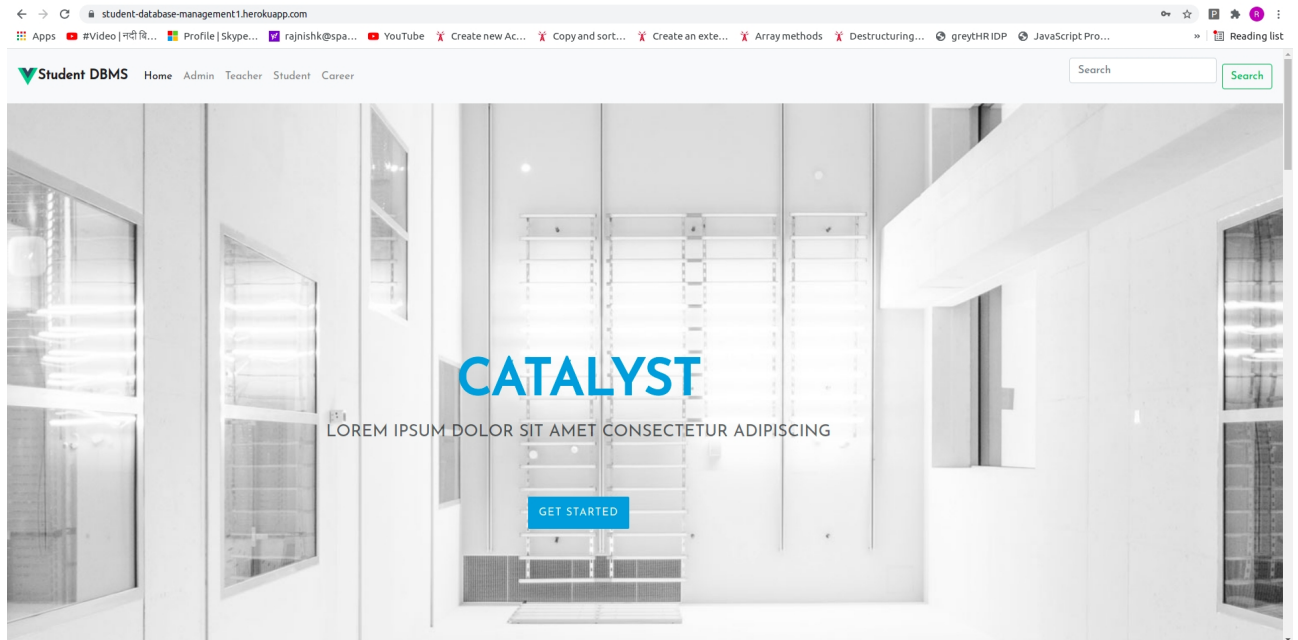


Student Database Management

SECTION A: Common Features

1. Home Page



***Home Page contains:

- a. Logo and Title(Student DBMS)
- b. Home (after clicking on it user will stay on the same page i.e Home page)
- c. Admin
- d. Teacher
- e. Student
- f. Career Section(link to apply for a teacher job)

Note: After clicking on Admin,Teacher and Student link user will be redirected to common Login Page.

*** For the basic understanding of VUEJS watch this:

<https://www.youtube.com/watch?v=qZXt1Aom3Cs&t=1767s>

*** For the home page creation:

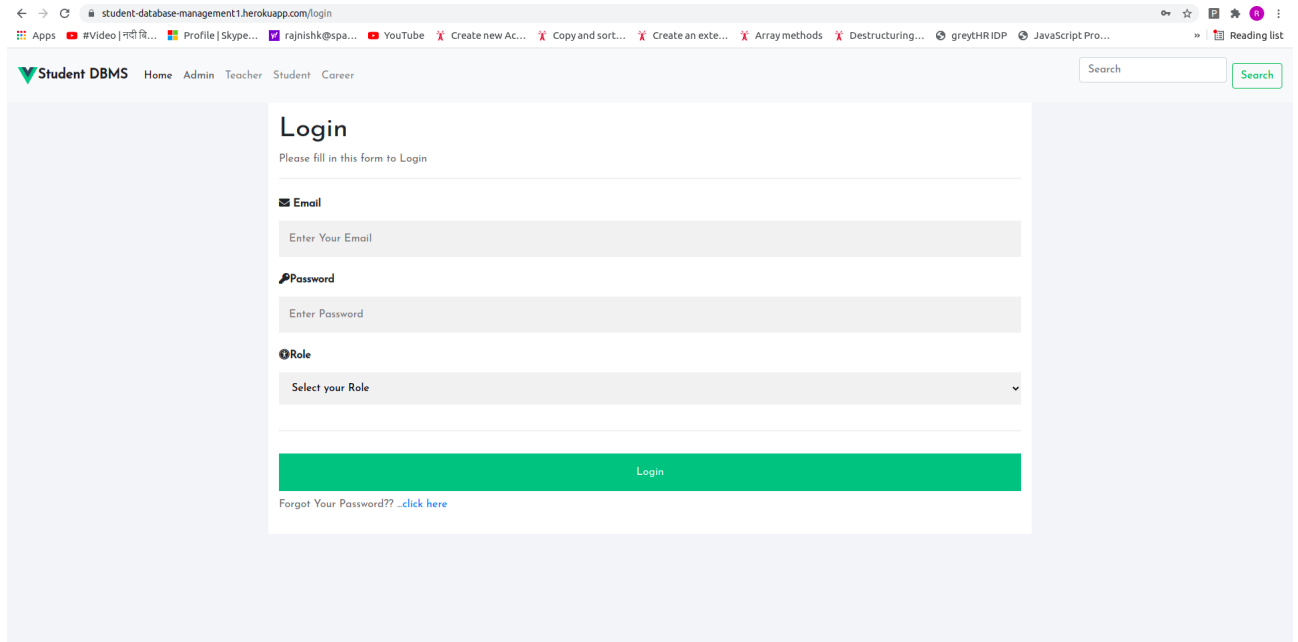
https://www.youtube.com/watch?v=wBTnD_ob12M

*** For complete Production level understanding:

<https://www.youtube.com/watch?v=HgpVgFdBS2E&list=PLAl8os33KyOVD4asd0Sf7BcuE41fu7i6c&index=1>

Note: For payment details use paytm payment bank(don't use regular bank details) .
For the free Amazon web services they will charge Rs. 2 but will be returned.
To use free Add-ons in Heroku you will be charged Rs. 66 but again will be returned so don't worry.

2. Common Login Page:



The screenshot shows a web browser window with the address bar displaying 'student-database-management1.herokuapp.com/login'. The browser's tab bar shows several open tabs, including 'Apps', '#Video | ...', 'Profile | Skype...', 'rajnishk@spa...', 'YouTube', 'Create new AC...', 'Copy and sort...', 'Create an exte...', 'Array methods', 'Destructuring...', 'greythr IDP', and 'JavaScript Pro...'. The page itself is titled 'Student DBMS' and has a navigation menu with links to 'Home', 'Admin', 'Teacher', 'Student', and 'Career'. A search bar is located in the top right corner. The main content area is a login form with the title 'Login' and the instruction 'Please fill in this form to Login'. The form contains three input fields: 'Email' (with placeholder text 'Enter Your Email'), 'Password' (with placeholder text 'Enter Password'), and 'Role' (a dropdown menu with the text 'Select your Role'). Below the form is a green 'Login' button and a link 'Forgot Your Password?? ...click here'.

*** There is a common login page based on the role of user.

*** There are three Roles in the application which are Admin,Teacher and Student.

***watch this one to create login page in vuejs:

<https://www.youtube.com/watch?v=k2HzNKAI8QY&list=PLhBD-2kqNQTTgYG0fqQ1huLrcOrELCHNa&index=3>

*** Password hashing using Bcrypt npm package:

https://www.youtube.com/watch?v=sTHWNPVNvm8&list=PLpPqplz6dKxVC1RlVMH_LcZz2vUheC1-i&index=2

Note: At the bottom of the common login page there is a link to forget password page.

*** watch this one to completely understand forget/reset password logic and implementation

<https://www.youtube.com/watch?v=72JYhSoVYPc>

*** Sending Emails from node.js app:

<https://www.youtube.com/watch?v=nF9g1825mwk>

3. Forget Password Page:

student-database-management1.herokuapp.com/forget-password

Student DBMS Home Admin Teacher Student Career

Search Search

Forget Password Page

Please fill in this form to reset your password

Email

Enter Your Email

Role

Select your Role

Get Reset Password Link

*** After verifying the email and the role a reset password link will be sent to user on mail. After clicking the link on the mail reset password page will open.

student-database-management1.herokuapp.com/forget-password

Student DBMS Home Admin Teacher Student Career

Search Search

Forget Password Page

Please fill in this form to reset your password

Email

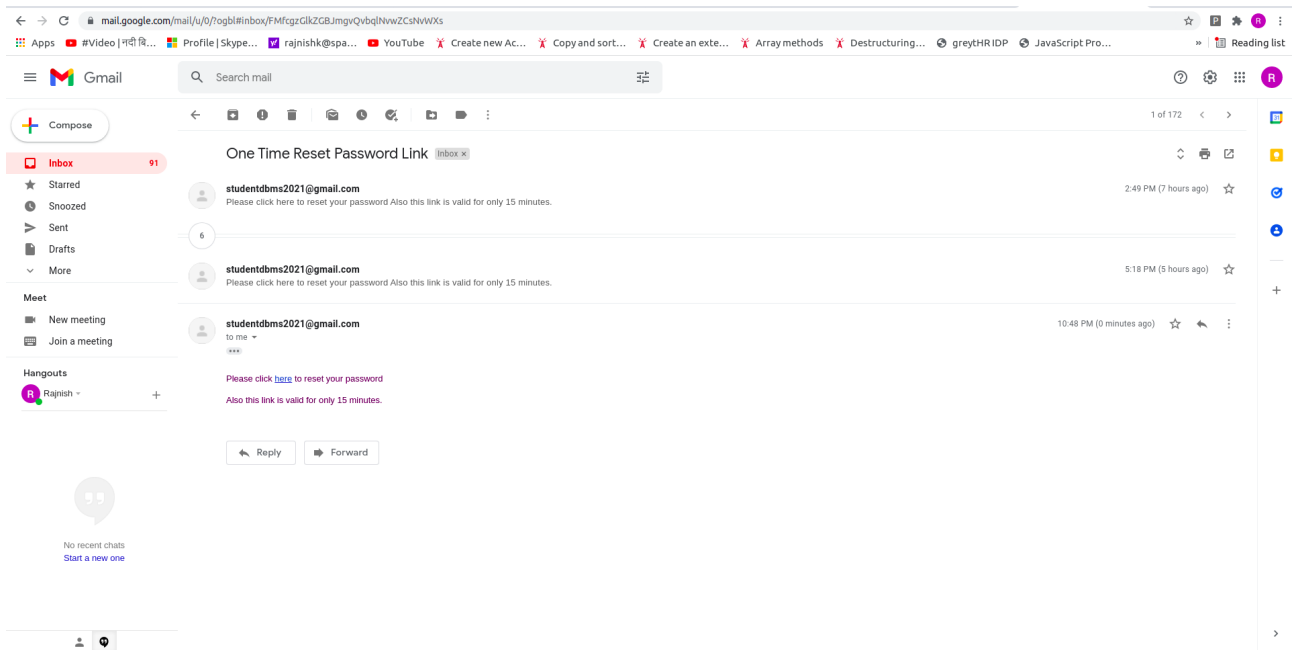
rajnish7100042@gmail.com

Role

Admin

Get Reset Password Link

...ent-database-management1.herokuapp.com says
Please check your email for reset password link
OK



4. Reset Password Page:

*** After entering new password and confirm new password, password will be updated.

Section B : Admin

1. Admin Dashboard:

After entering the correct details in the common login page user will be redirected to Admin Dashboard.

Student DBMS Home Admin Teacher Student Career

Search Search

Login

Please fill in this form to Login

Email
rajnish7100042@gmail.com

Password
.....

Role
Admin

Login

Forgot Your Password?? ...click here

Student DBMS Home Admin Teacher Student Career

Search Search

Welcome Rajnish Patel! Have a nice day

[Logout](#) [Register Student](#) [Register Teacher](#) [Register Admin](#) [Issue a Notice](#) [Job Application](#) [Upload Image](#)

Students List

Name	Email	Phone	Batch	Personal Mentor	Action
Rajnish Patel	rajnish7100042@gmail.com	8863939768	Pre-Foundation	Mantosh Singh	Edit Delete Add
Shankar Singh	rajnish7100042@gmail.com	8863939768	Target	teacher	Edit Delete Add
Krishu Kumar Patel	krishukumarpatel945@gmail.com	9931465584	Achiever	Mantosh Singh	Edit Delete Add
Prabhat Kumar Patel	kumarprabhatpati328665@gmail.com	8873086204	Achiever	Mantosh Singh	Edit Delete Add
student	student@text.com	+918863939768	Pre-foundation	teacher	Edit Delete Add

Teachers List

Name	Email	Phone	Qualification	Experience	Action
Mithlesh Choubey	kumarprabhatpati328665@gmail.com	698745612566	PhD	15 years	Edit Delete Add
Mantosh Singh	rajnish7100042@gmail.com	69845698562	B.TECH	5 years	Edit Delete Add
Rajnish Kumar	krishukumarpatel945@gmail.com	08863939768	Phd	12 years	Edit Delete Add
Rajnish Kumar	kumarmishra0008@gmail.com	08863939768	M.Tech	12 years	Edit Delete Add
Rajnish Kumar	rajnish71000042@gmail.com	08863939768	M.Tech	12 years	Edit Delete Add

Admins List

Name	Email	Phone	Action
prabhat Kumar Patel	kumarprabhatpati328665@gmail.com	8873086204	Edit Delete Add
Admin	admin@text.com	123456789	Edit Delete Add

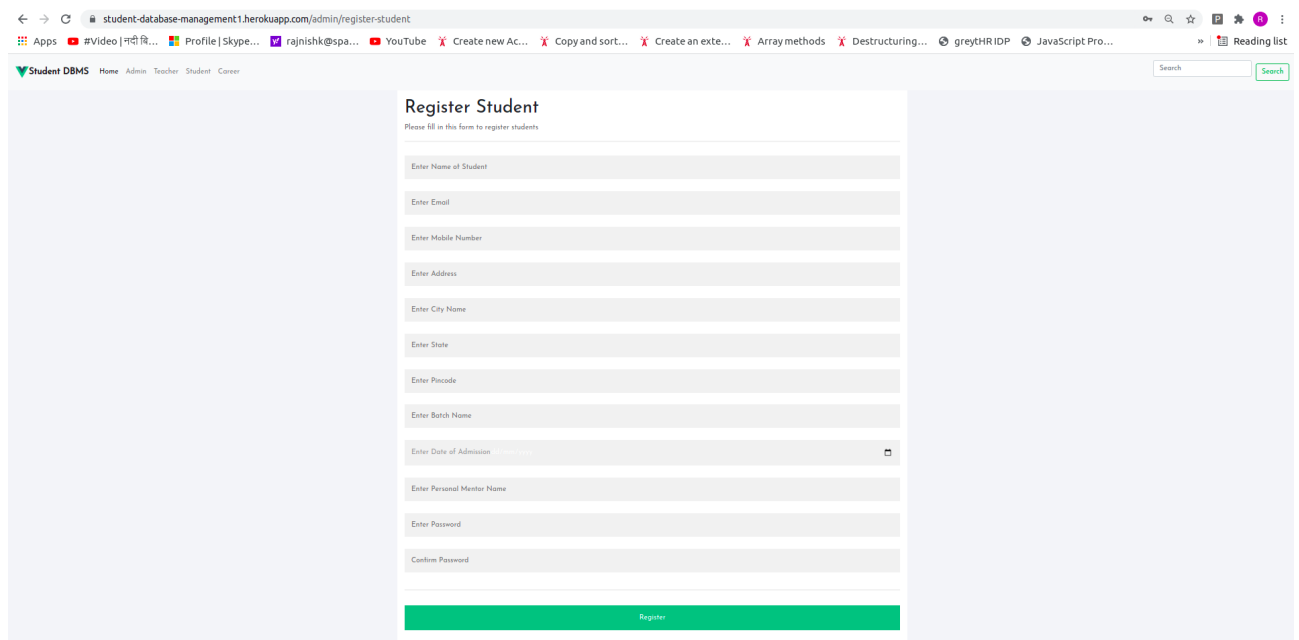
*** On the leftmost side of the dashboard, Profile Picture,Email and Phone Number are displayed

*** On right side of dashboard all the registration details of student, teacher and admin are displayed

*** Admin Dashboard contains:

- a. **Logout** (on clicking, user will be logged out and redirected to common login page)
- b. **Register Student** (Admin will register new student through this link)
- c. **Register Teacher** (link for the teacher registration)
- d. **Register Admin** (link for the admin registration)
- e. **Issue a Notice** (link to Issue a notice)
- f. **Job Application** (all the job application will be displayed to the admin with resume of each applicant)
- g. **Upload Image** (admin will choose a profile picture which will be displayed on the dashboard)

2. Register Student Page:



The screenshot shows a web browser window with the URL `student-database-management1.herokuapp.com/admin/register-student`. The page has a navigation bar with links: Home, Admin, Teacher, Student, Career. The main content area is titled "Register Student" and includes a subtext "Please fill in this form to register students". The form contains the following fields: Enter Name of Student, Enter Email, Enter Mobile Number, Enter Address, Enter City Name, Enter State, Enter Pincode, Enter Batch Name, Enter Date of Admission (with a calendar icon), Enter Personal Mentor Name, Enter Password, and Confirm Password. A green "Register" button is at the bottom of the form.

Note: This page is protected. Only admin can access this page.
Json web token is used for the authentication

*** Why should we use JWT:

<https://www.youtube.com/watch?v=7Q17ubqLfAM>

*** JWT authentication:

<https://www.youtube.com/watch?v=Pg7p2F8zI5I&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=16>

*** storing json web token in cookie:

<https://www.youtube.com/watch?v=Pg7p2F8zI5I&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=16>

*** Protecting(authenticate before serving a page) a page using JWT:

<https://www.youtube.com/watch?v=u19Qdq7fhTk&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=34>

*** After clicking on the register button student data will be stored in the student_registration table in the database and an email will be sent to the user having information regarding password.

*** Creating Registration page (frontend code):

<https://www.youtube.com/watch?v=7Q17ubqLfM>

*** Backend Code for Registration:

<https://www.youtube.com/watch?v=S-nC83myMIs&t=2180s>

3. Register Teacher Page:

student-database-management1.herokuapp.com/admin/register-teacher

Register Teacher

Please fill in this form to register teacher

Enter Name of the teacher

Enter Email

Enter Mobile Number

Enter Address

Enter City Name

Enter State

Enter Pincode

Enter Qualification

Enter Experience in Years

Enter Date of Joining

Enter Salary

Enter Password

Confirm Password

Register

*** This page is protected and only admin can access it.

*** After clicking on the register button teacher data will be stored in teacher_registration table in the database and an email will be sent to the user having information regarding password.

4. Register Admin Page:

The screenshot shows the 'Register Admin' page of the Student DBMS application. The page has a light blue header with the application name and navigation links. The main content area is white and contains a form titled 'Register Admin' with the instruction 'Please fill in this form to register Admin'. The form fields are: Enter Name of Admin, Enter Email, Enter Mobile Number, Enter Address, Enter City Name, Enter State, Enter Pincode, Enter Date of joining (with a calendar icon), Enter Password, and Confirm Password. A green 'Register' button is at the bottom of the form.

*** This page is also protected. Only Admin can access it.

*** After clicking on register button data will be stored in admin_registration table in the database and an email will be sent to the user having information regarding password.

5. Notice Page:

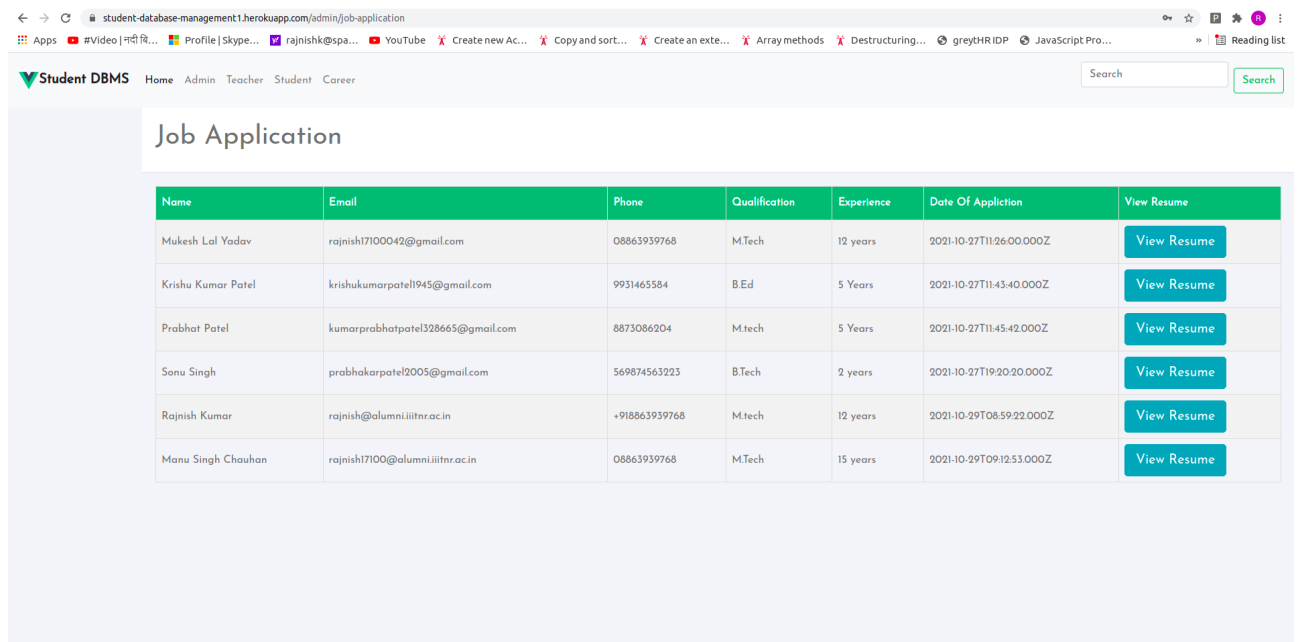
The screenshot shows the 'Announcement' page of the Student DBMS application. The page has a light blue header with the application name and navigation links. The main content area is white and contains a form titled 'Announcement' with the instruction 'Please fill in this form to issue a Notice'. The form fields are: Name (with a user icon), Email (with an email icon), Group (with a dropdown menu), Notice Date (with a calendar icon), Subject (with a subject icon), and Notice (with a text area). A green 'Issue Notice' button is at the bottom of the form.

*** This is a protected page. Only Teacher and Admin can access this page.

*** There are three groups to which notice can be sent:

- Student
- Teacher
- Common(notice will be sent on the mail to all the registered users)

6. Job Application Page:



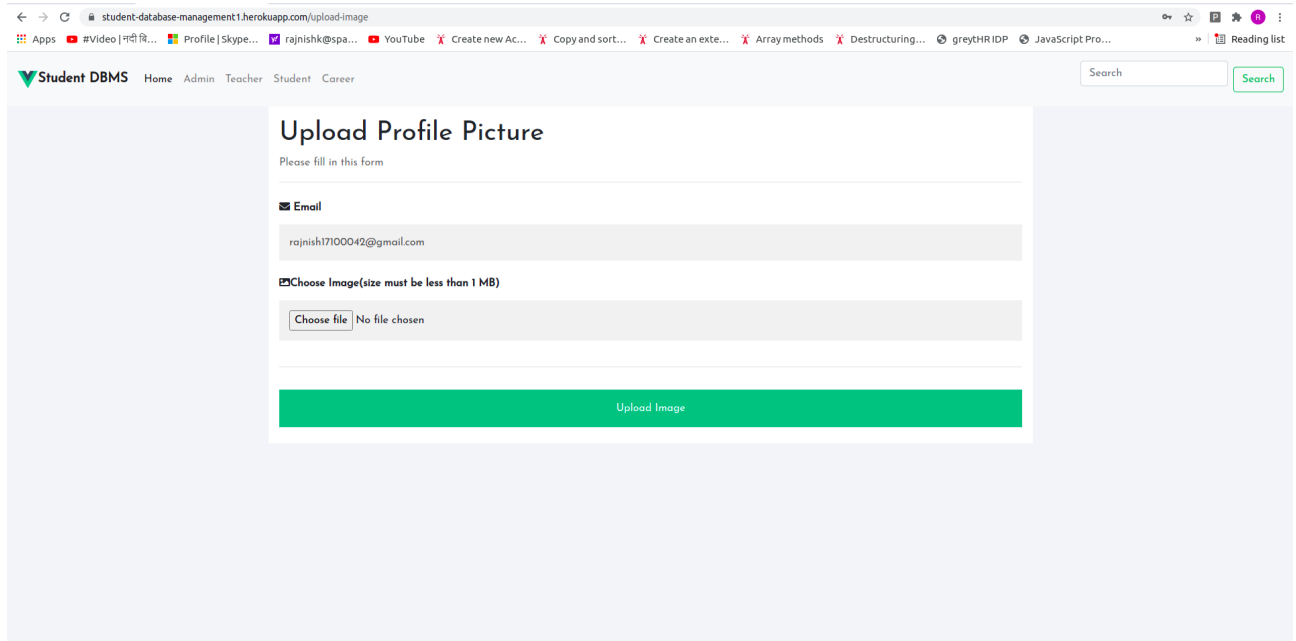
Name	Email	Phone	Qualification	Experience	Date Of Application	View Resume
Mukesh Lal Yadav	rajnish17100042@gmail.com	08863939768	M.Tech	12 years	2021-10-27T11:26:00.000Z	View Resume
Krishu Kumar Patel	krishukumarpatel1945@gmail.com	9931465584	B.Ed	5 Years	2021-10-27T11:43:40.000Z	View Resume
Prabhat Patel	kumarprabhatpatel328665@gmail.com	8873086204	M.tech	5 Years	2021-10-27T11:45:42.000Z	View Resume
Sonu Singh	prabhakarpatel2005@gmail.com	569874563223	B.Tech	2 years	2021-10-27T19:20:20.000Z	View Resume
Rajnish Kumar	rajnish@alumni.iitnr.ac.in	+918863939768	M.tech	12 years	2021-10-29T08:59:22.000Z	View Resume
Manu Singh Chauhan	rajnish171000@alumni.iitnr.ac.in	08863939768	M.Tech	15 years	2021-10-29T09:12:53.000Z	View Resume

*** This is a protected page. Only admin can access it.

*** All the job application will be displayed on this page.

*** Admin can download the resume and review it. One advancement to it can be directly displaying the resume without download.

7. Upload Image Page:



The screenshot shows a web browser window with the URL `student-database-management1.herokuapp.com/upload-image`. The page title is "Upload Profile Picture" and it includes the instruction "Please fill in this form". The form contains an "Email" field with the value `rajnishk17100042@gmail.com` and a "Choose Image" field with a note "(size must be less than 1 MB)". Below the image field is a "Choose file" button and the text "No file chosen". At the bottom of the form is a large green "Upload Image" button. The website's navigation bar includes links for "Student DBMS", "Home", "Admin", "Teacher", "Student", and "Career", along with a search bar.

*** This is a protected page. Only registered student, teacher, admin can access it.

*** With the help of this page user can upload profile picture which will be displayed on dashboard.

*** NodeJs Image uploading with multer:

<https://www.youtube.com/watch?v=9Qzmri1WaaE>

*** Uploading image directly to Amazon S3:

<https://www.youtube.com/watch?v=yGYeYJpRWPM&t=430s>

*** Uploading image to Amazon S3 from Node backend (suggested method):

https://www.youtube.com/watch?v=NZEIlg91l_ms

*** Complete Playlist for file uploading to Amazon S3:

https://www.youtube.com/watch?v=7j9t_7FcXLw&list=PLuNEz8XtB51LJ-3DuKypUlvYlC1tF-BT5&index=1

8. Displaying Registration details of Student,Teacher and Admin on admin dashboard:

Students List

Name	Email	Phone	Batch	Personal Mentor	Action
Rajnish Patel	rajnish1700@gmail.com	8863939768	Pre-Foundation	Mantash Singh	✎ 🗑 🔑
Shankar Singh	rajnish170004@gmail.com	8863939768	target	teacher	✎ 🗑 🔑
Krishu Kumar Patel	krishukumarpatel1945@gmail.com	9931465584	Achiever	Mantash Singh	✎ 🗑 🔑
Prabhat Kumar Patel	kumarprabhatpatel328665@gmail.com	8873086204	Achiever	Mantash Singh	✎ 🗑 🔑
student	student@test.com	+918863939768	Pre-foundation	teacher	✎ 🗑 🔑

Teachers List

Name	Email	Phone	Qualification	Experience	Action
Mithlesh Choudhary	kumarprabhatpatel328665@gmail.com	698745623568	PHD	15 years	✎ 🗑 🔑
Mantash Singh	rajnish170004@gmail.com	6984569562	B.TECH	5 years	✎ 🗑 🔑
Rajnish Kumar	kumarishuraj2005@gmail.com	08863939768	M.Tech	12 years	✎ 🗑 🔑
Rajnish Kumar	rajnish1700004@gmail.com	08863939768	M.Tech	12 years	✎ 🗑 🔑
teacher	teacher@test.com	123456789	M.Tech	12 years	✎ 🗑 🔑

Admins List

Name	Email	Phone	Action
Admin	admin@test.com	123456789	✎ 🗑 🔑
Prabhat Kumar Patel	prabhatkarpate2005@gmail.com	8873086204	✎ 🗑 🔑
Prabhat Kumar Patel	kumarprabhatpatel328665@gmail.com	8873086204	✎ 🗑 🔑
Krishu Kumar Patel	krishukumarpatel1945@gmail.com	9931465584	✎ 🗑 🔑

***These lists will only be displayed to the admin.

*** Admin can edit,delete and change password of users(Student, Teacher, Admin) on clicking the respective icons based on the id(one column in the database table) of the user

9. Student details updation by Admin:

student-database-management1.herokuapp.com/admin/update-student/1

Student DBMS Home Admin Teacher Student Career

Update Student

Please fill the updated data

Rajnish Patel

rajnish1700@gmail.com

8863939768

Behind Sanjeevani Hospital,yogipur

Patna

Bihar

800020

Pre-Foundation

07/10/2021

Mantash Singh

Update

*** Data Updation logic in VUEJS:

<https://www.youtube.com/watch?v=dWF41e8lhVY&list=PL8p2I9GklV44m5tFH-zjCmTiHeq9GZrby&index=18>

***Prefilling details in the Update Page:

<https://www.youtube.com/watch?v=EBEU7t35rNg&list=PL8p2I9GklV44m5tFH-zjCmTiHeq9GZrby&index=19>

https://www.youtube.com/watch?v=Tr_mVFBnx5s&list=PL8p2I9GklV44m5tFH-zjCmTiHeq9GZrby&index=20

*** Data deletion logic:

<https://www.youtube.com/watch?v=t3cojoA1SRQ&list=PL8p2I9GklV44m5tFH-zjCmTiHeq9GZrby&index=21>

*** What is RESTful API?

<https://www.youtube.com/watch?v=Q-BpqyOT3a8>

*** How to create RESTful API:

<https://www.youtube.com/watch?v=1MTBuP1nfLg>

<https://www.youtube.com/watch?v=eB9Fq9I5ocs&t=891s>

10.Student Password Updation by admin:

The screenshot shows a web browser window with the URL `student-database-management1.herokuapp.com/update-student-password/1`. The page title is "Update Student Password" and it includes a subtext "Please fill in to update the password". The form consists of three input fields: "Enter Current Password", "Enter New Password", and "Confirm New Password". Below these fields is a green button labeled "Update Password". The browser's address bar shows several tabs, including "Apps", "#Video | रीटिंग...", "Profile | Skype...", "rajnishk@spa...", "YouTube", "Create new Ac...", "Copy and sort...", "Create an exte...", "Array methods", "Destructuring...", and "greyTHR IDP". The browser's zoom level is set to 100%, and there is a "Reset" button. The page also features a search bar with a "Search" button and a "Reading list" icon.

*** To change the password of student admin should know the current password otherwise no way to update the password

***Similarly admin can update details of Teacher and other Admins

Note: In the application there is a Super Admin which is registered in the initial phase of the application. There is no way to delete the super admin. Non-super admins can be deleted.

Section C: Teacher

1. Teacher Dashboard:

After entering the correct details(email,password and role) in the common login page, user will redirected to the teacher dashboard.

The screenshot shows the login page of the Student DBMS application. The browser address bar shows the URL: student-database-management1.herokuapp.com/login. The page has a navigation bar with links: Home, Admin, Teacher, Student, Career. A search bar is located on the right. The main content area is titled "Login" and contains a form with the following fields: Email (teacher@test.com), Password (masked with dots), and Role (a dropdown menu with "Teacher" selected). A green "Login" button is at the bottom of the form. Below the button is a link: "Forgot Your Password?? ...click here".

The screenshot shows the Teacher Dashboard. The browser address bar shows the URL: student-database-management1.herokuapp.com/teacher/dashboard. The page has a navigation bar with links: Home, Admin, Teacher, Student, Career. A search bar is located on the right. The main content area is divided into two sections. The top section is titled "Registration Details" and contains a table with the following data:

Qualification	Experience	Joining Date	Address	City	State	Pincode
M.Tech	12 years	2021-10-30	Behind Sanjeevani Hospital,Yogpur,kankarbagh,patna-20	Patna	Bihar	800020

The bottom section is titled "Students Under Guidance" and contains a table with the following data:

Name	Email	Phone	Batch	Personal Mentor	Action
Shankar Singh	rajnish17100042@gmail.com	8863939768	target	teacher	Edit Delete Add
student	student@test.com	+918863939768	Pre-foundation	teacher	Edit Delete Add

On the left side of the dashboard, there is a sidebar with a profile picture of the teacher, their email (teacher@test.com), and their phone number (123456789). The sidebar also contains links: Logout, Update Password, Upload Image, and Issue a Notice.

*** On the leftmost side of dashboard, profile picture, email and phone number of user are displayed.

*** On the right side, user registration details and the details of students whose personal mentor is the current user(teacher) are displayed.

***** Teacher Dashboard contains:**

- a. **Logout** (on clicking, user will be logged out and redirected to common login page)
- b. **Update Password** (user can update it's own password)
- c. **Upload Image** (teacher will choose a profile picture which will be displayed on the dashboard)
- d. **Issue a Notice** (link to Issue a notice)

Note: All these four features are almost similar which we discussed above.

Section D: Student

1.Student Dashboard:

After entering the correct details in the common login page user will be redirected to student dashboard.

Student DBMS Home Admin Teacher Student Career

Search Search

Login

Please fill in this form to Login

Email
student@test.com

Password
.....

Role
student

Login

Forgot Your Password?? ...click here

Student DBMS Home Admin Teacher Student Career

Search Search

Welcome student !! Have a nice day. [Logout](#) [Update Password](#) [Upload Image](#)

Registration Details

Batch	Personal Mentor	Admission Date	Address	City	State	Pincode
Pre-foundation	teacher	2021-10-29	Behind Sanjeevani Hospital,Yogpur,kankarbagh,patna-20	Patna	Bihar	800020

student@test.com
+918863939768

*** On the leftmost side of dashboard, profile picture, email and phone number of user are displayed.

*** On the right side user registration details are displayed.

*** features for student:

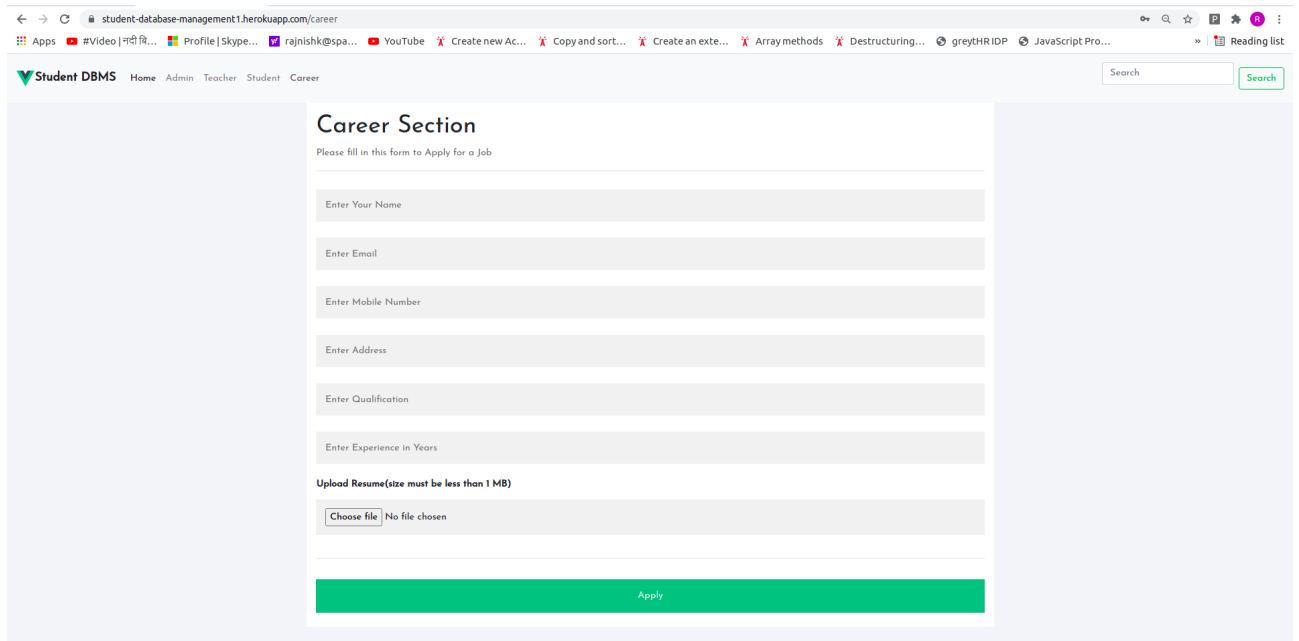
a. Logout

b. Update Password and c. Upload Image

Section E: Career

1. Career Page:

One can apply for the job with the help of career link.



The screenshot shows a web browser window with the URL `student-database-management1.herokuapp.com/career`. The page title is "Student DBMS" and the navigation bar includes links for Home, Admin, Teacher, Student, and Career. A search bar is located in the top right corner. The main content area is titled "Career Section" and contains a form for job applications. The form includes fields for Name, Email, Mobile Number, Address, Qualification, and Experience in Years. There is also a file upload section for a resume, with a note that the size must be less than 1 MB. A green "Apply" button is at the bottom of the form.

Student DBMS Home Admin Teacher Student Career

Search Search

Career Section

Please fill in this form to Apply for a Job

Enter Your Name

Enter Email

Enter Mobile Number

Enter Address

Enter Qualification

Enter Experience in Years

Upload Resume(size must be less than 1 MB)

Choose file No file chosen

Apply

*** This page can be accessed by anyone.

*** After applying for the job an email will be sent to applicant saying that your resume is under review.

Note: While sending the job application data along with the Resume I was facing problem with sending all data in the request body.

So the solution which I used for this is: I am sending the file(resume) in the request body as a form data and other data I am sending as a query parameter to the URL.

*** Sending data as a query parameter to the URL:

<https://www.youtube.com/watch?v=crWdh53CYnw&t=288s>

Section F: Application Requirements

Requirements:

- 1.The app should have a login functionality.
- 2.The application should three roles, viz. Student, Teacher, and Administrator(hereby referred as admin)
- 3.The student should only be able to view and edit only his/her respective data and not any other's data.
- 4.The teacher should only be able to view and edit only his/her respective data and not any other's data.
- 5.Students will be assigned to a particular teacher
- 6.A teacher can add, edit, view, delete students only under his/her supervision
- 7.A system admin will have the ability to add, update, block, and delete any student and teacher.
- 8.Any student should not be able to edit/view the teacher's data.
- 9.Any student should not be able to edit/view the admin's data.
- 10.Any teacher should not be able to edit/view the admin's data.
- 11.The app should also maintain who last edited the student's record.
12. After registration is done by the admin, default password should be sent on registered email.
- 13.Implement notice feature for teacher and Admin to announce certain things.
14. Also give facility to issue notice for teachers group, student group and common group.
15. Email notice to all members.
16. Add feature to upload profile photo.
- 17.Add feature to upload teacher resume.
18. Add feature for forget password using otp in mail or on mobile number
- 19.On Home page add registration page for student to apply for admission.
20. Add career section on Home page where teachers can apply for job

Section G: Tools and Technologies

1. Client Side technology: **VUEJS**
2. Server Side Technology: **NodeJs and ExpressJs**
3. Database: **MYSQL Database**
4. Password Hashing: **BCRYPT**
5. Authentication: **JSON WEB TOKEN**
6. Deployment: **Heroku**
7. File Storage: **Amazon S3**
8. Code Editor: **VSCODE**
9. Remote Database connection: **JawsDB MYSQL(Heroku Add-ons) and MYSQL Workbench**
10. Version control: **GiT HUB**
11. Application Deployment link:
<https://student-database-management1.herokuapp.com/>
12. Project Code Link: <https://github.com/rajnish17100042/student-dbms>

Section H: References

1. vueJS tutorials:

<https://www.youtube.com/watch?v=qieXC2pfeN0&list=PL8p2I9GklV44m5tFH-zjCmTiHeq9GZrby&index=1>

2 Nodejs Tutorial:

https://www.youtube.com/watch?v=SY-NEr_bpEs&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=40

3. Basic designing of the app:

https://www.youtube.com/watch?v=30iSu-R_uSA

4. Jwt authentication:

<https://www.youtube.com/watch?v=x5gLL8-M9Fo&t=89s>

<https://www.youtube.com/watch?v=7nafah9SddU&t=578s>

5. Javascript concepts:

<https://javascript.info/>

6. vueJS CRUD app:

<https://www.youtube.com/watch?v=JLc-hWsPTUY>

7. Frontend design,styling and SQL tutorial:

<https://www.w3schools.com/>

8. npm package manager :

<https://www.npmjs.com/package/nodemailer>

9. Email sending feature:

<https://www.youtube.com/watch?v=nF9g1825mwk>

10. forget password feature implementation:

<https://www.youtube.com/watch?v=72JYhSoVYPc>

11. file uploading in vuejs:

<https://www.youtube.com/watch?v=VqnJwh6E9ak>

12. file uploading using multer(server side):

<https://www.youtube.com/watch?v=9Qzmri1WaaE>

13. uploading file to Amazon S3:

https://www.youtube.com/watch?v=NZEIlg91l_ms

<https://www.youtube.com/watch?v=yGYeYJpRWPM>

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14. Advanced mailing system using Gmail API:

<https://www.youtube.com/watch?v=-rcRf7yswfM>

15. reactjs nodejs deployment to heroku:

[https://www.youtube.com/watch?](https://www.youtube.com/watch?v=7il2CrBA5VY&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=44)

[v=7il2CrBA5VY&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=44](https://www.youtube.com/watch?v=7il2CrBA5VY&list=PLwGdqUZWnOp3t3qT7pvAznwUDzKbhEcCc&index=44)

<https://www.youtube.com/watch?v=71wSzpLyW9k>

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<https://www.youtube.com/watch?v=y0Vnl6UswyA>

<https://www.youtube.com/watch?v=W-b9KGwVECs&t=610s>

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<https://www.youtube.com/watch?v=ZZp0VljTsbM>