Central Coalfields Limited
A Miniratna Company

<u>INTERNSHIP REPORT</u>

Online Quarter Allotment System

Guide- Mr. Rayees Ahmad Naik

Duration: 03/12/2016 – 31/12/2016

<u>Submitted By</u>:

GOBIND MANUJA
VIT University, Vellore

AYUSH LAL
VIT University, Vellore

<u>CERTIFICATE</u>

This is to certify that

Mr. Gobind Manuja, S/O Chandrabhan Manuja, a student of B. Tech Computer Science and Engineering at VIT University, Vellore

and

Mr. Ayush Lal, S/O Jyoti Narayan Lal, a student of B. Tech Computer Science and Engineering at VIT University, Vellore

have successfully completed a four weeks internship programme at Systems Department at Central Coalfields Limited, Ranchi Head Office.

During the period of their internship, they were found to be punctual, hardworking and inquisitive.

We wish them very success in life.

Period of Internship: 03-12-2016 to 31-12-2016

<u>Authorised Signatory</u>

Guide – Mr. Rayees Ahmad Naik
Asst. Manager, Systems

HONOR CODE

I, **Gobind Manuja**, a Computer Science and Engineering undergraduate student at VIT University, Vellore

and

I, **Ayush Lal**, a Computer Science and Engineering undergraduate student at VIT University, Vellore

would like to declare that the project entitled – Online Quarter Allotment System submitted in fulfilment of the requirements for the Internship programme at Systems Department at Central Coalfields Limited is an original work.

Place: Ranchi

Date: 31/12/2016

Signature of the candidate: Gobind Manuja   Ayush Lal

ACKNOWLEDGEMENT

The Internship opportunity with Central Coalfields Limited was a great platform for our learning and professional development. We consider ourselves very lucky to have got a chance to work with this esteemed organisation and its extremely talented workforce.

We express our deepest thanks to the Systems Department, CCL-Ranchi for allowing us to carry out our project and work with their employees. We would also take this opportunity to thank HR department, CCL, Ranchi for all the cooperation and arranging all the facilities to make our work easier during the internship period.

We would in particular like to express our deepest gratitude and special thanks to our Project Guide, Mr. Rayees Ahmad Naik, Asst. Manager-Systems who always guided us and kept us on the correct path during the whole internship period.

We will strive to use the gained skills and knowledge in the best possible way, and we will continue to work on their improvement in order to attain our desired career objectives.

Hoping for the same level of cooperation in future.

Sincerely,

Gobind Manuja and Ayush Lal

Place: Ranchi

Date: 31/12/2016

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ORGANISATION PROFILE

Central Coalfields Limited (CCL) is a subsidiary of **Coal India Limited** (CIL), an undertaking of the Government of India. CCL manages the nationalized coal mines of the Coal Mines Authority, Central division. CCL is headquartered at Darbhanga House, Ranchi.

Coal India Limited (**CIL**) is an Indian state-controlled coal mining company. It is the largest coal producer company in the world and contributes around 82% of the coal production in India. Coal India Limited (CIL) produces coal through seven of its wholly owned subsidiaries. Central Coalfields Limited is one of those subsidiaries.

CCL presently has 62 operative mines (22 underground and 40 opencast) in regions located in India. CCL has also earned a Mini Ratna status by the government of India.

Headquarter of the company is located at Ranchi (Darbhanga House). CCL aims to include all the modern technologies to the use of its employees. Hence Systems Department was set up at CCL-Ranchi Darbhanga House office. The Systems department deals with all the technical advancements and operations of the company in the field of Information and Technology and other computer and systems related affairs.

Making and managing company's servers, websites, intranet, software, web-apps, web-portals, managing the company databases are some of the few works of the system department. Systems Department at CCL-Ranchi also maintains the centralised servers (which are both Rack and Tower Servers) of CCL for both the company's intranet facilities and the internet facilities. The Systems Department is also responsible for maintaining a record of the payroll, finance, sales and the production statistics of the CCL.

Systems Department every year gives opportunities to the graduates and undergraduates from various colleges of the country to work with the company in its IT and Computer Science related projects as interns or trainees.

A detailed and complete description of the organisation profile and its work can be viewed on the official website (www.centralcoalfields.in) of the company.

INTRODUCTION AND PROBLEM STATEMENT

The Quarter Allotment System developed here is a project of Central Coalfields Limited, Ranchi for the allotment of Quarters to its employees.

The system developed here is a combination of a website and a portal. The website for the Quarter Allotment System and its certain features can be publicly accessed with a unique Uniform Resource Locator, i.e. URL or web address. The web pages are organised into a hierarchical form based on the URL to help the user navigate through the pages. Also, there are predefined private locations on the website that can be accessed with a unique URL along with a unique username and password thus adding the features of a web portal. Hence in together, this system is developed with all the salient features of both a web-portal and a website.

The problem statement for this project lies in the need of developing such a system for quarter allotment for Public Sector Undertakings. CCL being a subsidiary of Coal India comes under the category of PSUs which are directly in control of the Government. To increase the transparency and to decrease the discrepancies involved during the manual pen-paper method for quarter allotment by the PSUs, the signs of a dire need of developing such a system was clearly seen by the Central Coalfields Limited.

Hence this system was developed to ease the process of application and to increase the transparency during the allotment procedures.

The system also provides different set of features for the user and the site-administrator as well. The user can view the details, download notices in the form of pdfs, check his/her application status etc. without any need of logging into their respective user accounts thus enabling a better user experience. Also, after logging into the user account, the user can have access to even more features that can only be accessed privately using a user id and password thus enabling more security features for the user.

There is also a different login account provided for the site-administrator. The site-administrator can manage the quarter allotment of all the users just with a click thus enabling any official with or without any technical knowledge to operate the admin dashboard just with a pre-decided login-id and password. Also, the site-administrator can view year-wise reports, quarter details, their previous occupants etc. through the admin dashboard. All the processes involved can be checked and monitored by the user though their login thus creating a transparency during the process of the allotment.

IMPLEMENTATION

I.   OVERALL IDEA

The overall idea was to develop an employee portal where an emloyee can register for the service using his 8 digit PIS number ans his PAN number as password. After registration, the employee is forced to set a password for his account using which he can log in later. After the login, the employee can either make a request for quarter allotment by submitting the required form or view his application status. There is also a provision for him/her to update his/her account password.

We also developed an admin panel for the site administrator. The administrator dashboard lists all applications and has options for necessary actions to take. The allotment procedure is based on the criteria set by the quarter allotment committee. All details on the application form are considered while evaluating an employee's candidature. Based on the decision of the committee, the site administrator allots quarters to the applicants. Through the administrator dashboard, the site admin can also view the status of each quarter, their allotment history and can also view reports.
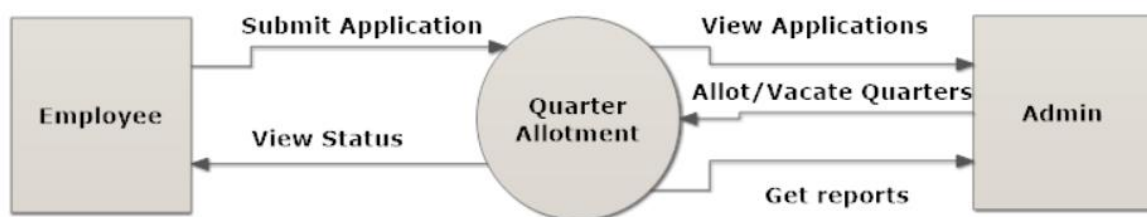

Fig 1. Overall Idea

II.   DATABASE DESIGN:

Each application has a unique reference number besides fields such as name, date of joining, designation, department quarter type opted for, whether or not the employee has a personal residence in the city, his grade, salary, and so on and so forth. Employee's personal details appear on the application form by default. Each quarter has a type (A, B or C) and a number which together uniquely identify each quarter. Besides, each quarter also has a status (Occupied, Vacant or Damaged). Each allotment comprises a start date and end date. Start date is the date of allotment whereas end date is data of vacating.

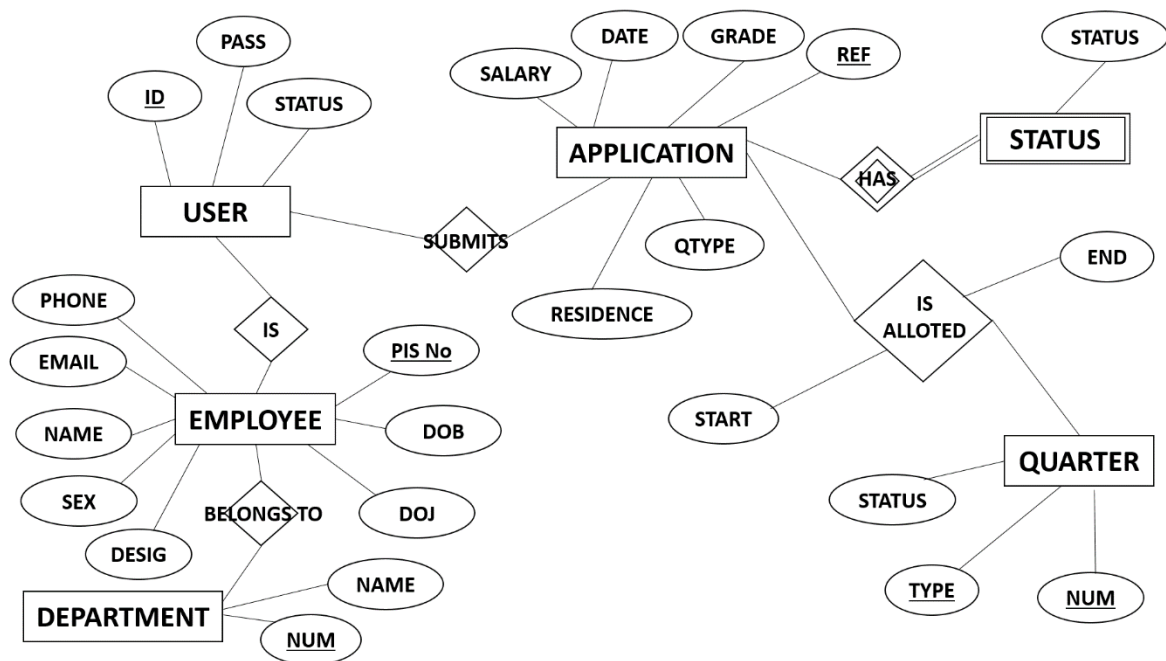Based on these details, an entity relationship diagram was drawn for designing the database.

Fig. 2. ER Diagram

The ER diagram was then mapped to a relational schema based on which all necessary tables were created and relationship among them were established.
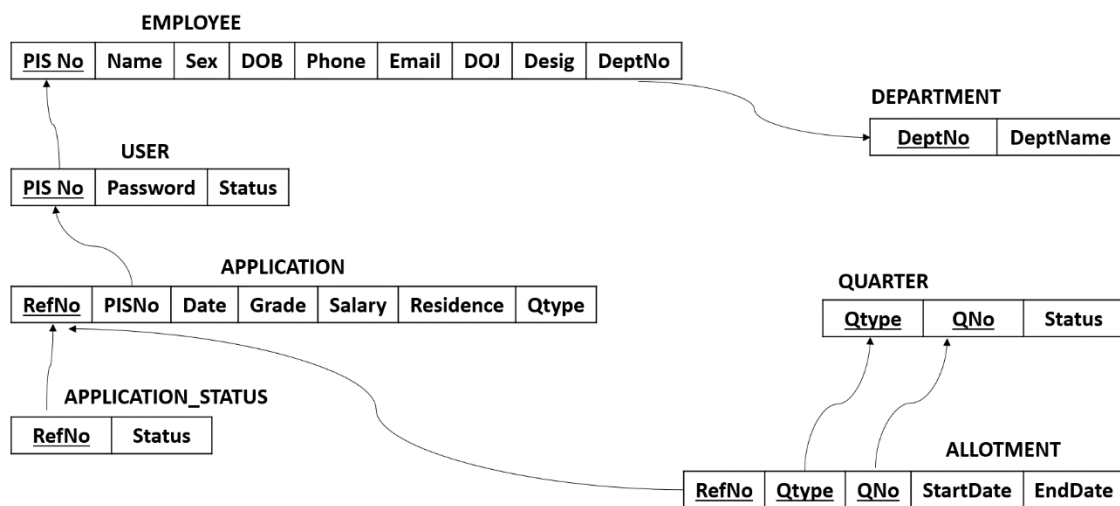

Fig 3. Relational Schema

III. Technologies used:

The following technologies and IDEs were used in developing this Quarter Allotment System:

i.   **HTML**

We have used HyperText Mark-up Language for creating the structural framework of the webpages and the pages of the portal. HTML is the standard mark-up language for all the websites, web applications and web portals. All the standards of The World Wide Web Consortium (W3C) have been complied and followed with in the code of the project prepared here.

ii.   **CSS**

The mark-up language frameworks in the project are styled with Cascading Style Sheets for describing the presentation of the web-pages. All the aspects of document presentation such as layouts, colours and fonts have been included in an external stylesheet to have a continuum display and design of the web pages.

iii.   **JavaScript**

JavaScript is a high-level and a dynamic programming language. Alongside HTML and CSS, JavaScript is one of the three core technologies that is used by the World Wide Web content production. JavaScript is supported on all the browsers without any requirement of supportive plugins. We have used snippets of JavaScript code and the functions used in different pages of the website and the portal as a single scripting language page placed in a separate script folder/file.

iv.   **PHP**

PHP or Hypertext Preprocessor (recursive acronym) is a server-side scripting language that is widely used for all across the globe for web development and general-purpose programming. We have used PHP exclusively for all the server-side scripting. All the data validations, form validations, fetching database contents, sessions, captcha, and security features which are added to the website and the portal are written in PHP in this project.

v.   **MySQL**

MySQL is an open source relational database management system. The web based system is made dynamic using PHP with MySQL as the backend.

vi.   **AJAX**

We have also used asynchronous JavaScript and XML (AJAX) to send and receive the data from the server in the background without interfering with the display and behaviour of the existing page. Thus this creates a better experience for the user.

- Both PHP and MySQL have been implemented with Wamp Server, a virtual server consisting of the Apache web server, MySQL database and PHP programming language. We have used Notepad++ for writing the code.

IV. <u>MODULES:</u>

a. Home Page

The home page contains the following tabs:
  i. Home
  ii. About Us
  iii. Notice
  iv. Register
  v. Login
  vi. Check Status
  vii. Admin

The screenshots of the above are shown below:

Home

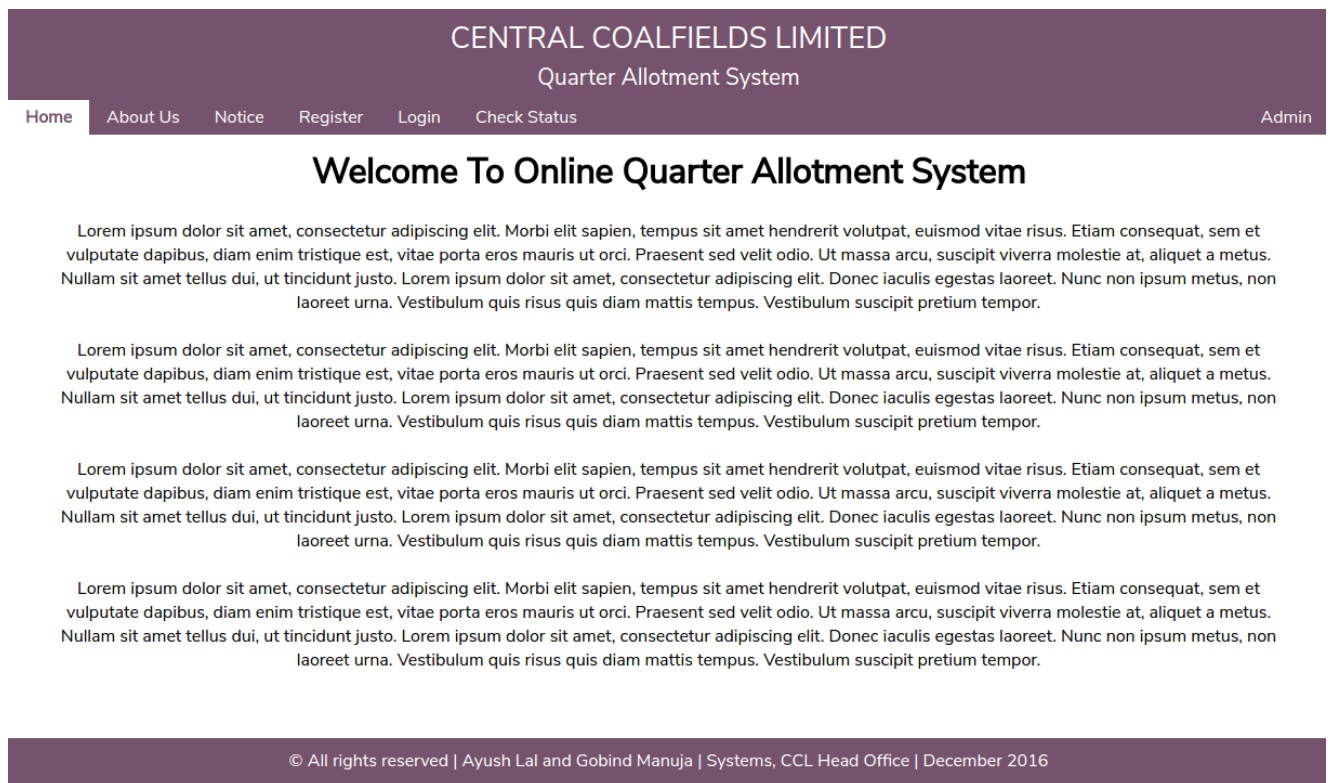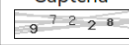Fig 4. Home

The homepage or **Home** is the starting webpage that will appear on the website of Quarter Allotment System has 7 tabs. The **About Us** tab is linked to the official website of CCL, i.e., www.centralcoalfields.in. The **Notice** tab will be used to display a pdf notice or notification of Quarter Allotment on a new tab. The **Register** tab helps a new user to register using his PIS number and PAN number which is already present in company's database. The **Login** tab is for the already registered user to login to his account. The **Check Status** tab helps the user to check his/her status of application for quarter allotment. On the extreme right there is a tab provided for **Admin** login. The site-administrator can get access to the admin dashboard after logging into his account.

Register

Fig 5. Employee Register

This **Register** page is exclusively for the new users. New users can register using their PIS number, an 8-digit unique identity number given to all the employees and their PAN number. A captcha code is also provided in the register form which changes each time the page is refreshed. If both the PIS number and the PAN number along with captcha match correctly with the values taken from the company's employee database (PIS and PAN), the user can register. Else subsequent error messages are shown.

Also, after the new user registers, he/she is by default taken to a new page where the user compulsorily needs to set a password for his/her account. This is done to keep the user's account more secure. Further details will be mentioned in the figures that follow.

Set Password

The user has to input a password which should be 8-20 characters long. Then the same password has to be re-typed again so as there is no mistake in making the password. If both the password match, the new input password is set as the default password for the PIS number that was used for registering. Else, subsequent error messages are shown.

CENTRAL COALFIELDS LIMITED
Quarter Allotment System

Please set you account password to proceed.

Set your password to continue.

Password	
Re-enter Password	
Captcha 6 8 2 6 7	
Submit Reset	

Fig 6. Set Password for new users

Login

The already registered users can **Login** to their account using their PIS number, an 8-digit unique identity number given to all the employees and their password (8-20 characters long) which they had set after registering. A captcha is also provided for keeping the login secure from bot attacks. After all the details are matched, the user can register into their account, else subsequent error messages are shown.

CENTRAL COALFIELDS LIMITED
Quarter Allotment System

Home   About Us   Notice   Register   Login   Check Status

Log in to continue

PIS Number	
Password	
Captcha 9 6 8 0 9	
Submit Reset	

Fig 7. Login

Check Status

Fig 8. Check Application Status

To make the browsing experience of the user to be better, a separate **Check Status** tab has been provided. The users who have already applied for the quarter can check their status through their PIS number or the application Reference number that is provided after applying for the quarters based on their convenience.

If the values of PIS or the Reference number is correct, then the application status of the user is displayed. The displayed result contains the fields- Reference Number, PIS Number, Date and Time of applying for the quarter and the status of the application.

b. Employee Portal

The Employee Portal contains the following tabs:

    i.   Home
    ii.   About Us
    iii.   Notice
    iv.   Make a Request
    v.   Your Status
    vi.   Change Password
    vii.   Logout
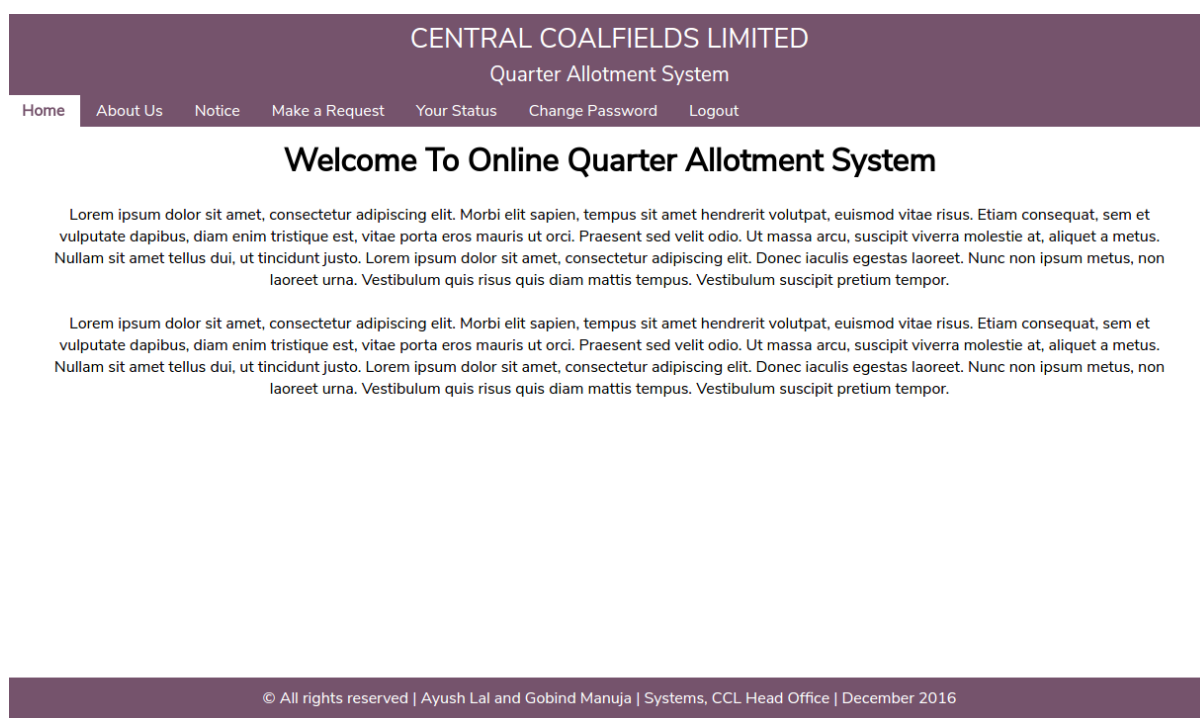
The screenshots of the above are shown below:

Home

CENTRAL COALFIELDS LIMITED
Quarter Allotment System

| Home | About Us | Notice | Make a Request | Your Status | Change Password | Logout |

Welcome To Online Quarter Allotment System

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi elit sapien, tempus sit amet hendrerit volutpat, euismod vitae risus. Etiam consequat, sem et vulputate dapibus, diam enim tristique est, vitae porta eros mauris ut orci. Praesent sed velit odio. Ut massa arcu, suscipit viverra molestie at, aliquet a metus. Nullam sit amet tellus dui, ut tincidunt justo. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec iaculis egestas laoreet. Nunc non ipsum metus, non laoreet urna. Vestibulum quis risus quis diam mattis tempus. Vestibulum suscipit pretium tempor.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi elit sapien, tempus sit amet hendrerit volutpat, euismod vitae risus. Etiam consequat, sem et vulputate dapibus, diam enim tristique est, vitae porta eros mauris ut orci. Praesent sed velit odio. Ut massa arcu, suscipit viverra molestie at, aliquet a metus. Nullam sit amet tellus dui, ut tincidunt justo. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Donec iaculis egestas laoreet. Nunc non ipsum metus, non laoreet urna. Vestibulum quis risus quis diam mattis tempus. Vestibulum suscipit pretium tempor.

Fig 9. Home-Login

After the user successfully logs in using the PIS and the Password (shown in Fig5.), the homepage or **Home** appears for user. The **About Us** tab is linked to the official website of CCL, i.e., www.centralcoalfields.in. The **Notice** tab is used to display a pdf notice or notification of Quarter Allotment on a new tab. The **Make a Request** tab helps the user to apply for quarters. This is exclusively for the users that can login. The **Your Status** tab helps the user to check his/her status of application for quarter allotment. The **Change Password** tab is used for changing the password of the account. The **Logout** tab is for logging out of the account and ending the active session.

Make a Request

The user, when logged in, can apply for the quarters by filling the **Make a Request** form. The PIS, Name, Gender, Designation, Department and Date of Joining are already filled by the default values pre-fetched from the employee database of the company. The user has to input his/her Salary and Grade (E1 to E8). The user is also asked if he/she has a personal residence. The value (Yes/No) input by the user is taken into consideration for the quarter allotment.

Also, there is a default setting that is set which allows only grade E8 employees to choose all types of quarters (type A, B and C) , grade E5-E7 to choose only between quarters of type B and C and grade E1-E4 to choose only type C quarters.

Thus based on the rules of the company, the application for the quarter allotment can be approved or rejected. The application details are thus fed into the database. The site-Admin can thus take further actions.

Fig 10. Make a Request

Your Status

Fig 11. User Application Status

The logged in user can check his/her application status through **Your Status** tab. The displayed result contains the fields- Reference Number, Date and Time of applying for the quarter and the status of the application. Also, if the application is approved, then the quarter type and the quarter number are also displayed.

Change Password

CENTRAL COALFIELDS LIMITED
Quarter Allotment System

Home | About Us | Notice | Make a Request | Your Status | Change Password | Logout

Update Password	
New Password	
Re-enter New Password	
Captcha	
Submit Reset	

Fig 12. Update Password

The **Change Password** tab allows the logged in user to update the existing password. The user needs to input a new password which should be 8-20 characters long. Then the same password has to be re-typed again so as there is no mistake in making the password. A captcha is also provided to make the password change process more secure. If both the password match and the captcha code input is correct, the password is updated. Else, subsequent error messages are shown.

Logout

The user can end his/her active session by clicking the Logout tab. After Logging out, the user is directed to the main homepage of the website (as shown in Fig 4)
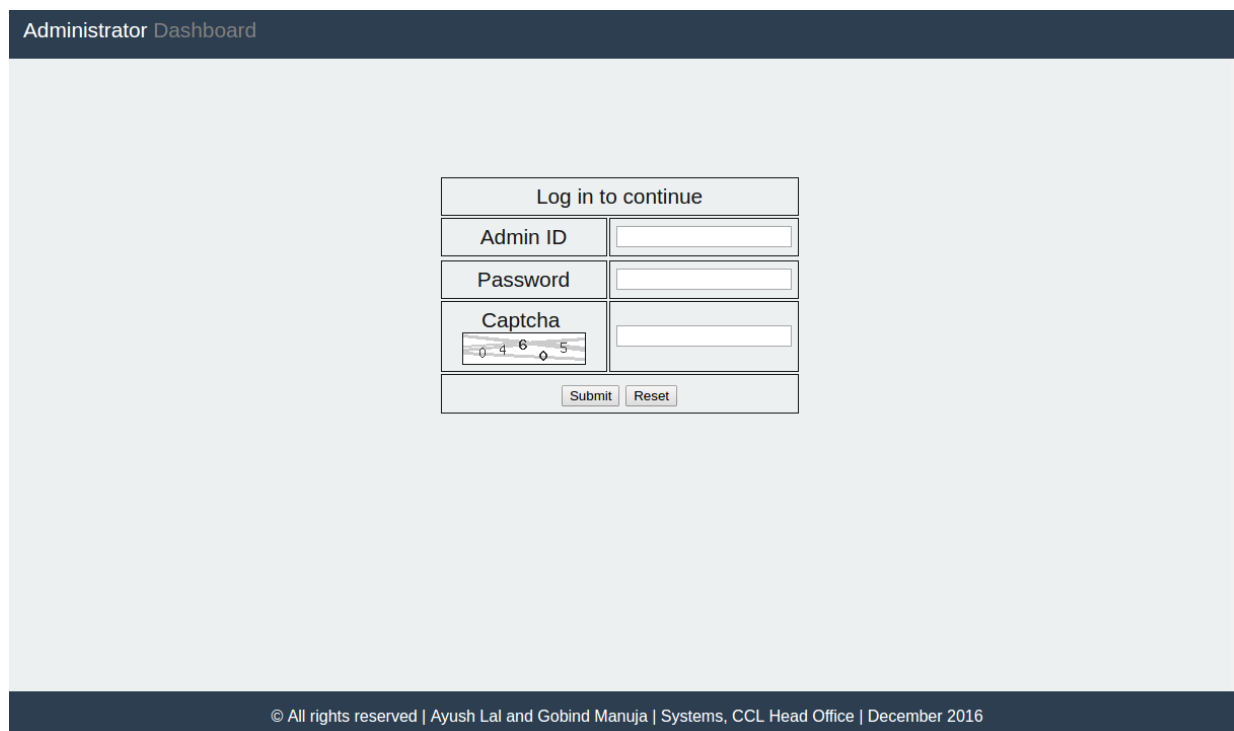
c. **Admin Panel**

The Admin Panel contains the following tabs:

 i. View Applications
 ii. Quarter Status
 iii. Manage Quarters
 iv. Annual Reports
 v. Profile Settings
 vi. Logout

The screenshots of the above are shown below:

Admin Login

Fig 13. Admin Login Page

When the user clicks the **Admin** tab on the homepage, he/she is directed to a new page for Administrator Dashboard Login page. This is exclusive for all the site-administrators. The site administrator is provided with a unique Admin ID and password (the password can be changed after logging into the Admin Dashboard). A captcha is also provided so as to keep the Admin Login page secured from bots. If all the values input are correct, then the access to the Administrator Dashboard is authenticated. Else, subsequent error messages are shown.

View Applications

The Administrator can view the application history of all the applicants using the View Applications option. The administrator can view All Requests, Pending Requests, Approved Requests and Rejected Requests. The displayed result contains the fields- Reference Number, PIS Number, Date and Time of applying for the quarter, the status of the application and view action. Using the view action, the Admin can view all the details of the applicant. The status includes Approved, Rejected and Vacated based on the current status of the application.

Also, the Admin can filter the requests based on the date of the application.

Fig 14. View Applications

Quarter Status

The Administrator can use the **Quarter Status** option to view the quarter status of all the quarters that are available with the company. Under Summary, the Administrator can view the Current Status of all the Quarters, Vacant Quarters, Occupied Quarters and Damaged Quarters.

Also, under Quick Search option, the site-administrator can search for individual quarter details by filtering the results with quarter type or quarter number or both. The status of the quarters is shown. Under the history option, the Admin can see the history of that particular quarter number. The history of allotment of any quarter can be seen using the history option. This way, the company can claim damage penalties on the users under whom the quarter was allotted, in case there is any damage done to the quarter.

Fig 15. Quarter Status

Manage Quarters

The admin can manage all the procedures for quarter allotment using the **Manage Quarters** option.

The administrator can search for the applications of the users using their PIS number or their Application Reference number. Based on the criteria for quarter allotment, the admin can then either Approve or Reject or keep the request in the pending (which is by default, unless other actions are not taken).

For allotting the quarters, the admin can use the Reference number of the user, select the quarter type, available quarter number and then allot that quarter to the applicant.

Also, if an existing resident of a quarter wishes to vacate the quarter or the admin wishes to vacate the quarter of an existing user, the admin can use the vacate quarter option. For vacating the quarters, the admin can use the Reference number of the existing user, select the quarter type, available quarter number and then vacate that quarter of the applicant.

All the actions are stored dynamically in the database. All the options that have already been mentioned, will have the respective updated result lists of actions done.

Fig 16. Manage Quarters

Annual Reports

The Admin can also use the option of **Annual Reports** to have a quick view of the number of total applications and total quarters allotted. This feature is added so as to help publish the allotment report based on year wise basis

Fig 17. Annual Reports

Profile Settings

Fig 18. Profile Settings

The **Profile Settings** tab allows the administrator to update the existing password. The admin needs to input a new password which should be 8-20 characters long. Then the same password has to be re-typed again so as there is no mistake in making the password. A captcha is also provided to make the password change process more secure. If both the password match and the captcha code input is correct, the password is updated. Else, subsequent error messages are shown.

Logout

The admin can end his/her active session by clicking the Logout option. After Logging out, the admin is directed to the admin login of the website (as shown in Fig13)

CONCLUSION AND FUTURE-WORK

This project gave us a good insight into developing software for the web as well as how technology can help automate pen-paper based tasks. The Quarter Allotment System was developed keeping in mind the guidance from our guide and necessary operations that the system was supposed to perform. The database was designed after examining the requirements of the system and keeping in mind any future extensions.

This project was an early-stage development of CCL's upcoming project *E-awas*, Improvements to this web based system would involve integration of services such as quarter rent payment, request for quarter maintenance, notification for penalties, incorporating quarters of all locations throughout the country, sending notifications via email, and a better user interface.

This project was indeed a great learning opportunity.