

Online Human Resource Management System

Certification Project

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Certification Project

Problem Statement

For the project, we are considering a fictitious company called "AppDev Technology".

The purpose of this project is to provide an easy way to automate all human resource functionalities of the Organization. In this system we can manage employee details, project details, project allocations, vacancies, interviews, leaves, daily attendance.

1. Online System should have a home page for the company with a menu as below –

Home | About Us | Projects | Vacancies

Login

Any person visiting the site (home page) should be able to view vacancies and apply for a job by submitting details.

Company employees and HR (admin) should use the "Login" link to log into the HRMS system.

2. Once logged into the system, employees and HR can perform following operations in the HRMS system:

HR (Admin)

After logging into the HRMS system using an admin account, admin dashboard should be displayed. It should display the pending leave approvals and links to following operations.

1. **Employee Management**
 - » Add/Edit/View Employee details
 - » View Attendance
 - » Leave Approval (For HR)
2. **Designation Management**
 - » Add/Edit/View Designation
3. **Vacancy Management**
 - » Add/Edit/View Vacancies

- » Edit/View/Delete Applicant status
- » Add/Edit/View Interview Schedule

4. Project Management

- » Add/Edit/View Projects
- » Allocate employees to projects

Employees (Non-HR)

After logging into the HRMS system using an employee account, employee dashboard should be displayed. It should display the time-in time-out links and links to following operations.

1. Employee Management

- » Add/Edit/View own details

2. Attendance

- » Time in-Time Out (Attendance)
- » View Attendance

3. Leaves

- » Apply for leave
- » Check the leave status

4. Project Management

- » View Assigned Projects and timelines

User Authentication

Login form is used to check whether the user is an authorized person to use this system. The user will have the username and password.

We have two types of users in this system. They are:

- HR
- Employee

HR will have all rights in this system. Employee can access only certain features.

Module details

Employee Management Module

In this module HR can perform the below process:

- Add/Edit/View Employee details
- View Attendance
- Approve for a leave

In this module employee can perform the below process:

- Edit & View their own details
- View Assigned project
- Mark daily Time-in time-out
- View Attendance
- Apply for a leave

Designation Management Module

In this module HR can perform the below process:

- Add/Edit/View Designation

Vacancy Management Module

In this module HR can perform the below process:

- Add/Edit/View Vacancies
- Add/Edit/View Applicant
- Add/Edit/View Interview Schedule

Project Management Module

In this module HR can perform the below process:

- Add/Edit/View Projects and project status
- Add/Edit/View Project assignments

In this module employee can view their assigned projects

Attendance Module

In this module employees can perform the below process:

- Mark Time-in
- Mark Time-out(only if time-in is done)
- Generate attendance report by searching the attendance records between the given dates

Database

Create a database called `hr_management_system`

Tables

Note: All column names are in lower case.

1. Create a table called `employees` to store employee's details. The table will contain the following fields.

Table Fields	Type
employee_id	Integer – Primary key
designation_id	Integer
first_name	varchar
last_name	Varchar
address	Varchar
contact_no	varchar
joining_date	date
username	varchar
password	varchar
basic_pay	varchar
create_date	Varchar
status	Tinyint 1- Active, 0 - Inactive

2. Create a table called `designations`. The table will contain the following fields.

Table Fields	Type
designation_id	Integer – Primary key
designation_name	varchar
description	varchar

3. Create a table called `attendance`. The table will contain the following fields.

Table Fields	Type
--------------	------

attendance_id	Integer – Primary key, auto-increment
employee_id	Integer
time_in	Datetime
time_out	Datetime

4. Create a table called [leave_requests](#). The table will contain the following fields.

Table Fields	Type
leave_id	Integer – Primary key, auto-increment
employee_id	Integer
leave_from	Datetime
leave_to	Datetime
reason	varchar
status	tinyint 0-Pending, 1-Approved,2-Rejected

5. Create a table called [projects](#) to store the project details. The table will contain the following fields.

Table Fields	Type
project_id	Integer – Primary key,auto-increment
project_title	varchar
description	Varchar
start_date	date
end_date	date
status	tinyint 1-In Progress, 0-Finished

6. Create a table called **project_allocations** to store the employees assigned to a project. The table will contain the following fields.

Table Fields	Type
proj_allocation_id	Integer – Primary key, auto-increment
project_id	Integer
employee_id	Integer
start_date	Date
end_date	Date
comment	Varchar

7. Create a table called **vacancies**. It is used to list out all the vacancies of the organization. The table will contain the following fields:

Table Fields	Type
vacancy_id	Integer – Primary key
title	text
designation_id	int
description	text
qualification	varchar
experience	float
age	varchar
last_application_date	Date
status	Tinyint 1-Active, 0-inactive

8. Create a table called **applicants** to store applicant's details. The table will contain the following fields:

Table Fields	Type
--------------	------

applicant_id	Integer – Primary key
vacancy_id	Integer
first_name	varchar
last_name	varchar
contact_no	varchar
email_id	varchar
date_of_birth	date
qualification	varchar
gender	varchar
salary_expectation	varchar
experience	varchar
comments	varchar
application_date	Date
status	Tinyint 1-Applied 2-Under initial review 3-Shortlisted for interview 4-Interview Scheduled 5-Application Rejected 6-Final Selection

9. Create a table called [interview_schedules](#) to store interview schedules and interview details. The table will contain the following fields:

Table Fields	Type
interview_id	Integer – Primary key
selection_round	varchar
vacancy_id	Integer
interview_date_time	datetime
venue	varchar
contact_no	varchar
status	Tinyint

	1-Active, 0-inactive
--	----------------------

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Models, views and controllers

Models

Create a model for each table.

Employee

Designation

Attendance

LeaveRequest

Project

ProjectAllocation

Vacancy

Applicant

InterviewSchedule

Create appropriate associations (hasOne, belongsTo etc) for each model.

Layout

1. Design a layout with header and footer and working area.
2. Header should have a menu as mentioned above.
3. Should display the "Login" link if no user is logged in.
4. Should display the username and "logout" link if no user is logged in.
5. If a user is logged in then display the "HRMS home" link to navigate to the dashboard page.
6. Any person visiting the home page should be able to view the vacancies and apply for the vacancy using the "Vacancy" link.
7. Sample layout



Controllers and application logic

Create following controller, actions and their corresponding views:

1. LoginController:

- » Display the login form.
- » Sample login form

A sample login form with two input fields: 'User Name' and 'Password'. Below the fields is a 'Submit' button. The form is enclosed in a light blue border.

- » Authenticate the user using employee table.
- » Store the designation id, employee id and username fields in the session variables.
- » After logging in to the system redirect to HRMS home page (different than the main home page).

2. HomeController:

- » Index: Base URL. Should display the main home page with menu. No other logic. Redirect to this page using the routes once the user types the base URL.
- » Sample Home page:



- » hrms home: Should be displayed after user logs into the system.
- » If the user is HR (admin), load the pending leaves records with approve/reject links along with links to all the operations.
Create a separate element for the hr dashboard that will display the pending leaves.

Sample HRMS home Layout for admin login:

Pending Leaves						
Leave ID	Employee ID	Employee Name	Leave From	Leave To	Reason	Actions
2	5	Tejas Kumar	2015-07-30	2015-07-30	Festival	Approve / Reject

View Employees Add Employee View Projects Add Project View Designation

View Vacancies Add Vacancies Attendance View Interview Schedule

- » If the user is employee, the load the attendance record along with links to the pages employee can access.
Create a separate element for employee dashboard that will display today's attendance status. Provide a facility to the user to mark attendance using

time-in time-out links. User should not be able to time-out until he has already timed in. Once marked, display the time-in/time-out record on the dashboard.

Sample HRMS home Layout for employee login:

Today's attendance	
Time-In	Time-Out
23-07-2015 01:03:08	Time-Out

[Edit Profile](#)
[Attendance](#)
[View Projects](#)
[Leave](#)

3. AttendanceController:

- » Processes the time in and time out actions when the user clicks on the time_in or time_out link on the dashboard.
- » For time-in action, pass the employee id to the action as URL querystring param. Create a record in attendance table with current server date-time. Redirect to the HRMS home page.
- » For time out action, pass the employee id to the action as URL querystring param. Search for today's time-in record which is already created during that time in process using the employee ID and today's date. Update the time_out field of the returned record. In this way we ensure that user cannot mark time-out unless he performs a time-in. The dash-board will display today's attendance status to the employee once he logs into the system.
- » As time-in time-out actions redirects to HRMS home page, there will be no view for these actions.
- » The controller also handles generating the attendance report for the employees and HR using the given date range. Create a form to get the date range as an input for the report. Employees can generate only their own attendance report. HR can generate report for any employee.

Sample attendance report form for employee

Search Attendance			
From date		To date	
23 ▾	July ▾	2015 ▾	23 ▾ July ▾ 2015 ▾
<input type="button" value="Submit"/>			
Sr No.	Time-In	Time-Out	Working Hours
No Records Found			

The attendance report form for HR should have a drop down containing all the employees with the employee ID. HR can select the employee from drop down, set the date range and submit the form to generate report.







The report output should be displayed on the same page below the input form.

Sample attendance report form for HR

AppDev Technologies			
Welcome admin logout			
Home HRMS Home About Us Our Services Vacancies			
Search Attendance			
Employee Name	From date	To date	
<div>John C ▾</div> <div> John C Amit Kumar Tejas Kumar Mohan Shah Robert A </div>	8 ▾ July ▾ 2015 ▾	13 ▾ July ▾ 2015 ▾	<input type="button" value="Submit"/>
	Time-Out	Working Hours	
Back to HRMS Home			
© AppDev Technologies			

4. EmployeesController:

- » Add, edit and delete the employees.
- » Display list of all the employees with links to edit, delete a particular employee. Also contains link to add new employee.

Employees List				
Add New Employee				
Employee ID	Employee Name	Joining Date	Designation	Action
1	admin admin	1998-02-04	HR	 
2	John C	2007-10-12	Developer	 
4	Amit Kumar	2013-11-06	Developer	 

- » Create a form using FormHelper with all the employees table fields. Use same form to add,edit employee details. Same form is used by employees to update their details.

Add Employee Details

First Name

Last Name

Designation

HR

Address

Contact No

Joining Date

July

-

23

-

2015

User Name

Password

Basic Pay (INR)

Status

Active

- » Create a page to display a confirmation message while deleting the employee record. Once the user confirms then only delete the record.

Sample confirm delete page:


[Home](#) [HRMS Home](#) [About Us](#) [Our Services](#) [Vacancies](#)

You are about to delete user :1. Please confirm delete

Confirm Delete

5. DesignationsController:

- » Add, edit and delete designations.
- » Only HR has permission to this functionality.
- » Create a page to display list of designations with edit and delete links. Also has a link to add new designations.

Designations List			
Add New Designation			
Designation ID	Designation Name	Description	Action
1	HR	Human Resource	 
2	Developer	Developer	 
3	Software Engineer	Software Engineer	 

- » Create form to add, edit the designation details.

Add Designation Details

Designation Name

Description

- » Create a page to display a confirmation message while deleting the designation record. Once the user confirms then only delete the record.

6. VacanciesController:



- » Add, edit and delete the vacancies.
- » Display vacancy list to the visitor.
- » Also handles job applications. The applicant details are stored in the Applicant table by this controller.
- » Create two separate pages to display the vacancy lists. One to the site visitor who wish to apply for the job and another to the admin.
- » Site user can apply to the vacancy.

Vacancy List (for job applicant)

Vacancys List								
Vacancy ID	Title	Job Description	Qualification	Designation	Min Experience	Max Age	Last Application Date	Apply
1	Recruitment for PHP Developer	Must have experience in PHP, MySQL, along with HTML,JS and CSS	Engineering,M.Sc., M.C.A.	Developer	2 Years	21 Years	2015-07-31	<input type="button" value="Apply Now"/>

- » Admin can update/delete vacancy record. There will also be links to view the applicant list and interview schedule for a particular vacancy.

Vacancy List (For admin)

Vacancys List							
Add New Vacancy							
Vacancy ID	Title	Designation	Job Description	Qualification	Last Application Date	Status	Action
1	Recruitment for PHP Developer	Developer	Must have experience in PHP, MySQL, along with HTML,JS and CSS	Engineering,M.Sc., M.C.A.	2015-07-31	Active	  View Applicants Interview Schedule

- » Create a form to insert/update vacancy details.

Add Vacancy Details

Title

Job Description

Designation

HR

Qualification reqd.

Min. Experience

Years

Max. age

Years

Last Application Date

July

- 23

- 2015

Status

Active

- » Create a page to display a confirmation message while deleting the vacancy record. Once the user confirms then only delete the record.
- » Create a form to store the applicant data into "applicant" table. This form will be displayed when the job applicant clicks on "Apply now" button to apply for a vacancy.



Job Application

Application ID	<input type="text"/>
First Name	<input type="text"/>
Last Name	<input type="text"/>
Qualification	<input type="text"/>
Email	<input type="text"/>
Contact No	<input type="text"/>
Date Of Birth	<input type="text" value="23"/> - <input type="text" value="July"/> - <input type="text" value="1995"/>
Gender	<input type="text" value="Male"/>
Experience	<input type="text"/> Years
Salary Expectations(INR)	<input type="text"/>

Submit

7. ApplicantsController:

- » Edit and delete the Applicants.
- » Display applicant list for a particular vacancy. Applicant list can be viewed by clicking on the "View Applicants" on the vacancy list.
- » Create a page to display list of applicants for a particular vacancy. Pass vacancy ID as URL querystring parameter. Also has edit and delete links. HR can change status of applicant using "Edit" button.

Vacancy Details							
Vacancy ID	Title	Job Description	Qualification	Designation	Min Experience	Max Age	Last Application Date
1	Recruitment for PHP Developer	Must have experience in PHP, MySQL, along with HTML,JS and CSS	Engineering,M.Sc., M.C.A.	Developer	2 Years	21 Years	2015-07-31
Applicant List							
Applicant ID	Name	Qualification	Experience	Contact No	Salary Expectations (Yearly)	Application Date	Actions
1	Arun Kumar	B.E. Electrical	4 Years	9898989898	500000	2015-07-21	 

- » Create a form to edit the applicant details. All other details of the applicant are for only display purpose and only status and comments are editable. HR can update status of the applicant using this form. Create a drop down for status. Following are valid status'

Status ID	Status Description
1	Applied
2	Under initial review
3	Shortlisted for interview
4	Interview Scheduled
5	Application Rejected
6	Final Selection

Applicant Details


Application ID	1
Applicant Name	Arun Kumar
Qualification	B.E. Electrical
Email	ak@gmail.com
Contact No	9898989898
Date Of Birth	1985-04-13
Gender	Male
Experience	4 Years
Salary Expectations(INR)	500000
Application Date	2015-07-21
Status	<input type="text" value="Interview Scheduled"/>
Comments	<input type="text"/>

Submit

- » Create a page to display a confirmation message while deleting the applicant record. Once the user confirms then only delete the record.

8. InterviewsController:

- » Add, edit and delete the interview schedules.
- » Displays the interview schedule list for a particular interview when the admin clicks on "Interview schedule" link on the vacancies list page.
- » The list has edit, delete links and also a link to view the applicants for that particular vacancy.
- » Also has a link to schedule a new interview for that particular vacancy.

Interviews List							
Add New Interview							
Interview ID	Vacancy ID	Selection Round	Interview Date-Time	Venue	Contact No.	Status	Action
1	2	Aptitude Test	2015-07-31 10:00:00	BKC Complex, Mumbai	983983938398	Active	  View Applicants

- » Create a page to display a confirmation message while deleting the interview schedule record. Once the user confirms then only delete the record.
- » Create a form to save the interview schedule record. Same form is used to update the existing interview schedule.

Edit InterviewSchedule Details

Selection Round

Interview Data-Time - - :



Venue

Contact No

Status

9. ProjectsController:

- » Add, edit and delete the projects. Lists existing projects.
- » Also adds employees to projects.
- » The controller also displays employees assigned to a project and project list for a particular employee (accessed by the employee to see his projects)
- » Create a page to display list of projects. The list has links to update, delete existing project records along with a link to "View/Allocate Employees" to that particular project.
- » The page has a link to "Add new Project"

Projects List						
Add New Project						
Project ID	Project Title	Description	Start Date	End Date	Status	Action
1	Trading Android App	Develop a trading mobile app on Android System	2015-07-22	2015-07-22	Active	  View/Allocate Employees

- » Create a page to display a confirmation message while deleting the project record. Once the user confirms then only delete the record.
- » Create a form to add new project. Same form will be used to update existing project details

Add Project Details

Project ID:

Project Title

Project Description

Project Start Date - -



Project End Date - -

Status

- » Create a page to display list of assigned employees to a particular project. This can be accessed from the project listing page. It will also have a link to add new employees to the selected project.

Project Name:Trading Android App
Project Details:Develop a trading mobile app on Android System
[Assign New Employee](#)

Assigned Employees

Assignment ID	Project ID	Employee Name	Assigned From	Assigned To	Action
1	1	John C	2015-04-01	2016-12-31	
2	1	Tejas Kumar	2015-08-01	2015-10-24	

- » Create a form to assign an employee to a project. Send the project id in the URL query string parameter. Select employee from a drop down.

Project Name:Trading Android App
Project Details:Develop a trading mobile app on Android System

Add Project Allocation Details

Allocation ID

Employee Name



Allocation start Date - -

Allocation End Date - -

- » Create a page to display a confirmation message while deleting the project record. Once the user confirms then only delete the record.

10. LeavesController:

- » Handles leave requests.
- » Create a page to display leaves applied by a particular employee. The page displays status of the leave application. Employee can edit the leave application only if it is in Pending (status = 0) status. Once HR processes (accepts/rejects) the leave request, employee cannot update the leave request. The page is displayed when the employee clicks on the "Leave" link on the dashboard. The page also has link to add new leave request.

LeaveRequests List						
Apply for Leave						
Leave ID	Employee Name	Leave Date From	Leave Date To	Reason	Status	Actions
2	Tejas Kumar	2015-07-30	2015-07-30	Festival	Pending	 

Remove the update/delete link once the request is processed

LeaveRequests List						
Apply for Leave						
Leave ID	Employee Name	Leave Date From	Leave Date To	Reason	Status	Actions
1	Robert A	2015-08-10	2015-08-14	Personal work	Rejected	No Changes Allowed

- » Create form to add a leave request. Do not include "status" field in the leave request form. Status can only be updated by HR.

Add LeaveRequest Details

Leave ID

Leave From

Leave To

Reason

- » Create an action to update the leave status. All the leave request with "Pending" (status = 0) will be displayed on the HR dashboard with approve/reject link. The links will call the action from LeavesController to update the status of the leave request. The leave_id and status will be passed as URL query string params and will be processed by the update_status action. There is no view associated with this action and after completing the process will be redirected to the HRMS home.

Note regarding design

As per conventions, a controller should handle its corresponding model and should create individual controllers for each model. But you can combine handling of multiple models in one controller. E.g. You can design VacanciesController to take care of add, edit and delete of vacancies using Vacancy model and can also use the Applicant model to store the Applicant details for the Job application process. Logically related actions even though it needs different modules than the default one, can be included in single controller.

You need to analyze the individual use case and must decide the application flow accordingly. Also put considerable efforts in design phase. As design changes during development phase are more difficult to incorporate and require more effort to complete than required if they would have identified in design phase.

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