



CS2102 Database Systems Project Report

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Table of Content

Introduction	3
ER Diagram	3
Relational Schema.....	4
Sample and Representative SQL code and function	5
Screen shots of Web Interface	6

Introduction

Our project is a Job Offers web application that contains a catalogue of job offers and job applicants. We have 2 separate portal where users can choose to sign up or login as an employer or as a job applicants. An employer can submit job offers and view applications to the job offers. While a job applicant can browse job offers submitted by employers and apply for the job.

We used both HTTP and PHP for our sever page language which is hosted on SoC Zone sever. The database management system is handled by Oracle SQL Developer

ER Diagram

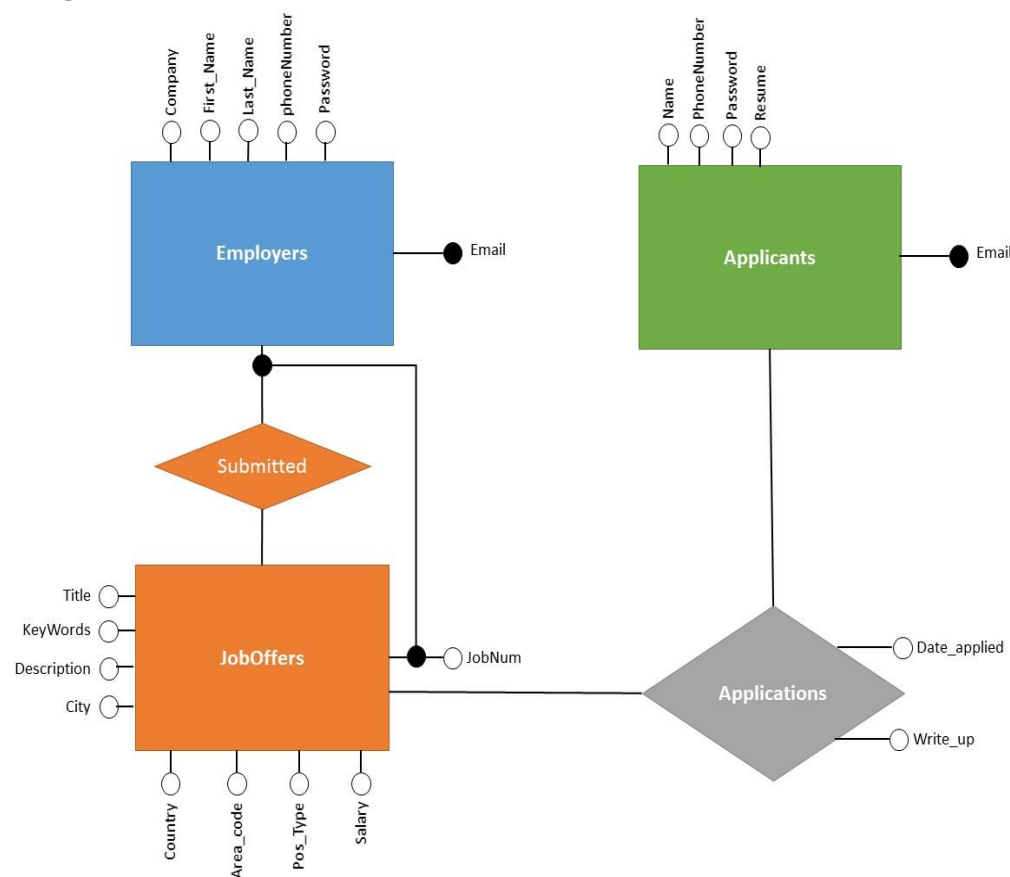


Figure 1. Entity Relation (ER) Diagram for the application

Relational Schema

```
create table Employers(  
email varchar(255) NOT NULL,  
company varchar(255) NOT NULL,  
first_name varchar(255) NOT NULL,  
last_name varchar(255) not null,  
phoneNumber varchar(255) NOT NULL,  
Primary Key (email),  
password varchar(255) NOT NULL  
);
```

Figure 2. Relational Schema for Employers in SQL DDL

```
create table JobOffers(  
jobnum int NOT NULL,  
Employers varchar(255),  
title varchar(255) NOT NULL,  
keywords varchar(255) NOT NULL,  
description varchar(2000) NOT NULL,  
city varchar(255) NOT NULL,  
country varchar(255) NOT NULL,  
area_code int NOT NULL,  
pos_type varchar(255) NOT NULL, -- part/fulltime  
salary int NOT NULL,  
Primary Key (jobnum,Employers),  
foreign key (Employers) references Employers(email)  
);
```

Figure 3. Relational Schema for Job Offers in SQL DDL

```
create table Applicants(  
email varchar(255) Primary key,  
name varchar(255) Not null,  
phoneNumber varchar(255) not null,  
password varchar(255) not null,  
resume varchar(2000) Not null  
);
```

Figure 4. Relational Schema for Applicants in SQL DDL

```
create table Applications(  
Applicants varchar(255) not null,  
date_applied date not null,  
writeup varchar(256) not null,  
Employers varchar(255) not null,  
JobOffers int not null,  
primary key(applicants,Employers,JobOffers),  
foreign key (applicants) references Applicants(email),  
foreign key (Employers,JobOffers) references JobOffers(Employers,jobnum)  
);
```

Figure 5. Relational Schema for Job application in SQL DDL

Sample and Representative SQL code and function

```
$sql = "insert into Applicants values ('".$_POST['Name']."','".$_POST['Email']."','".$_POST['Number']."','".$_POST['Password']."','".$_POST['Resume']."'");"
```

Figure 6. Applicants Register SQL code

Figure 6 shows the SQL code when a person register as an applicants to browse and apply for jobs. It will insert into the database their information so that employers can look through the information of the applicants. Similar code also exist for the employer side where they can register as an employer to submit job offers.

```
$sql = 'SELECT * FROM Applicants  
WHERE email = :email and  
password = :password';
```

Figure 7. Applicants Login SQL code

Figure 7 shows the SQL code to search the database for applicants to log them into the system. The SQL code check the database for the presence of such applicants and check if their password is correct before logging them in. Similar code exist for the employer side so that employers can log in also.

```
$sql = 'SELECT * FROM JobOffers';
```

Figure 8. Applicants Browse Job Offers SQL code

Figure 8 shows the SQL code to display the job offers for applicants to see, with a link for application besides each jobs.

```
$sql = "SELECT *  
FROM JobOffers WHERE title = '  
$_GET['searchContent'].  
"OR employers LIKE"  
$_GET['searchContent'].  
"OR keywords LIKE"  
$_GET['searchContent'].  
"OR description LIKE"  
$_GET['searchContent'].  
"OR city LIKE"  
$_GET['searchContent'].  
"OR country LIKE"  
$_GET['searchContent'].  
"OR area_code LIKE"  
$_GET['searchContent'].  
"OR pos_type LIKE"  
$_GET['searchContent'].  
"OR salary LIKE"  
$_GET['searchContent']" ;
```

Figure 9. Applicants Search Job Offers SQL code

Figure 9 shows the SQL code for the applicants to search the database for job offers submitted with certain keywords. The code search all content of the job offers including the employer, keywords, description, location, position type and salary.

```
$sql = "Insert into Applications values('".$_SESSION['Email']."',sysdate,'".$_POST['WriteUp']."','".$_GET['employer']."', '".$_GET['jobnum']."')";
```

Figure 10. Applicant Application for Jobs SQL code

Figure 10 show the code when the applicants apply for jobs. It will add the application into the database.

```
$sql = "update JobOffers set Title = '" . $_POST['Title'] . "' , Keywords = '" . $_POST['Keywords'] . "' , Description = '" . $_POST['Description'] . "' , City = '" . $_POST['City'] . "' , Country = '" . $_POST['Country'] . "' , Area_code = '" . $_POST['Area_code'] . "' , Pos_type = '" . $_POST['Type'] . "' , Salary = '" . $_POST['Salary'] . "' where jobnum = '" . $_SESSION['jobNum'] . "'";
```

Figure 11. Employer Update Job Offers SQL code

Screen shots of Web Interface

The screenshot displays the JobHunt web application. At the top, there is a dark header with the 'JobHunt' logo on the left and a 'Subtitle' placeholder on the right. Below the header is a navigation bar with links: 'Home', 'My Offers', 'Submit Job Offer', 'Employer Details', and 'Logout'. A search icon is also present. The main content area features a large banner image of a city street. Below the banner, the 'Register as Employer' form is visible, containing input fields for Email, Company, First Name, Last Name, Phone Number, and Password, along with a 'Submit' button. At the bottom, there are three placeholder widgets, each titled 'Just another widget' and containing dummy text.

Figure 12. Screenshot of Register as Employer

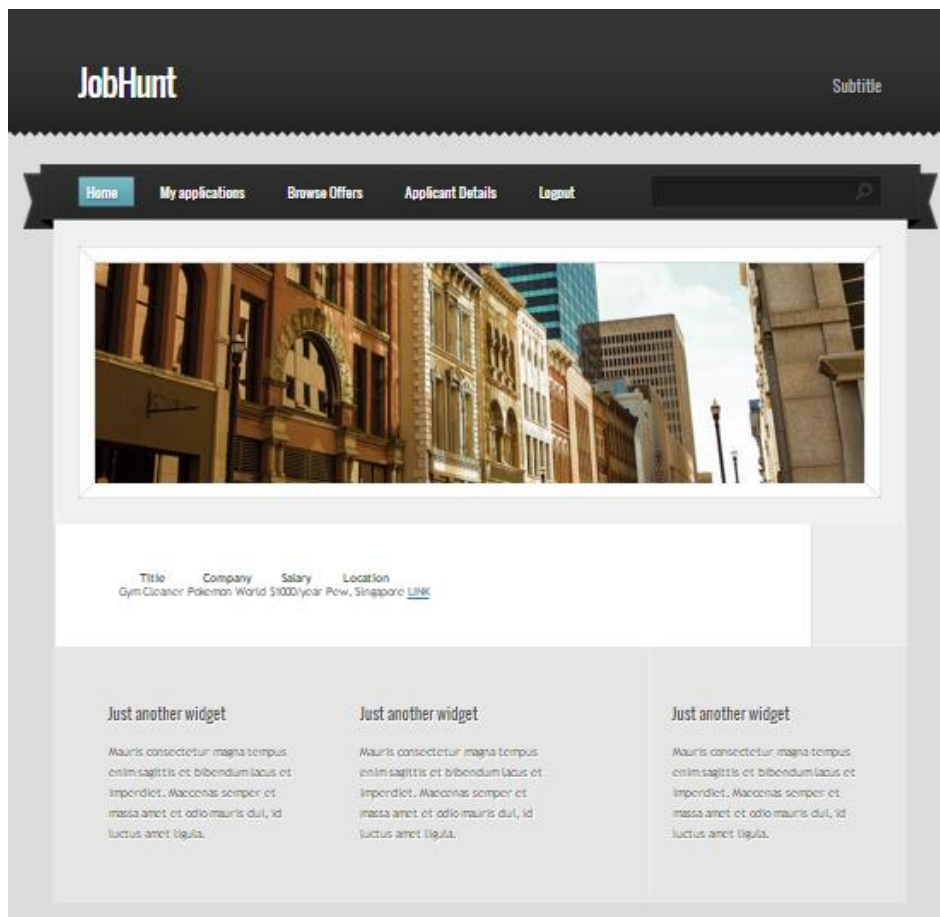


Figure 13. Screenshot of Browse Job Offers