers automatically.

Jobster

Huawei
Company

27
test alert of huawei
2018-05-03
0
open

POST JOB

Title:

Location:

Salary:

Requirement:

Description:

End Time:

post

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II. Deal with applications:

After company users clicking ‘applications’ in the side bar, all applications will be listed as below. ‘Status’ indicates the application is accepted, rejected, unreplied or unreplied. As long as a new application is opened, the status of this application will change from unreplied to unreplied. Even if a company user has rejected an application but regrets later, he could still press accept and then certain application’s status will become accepted.

Jobster

Huawei
Company

APPLICATIONS

Applicant	Title	Status	Detail
Runqi Du	Staff Engineer - Machine Learning	unreplied	open
Xidan Xu	Senior HRBP Huawei France R&D Center	accept	open
Yan Li	Senior UI Developer	unreplied	open
Runqi Du	Cloud Solution Architect	reject	open
Linya Gong	PV Solar Inverter Sales Executive	unreplied	open
Ruochen Fang	Staff Engineer - Machine Learning	unreplied	open
Xinyu Ma	Staff Engineer - Machine Learning	unreplied	open
Yunfei Teng	New Graduate Software Engineer	reject	open
Shangwen Yan	PV Solar Inverter Sales Executive	unreplied	open

Runqi Du

University:

Tianjing University

Major:

MOT

accept

reject

For student users, click application history in the side bar to check the status of users’ previous applications.

APPLICATION HISTORY

Company	Title	Status	Detail
Facebook	Marketing Science Research	unread	open
Google	Front End Software Engineer	unread	open
Facebook	PhD Recruiting, Intern Recruite	unread	open
Huawei	PV Solar Inverter Sales Executive	unreplied	open
Didi	Senior Software Engineer	unread	open
Microsoft	Data & Applied Scientist	unread	open
Amazon	Software Developer	unread	open
Huawei	Staff Engineer - Machine Learning	unreplied	open
Huawei	Cloud Solution Architect	unreplied	open
Huawei	Chief Data scientist for R&D	unreplied	open
Microsoft	Post Doc Researcher	reject	open
Huawei	New Graduate Software Engineer	accept	open

Marketing Science Research
Location: New York City, NY, US
Salary: 15k/month
Requirement: PhD in Stats
endTime: 2019-01-19 00:00:00
Description: Apply your expertise in quantitative analysis, data mining, and the presentation of data to measure and communicate the effectiveness of online advertising

III. Post blogs:

Both students and companies can click blog in the side bar and post blogs which can be seen by all.

Students' blogs as below:

STUDENT POSTS

Message	Post Time
demo presentation tomorrow ^_^	2018-05-07 13:52:01
project half done ^_^	2018-05-06 16:05:39
Come back home soon!!Yeah~~	2018-05-06 14:50:26
I wanna wear dress.....T T	2018-05-06 14:49:47
I'm frozen :)	2018-05-06 14:49:25
I hate final ==	2018-05-06 14:49:03
today is so cold!	2018-05-06 14:48:47
heilheihei	2017-12-12 00:00:00

Profile
Shangwen Yan
University: New York University
Qualification: MS
Major: CE
GPA: 3.8
Start Date: 2017-09-01
End Date: 2019-05-01
Resume Text: Machine Learning Related Labs (Python3, JupyterNotebook, Tensorflow, Keras, PyTorch) 09/2017-Present

Companies' blogs as below:

COMPANY POSTS

Message	Post Time
I'm a good company~~~	2018-05-07 13:54:51
hi	2018-05-07 00:38:08
project finished hahahahahahah	2018-05-07 00:17:26
My company is so good!	2018-05-07 00:16:55
huawei	2018-05-07 00:15:18

Profile
Huawei

Location: 343 gold street
Industry: mobile
Magnitude: 10000
Resume Text: At Huawei, we define human progress by innovations that enrich humanity. We do not view connectivity as a privilege, but a necessity. We believe that the impact of information and communications technology should be measured by how many people can benefit from it

IV. Follow companies:

For student users, click companies in the side bar. Then all companies will be listed. All companies the user has followed will be listed at top. The green circle in Follow field indicates that the company is currently followed by the user. Click the green circle to unfollow or click the gray line to follow.

COMPANIES

Company	Industry	Magnitude	Follow	Detail
Google	Internet	8000	o	open
Amazon	Internet	9000	o	open
Facebook	Internet	13000	o	open
Walmart	Retail	3000	o	open
Microsoft	Computer Software	15000	o	open
Huawei	mobile	10000	o	open
Didi	Internet	43680	o	open
test			o	open

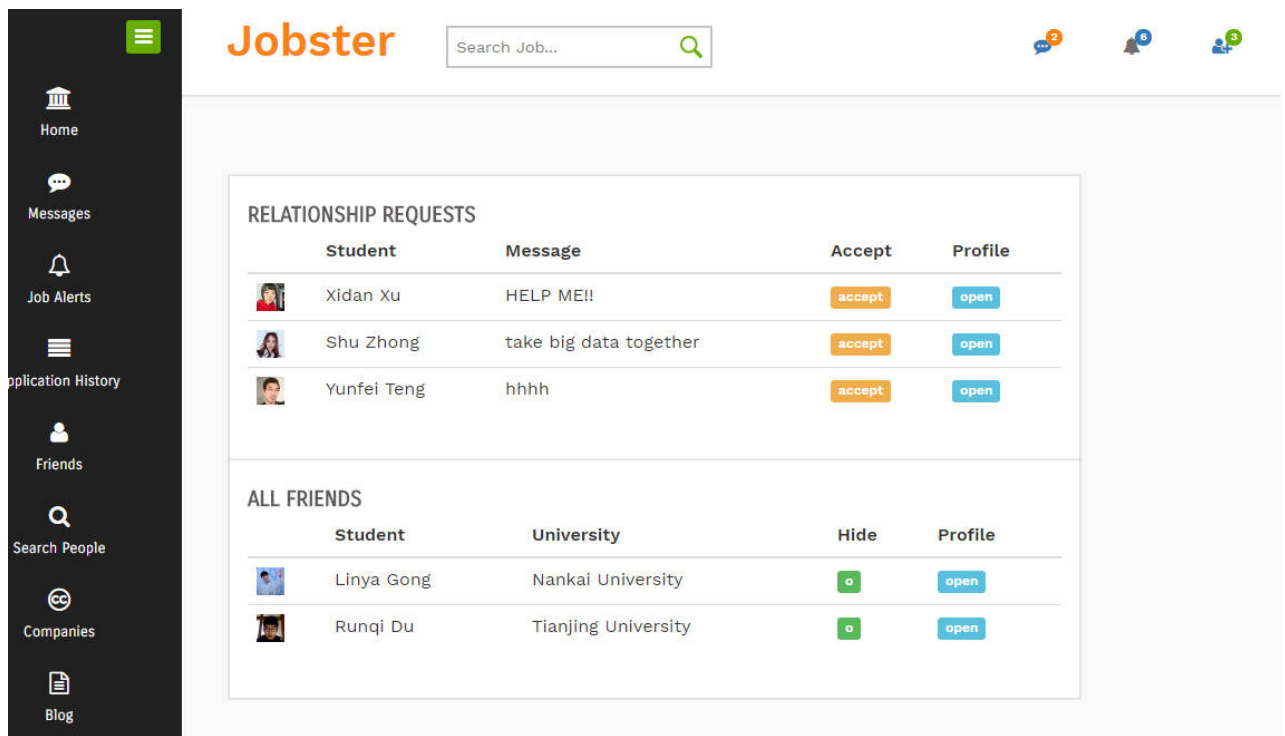
Google

Location: New York
Industry: Internet
Magnitude: 8000
Description: Since our founding in 1998, Google has grown by leaps and bounds. From offering search in a single language we now offer dozens of products and services

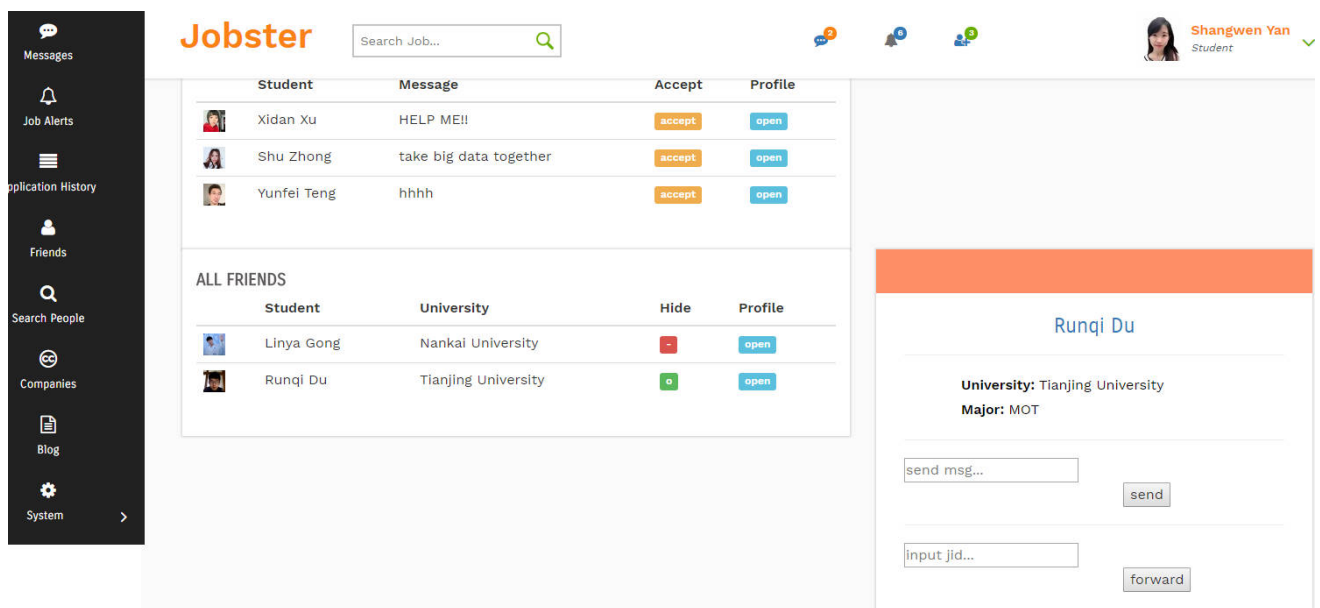
[all jobs](#)

V. Friends:

Unhandled friend requests and all friends will be listed when student users click Friends in the side bar. Student users can click 'accept' to accept the friend requests. In the ALL FRIENDS area, green circle in Hide field indicates that friend could see the user's all information. If click the green circle, it will become red line which means friend can only see limited basic information of the user.



After clicking open in profile field, student users can see the information of friends and send messages or share a job by jid.



VI. Job alerts:

For student users, click Job Alerts in side bar to check received job alerts. Users can find out who sent this job alert in the source field after clicking 'open', as well as apply this job by clicking 'apply'. As long as users click open of a new job alert, the status of the job alert will change from unread to read. Unread job alerts will be listed at top.

JOB ALERTS

Company	Title	Status	Detail
Google	Kernel/OS Software Engineer	unread	open
Walmart	Programmer Analyst	unread	open
Huawei	test alert of huawei	unread	open
Huawei	Cloud Solution Architect	unread	open
Amazon	Software Developer	unread	open
Microsoft	Data & Applied Scientist	unread	open
Huawei	Chief Data scientist for R&D	read	open
Huawei	Cloud Solution Architect	read	open
Huawei	PV Solar Inverter Sales Executive	read	open

Kernel/OS Software Engineer
Location: Mountain View, CA, US
Salary: 12k/month
Requirement: MS in CE
endTime: 2018-05-31 00:00:00
Source: following company-Google
Description: Experience writing code targeting bare metal or for a Real-Time Operating System (RTOS)

VII. Chat with friends:

For student users, click Messages in side bar to see recent messages. All friends who have conversations with user will be listed and friends whose messages are unread will be listed at top (red number indicates how many unread messages). After clicking open, conversation will be shown on the right. Users can also send messages here.

RECENT MESSAGES

Student	University	Unread	Open
Shu Zhong	New York University	2	open
Ruochen Fang	Carnegie Mellon University	0	open
Xinyu Ma	New York University	0	open
Linya Gong	Nankai University	0	open
Runqi Du	Tianjing University	0	open
Yan Li	New York University	0	open
Yunfei Teng	Tongji University	0	open

Message history with: Yan Li

Friend: how is project?
 You: not good ===
 You: Let me die ...
 You: how are u today?
 You: im fine thank you and you?

VIII. Restrict information:

Students' all information is set by default that all people or company could see. Student users could set sensitive information (eg. GPA) only seen by companies the user has followed by clicking the green button 'seen by all' in blog/profile page (The button then turns to red).

Student users can also restrict information from one specific friend by click the green hide button in Friends page.

The difference between restricted and unrestricted information can be seen as below:

University: New York University

Start Date: 2017-09-01

End Date: 2019-05-01

Major: CE

Qualification: MS

GPA: 3.8

Resume: Machine Learning Related

Labs (Python3, JupyterNotebook,
Tensorflow, Keras, PyTorch) 09/2017-
Present

University: New York University

Major: CE

PART 4 Security and Concurrency

- I. Guard against SQL injection: use prepared statement

```
$sql="INSERT INTO student (sname,pswd,email,phone,interest,resumefile,resumetext,university,
                           qualification,major,gpa,startdate,enddate) VALUES (?,?,?,?,?,?,?,?,?,?,?,?,?);";
$stmt=mysqli_stmt_init($con);
if(!mysqli_stmt_prepare($stmt,$sql)){
    echo "SQL error";
}else{
    mysqli_stmt_bind_param($stmt, "ssssssssssss" ,
        &var1: $sname, &var2: $password,$email,$phone,$interest,$resumefile,$resumetext,$university,
        $qualification,$major,$gpa,$startdate,$enddate);
    mysqli_stmt_execute($stmt);
    $stmt->close();
}
```

- II. Guard against cross-site scripting: use mysqli_real_escape_string

```
$email = mysqli_real_escape_string($con,$_POST['email']);
$sname = mysqli_real_escape_string($con,$_POST['sname']);
$phone = mysqli_real_escape_string($con,$_POST['phone']);
$interest = mysqli_real_escape_string($con,$_POST['interest']);
$password = mysqli_real_escape_string($con,$_POST['pswd']);
$password2 = mysqli_real_escape_string($con,$_POST['pswd2']);
$resumefile=mysqli_real_escape_string($con,$_POST['resumefile']);
$resumetext=mysqli_real_escape_string($con,$_POST['resumetext']);
$university = mysqli_real_escape_string($con,$_POST['university']);
$qualification=mysqli_real_escape_string($con,$_POST['qualification']);
$major = mysqli_real_escape_string($con,$_POST['major']);
$gpa = mysqli_real_escape_string($con,$_POST['gpa']);
$startdate = mysqli_real_escape_string($con,$_POST['start']);
$enddate =mysqli_real_escape_string($con, $_POST['end']);
```

- III. Deal with concurrency: use transaction control


```

//begin transaction, in case of concurrency
mysqli_begin_transaction($con);

$sql="INSERT INTO student (sname,pswd,email,phone,interest,resumefile,resumetext,university,
                           qualification,major,gpa,startdate,enddate) VALUES (?, ?, ?, ?, ?, ?, ?, ?, ?, ?, ?);";
$stmt=mysqli_stmt_init($con);
if(!mysqli_stmt_prepare($stmt,$sql)){
    echo "SQL error";
}else{
    mysqli_stmt_bind_param($stmt, "ssssssssssss" ,
        &var1: $sname, &var2: $password,$email,$phone,$interest,$resumefile,$resumetext,$university,
        $qualification,$major,$gpa,$startdate,$enddate);
    mysqli_stmt_execute($stmt);
    $stmt->close();

    //commit
    mysqli_commit($con);
}

```

Test Data (as required in P1)

(only part of the data, which is used for SQL queries in next part, is shown)

Student

A	B	C	D	E	F	G	H	I	J	K	L	M	N
sid	sname	pswd	email	phone	interest	resumeFile	resumeText	university	qualification	major	gpa	startDate	endDate
1	Shangwen Yan	sy2160	sy2160@nyu.edu	3473207075	NULL	NULL	17 u Processeddataoana	New York University	MS	CE	3.8	2017/9/1	2019/5/1
2	Ruochen Fang	ruochen	ruochen@gmail.com	3252399898	NULL	NULL	bout music. Establish	Carnegie Mellon University	MS	SE	3.51	2018/1/1	2019/5/1
3	Xinyu Ma	xm546	xm546@nyu.edu	3253773345	NULL	NULL	ling/downloading, discus	New York University	MS	CE	3.7	2017/9/1	2019/5/1
4	Linya Gong	lg2740	lg2740@nyu.edu	3209847899	NULL	NULL	, implemented load balanc	Nankai University	BS	EE	3.1	2016/9/1	2018/5/1
5	Runqi Du	rd233	rd233@nyu.edu	2372342390	NULL	NULL	quate Impact Investment	Tianjing University	BS	MOT	2.9	2016/9/1	2018/5/1
6	Yan Li	yl4752	yl4752@nyu.edu	3283783378	NULL	NULL	ppender function in log	New York University	MS	CE	4	2017/9/1	2019/5/1

Company

	cid	cname	pswd	email	phone	location	industry	magnitude
▶	1	Google	Google	googlehr@google.com	3473307987	New York	Internet	8000
	2	Amazon	Amazon	amazonhr@amazon.com	3242787976	Seattle	Internet	9000
	3	Facebook	Facebook	facebookhr@facebook.c...	2897688976	Mello Park, CA	Internet	13000
	4	Walmart	Walmart	walmarthr@walmart.com	3478978867	San Bruno, California	Retail	3000
	5	Microsoft	Microsoft	microsofthr@microsoft.c...	2787637787	Redmond, WA	Computer Software	15000
	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Follow

	sid	cid	followTime
▶	1	3	2018-02-14 00:00:00
	1	5	2018-04-14 00:00:00
	2	5	2018-04-11 00:00:00
	6	5	2017-04-15 00:00:00

Job

	jid	cid	location	title	salary	requirement	desc	endTime	postTime
▶	1	5	New York City, NY, US	Data & Applied Scientist	11	MS in CS	Assisting in statistical debugging, core algorithm...	2018-04-14 00:00:00	2018-02-14 00:00:00
	2	2	Cambridge, MA, US	Software Developer	15	MS in CS	Participate in the development and maintenanc...	2018-05-19 00:00:00	2018-04-14 00:00:00

Relationship

	sid1	sid2
▶	2	1
	3	1
	6	1
	1	2
	1	3
	1	6

Queries & Results(as required in P1

(1)

```
# 1. Create a record for a new student account, with a name, a login name, and a password.
insert ignore into Student(sname,email,pswd)
values('Shangwen Yan','sy2160@nyu.edu','sy2160');
```

(2)

```
# 2. List the names of all friends of a particular user (e.g. user with sid = 1)
select sname
from Student inner join Relationship on Student.sid = Relationship.sid2
where sid1 = 1;
```

Result Grid	
sname	
Ruochen Fang	
Xinyu Ma	
Yan Li	

(3)

```
# 3. Delete all friendship requests that are older than one month and that have not been answered.
delete from RelationRequest
where TIMESTAMPDIFF(month,requestTime,now())>=1 ;
```







(4)

```
# 4. List all students from NYU that are following Microsoft.
select distinct sid, sname
from Follow natural join Student inner join Company
using(cid)
where university = 'New York University' and cname = 'Microsoft';
```

Result Grid	
sid	sname
1	Shangwen Yan
6	Yan Li

(5)




```
# 5. List all job announcements posted in the last week that are looking for someone with an MS in CS.
select * from Job
where TIMESTAMPDIFF(day,postTime,now())<=7 and requirement like '%MS%CS%';
```

Result Grid		 Filter Rows:	<input type="text" value="Search"/>	Edit:	 	Export/Import:	 	
jid	cid	location	title	salary	requirement	desc	endTime	postTime
▶ 2	2	Cambridge, MA, US	Software Developer	15	MS in CS	Participate in the development and maintenanc...	2018-05-19 00:00:00	2018-04-14 00:00:00
<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>	<input type="text" value="NULL"/>

(6)

```
# 6. For each student with GPA > 3.5 whose resume contains the keywords "database systems", create a
# notification telling the student about a particular new job announcement that a company has posted
# e.g. : jid = 1
insert ignore into JobAlert
select sid,1,2,now() from Student
where resumeText like '%database systems%' and gpa > 3.5;
```

result shown in JobAlert:

Result Grid				Filter Rows:	<input type="text" value=""/>		Se
sid	jid	type	addTime				
▶ 2	1	2	2018-04-17 19:33:19				
3	1	2	2018-04-17 19:33:19				
6	1	2	2018-04-17 19:33:19				
NULL	NULL	NULL	NULL				