# VGS: A University Governance and Management System using MERN Technologies

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***Abstract*** *:* The management of student records, faculty data and their status information archives is a primary and most requisite part of every university, and its contents are significant for every university. Therefore, it is necessary to develop a management system of student status archives that can provide accurate and quick information regarding Universities. The developed system can simplify the manual management of Student Status Archives in the taking place in past. It can also make diversity management work faster, safer and more effective. It can reduce not only the workload of staff but also improve the work efficiency and accuracy. The design and implementation of a comprehensive VGS user interface is very user-friendly because of MERN Stack technology. Faculties or students have access to all aspects of student's academic progress through a secure, online interface embedded in the university's website.

***IndexTerms*** **– MERN, University management, governance, React.**

## I. INTRODUCTION

The MERN stack is a JavaScript stack that's designed to make the development process smoother. MERN includes four entirely open-source components: MongoDB, Express, React, and Node.js. Adopting the stack also addresses critical but repetitive development tasks that redirects efforts towards building and innovating upon a breakthrough application and its testing. Another useful aspect of using MERN stack is developing Single Page Applications(SPA).

MongoDB is a NoSQL document-oriented database. It has flexible schema and json (Java Script Object Notation) based query language.

NoSQL stands for 'non-relational' SQL. It is essentially not a conventional database where you have tables and columns, called relational databases. There are actually two attributes of NoSQL that differentiate them from conventional.

Express is just a web framework for Node.js. Node.js is just a run-time environment that can run java-script. To write a full-fledged web server by hand on Node.js directly is not that easy, neither is it necessary. Express is that framework that simplifies the task of writing your server code.

React anchors the MERN stack. In some sense, this is the defining component of the MERN stack. It is an open-source java-script library maintained by Facebook that can be used for creating views rendered in HTML. Remember the SPA's where only the part which is changed is re-rendered instead of entire page, React is solely responsible for such behaviour. The best example of this is the web whatsapp.

Node.js is a java-script run-time that uses the chrome's V8 engine which is an open source java script run-time written in C++, that takes JS code and compiles it to machine code.

### Objectives:

1. • Providing the online interface for students, faculties and andiminstation etc.
2. • Increasing the efficiency of college record management.
3. • Decrease time required to access and deliver student records.
4. • To make the system more secure.
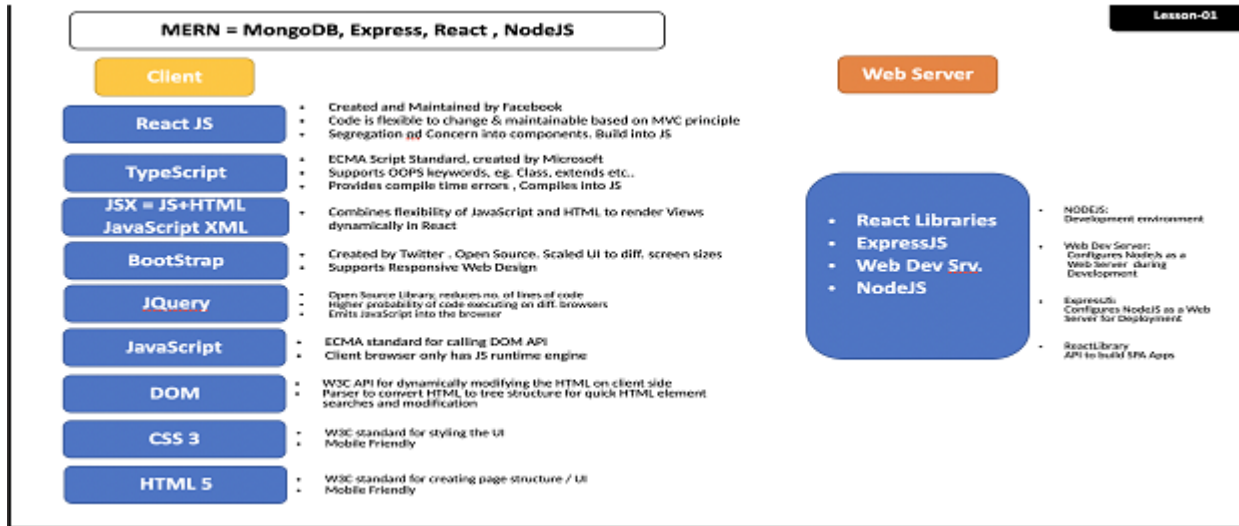5. • Decrease time spent on non-value added tasks.

### Background :

MERN= MongoDB, Express, React, NodeJs.

Enterprise web application( VGS) using MERN Stacks technology .It is full stack JavaScript developer technology which means they are using all stack of technologies together even if we remove one of that technology it does not work like that bundle of stack.

It is not a framework but it is environment for programs.

Work Done:



Depending on our requirements, earlier we were doing everything from scratch that is one limitation of CSS. Using CSS we have to create user defined class with set of properties. After mobile application when we use some margins. Paddling, dimension of webpage we have to create responsive websites. When we tee about dimension desktop have different dimension. Mobile or tablet have different dimensions. To overcome this problem bootstrap feature is used.

Java script is object based interpreted scripting language. But now Java script is one of the implementation of ECMA (ES5,ES6...ES8). Using JavaScript we can do coding on webpage.

After Node js, JavaScript is used on client side as well as server side coding. jQuery, React JS is a library which is used in the project.

Bootstrap: - It is the open source most popular CSS framework for developing responsive And mobile first websites. It provides lot of predefined classes with respective type of HTML tags like div, p, table, nav specific classes

jQuery is an external library function which contains lot of predefined function which internally _ connected each other.

Node js is not a library or framework. It is runtime environment for JavaScript library oz framework or JavaScript programs.
Node j's runtime environment + JavaScript modules score, external module)
Before Node j's JavaScript is use For client side scripting language, after modes java script can use client side as well as server side scripting language.
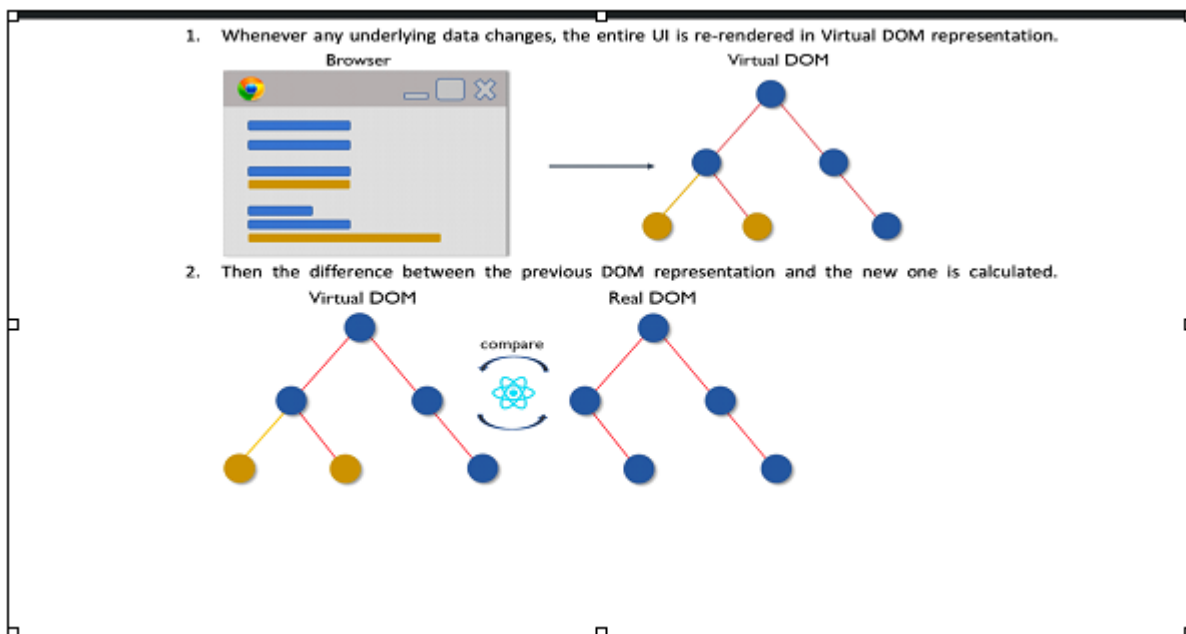
Client-side there is HTML less / javascriptes5 but back-end there is another technology
may be python, Java, or pap. There is gap between front-end and back-end technology .That gap is filled by Node. Using Node is we can create restful API
Node j's benefits :-

1. using Nodejs we can create restful API
2. using Nodejs we can create security program

3. we can do file handling program 4
4. I can connect the database

Which Java do, •net do, Nodejs also can do .

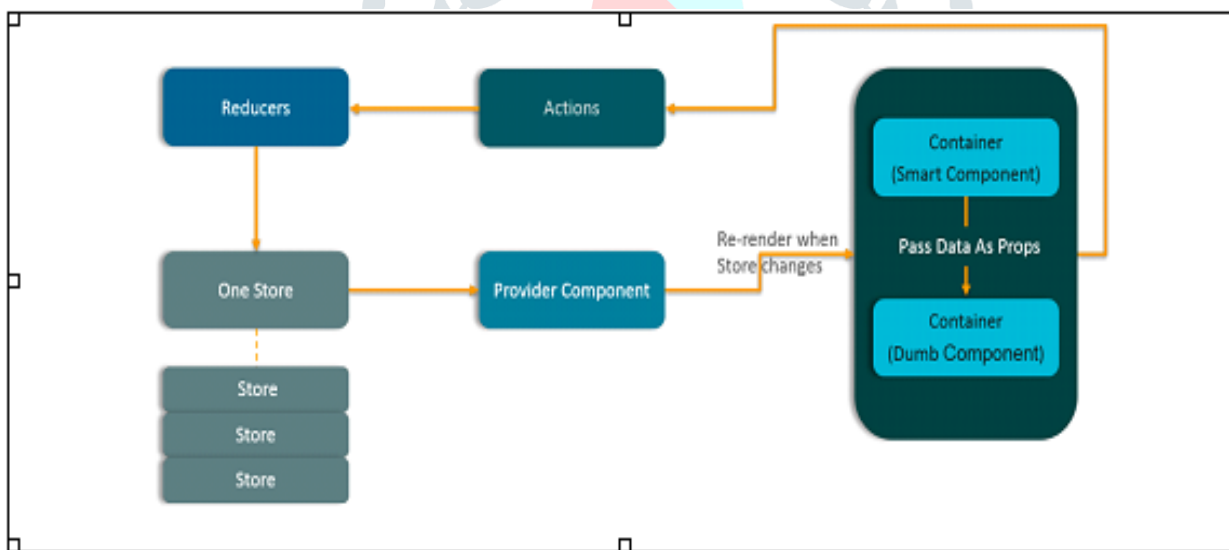DOM hierarchy created

DOM is a API application programming interfered) which provided by different language like JavaScript, Java, php...Etc

API may using function, property, classes. Modules. We can read, write and update HTML code dynamically

Redux follows the one way data flow of react. It keeps the state of the application in a single read-only JS object. To change the state we dispatch actions and reducers process the changes. All the reducers receive all the actions.



RESULTS :

Admin:

The Admin's responsibility is managing the student and faculty Accounts. also supervises the user's accounts, like who or what assign to faculty. He also updates the college-related information about events that occur in the college and updates placement related information. The Administrator will check all the updates, i.e. student updates, faculty updates, exam updates. The Admin has the highest level of access in the varsity governance system.
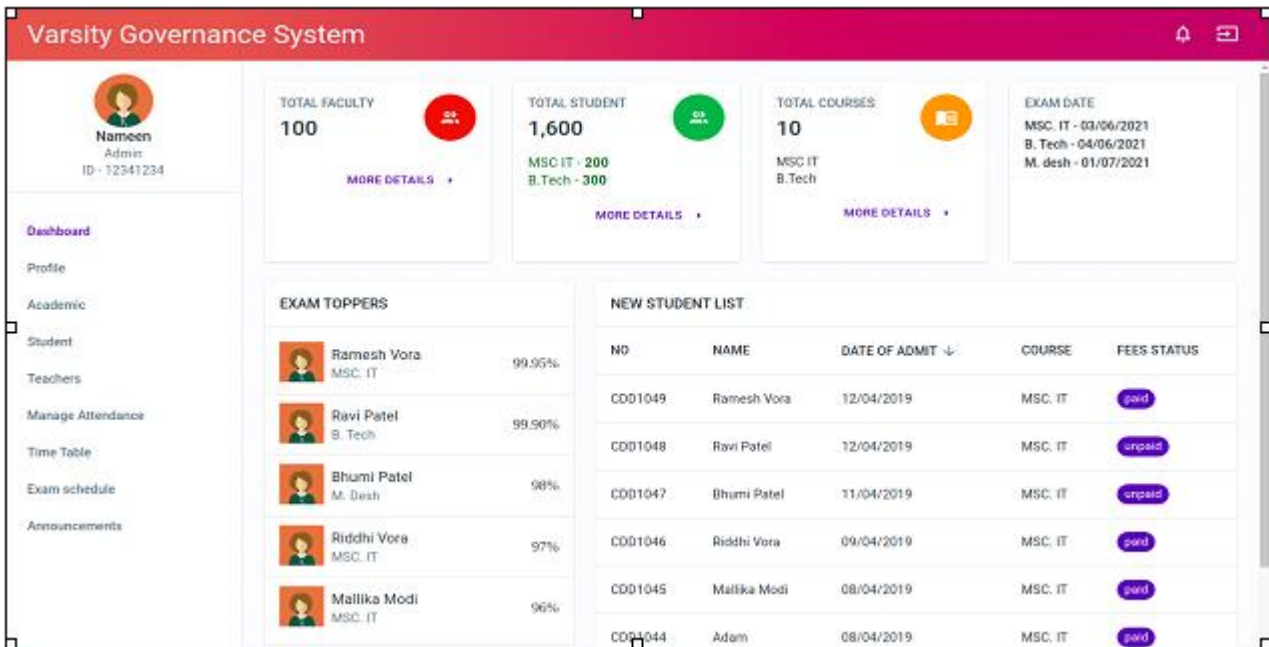
Figure 1 Admin Dashboard

Faculty:

The Faculty can update the information regarding the student's attendance, internal marks of the students and any information regarding their handling in university terms and conditions, not beyond that. They can also view the student details to understand student performance better and improve the student's efficiency. The staff also gets updates from the college regarding any events occurring in the college.
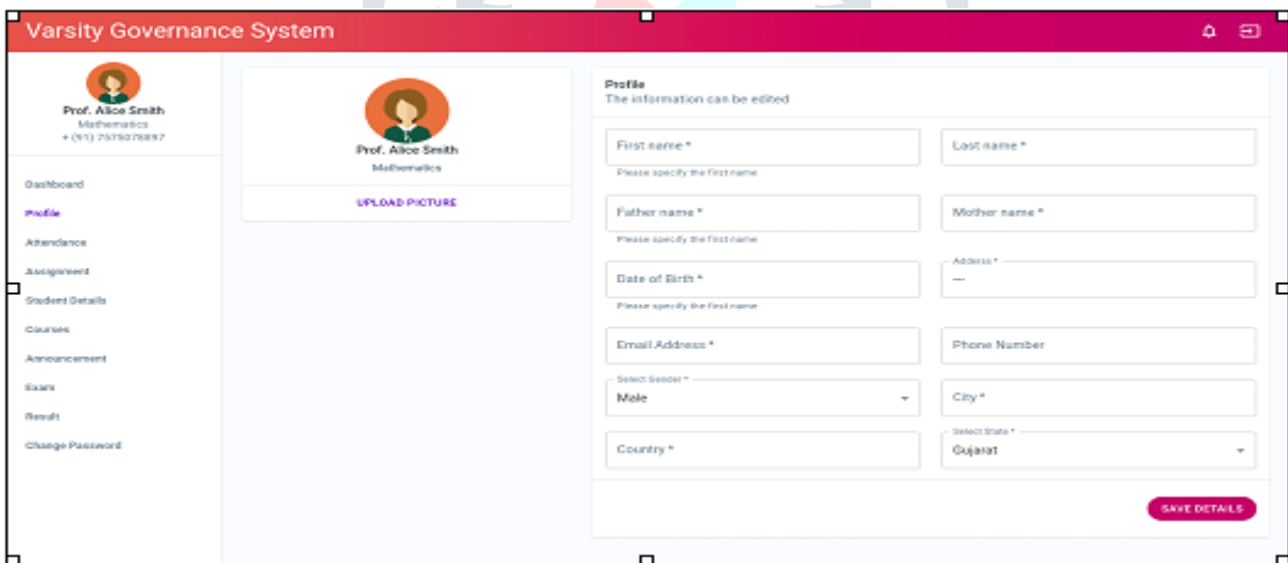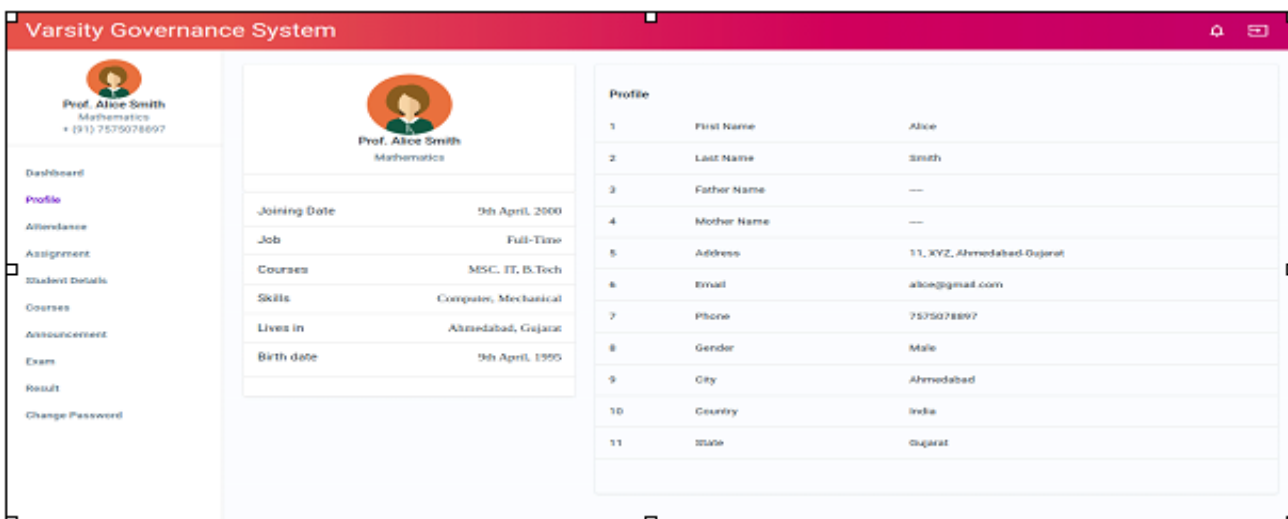


Figure 2  faculty Profile

Figure 3  Profile

Student:

The student is main agenda for any university because in every university student plays the vital role. information of the college, subject details, exam section information are easily accessible to the they can easily interact with university authorities and faculties.
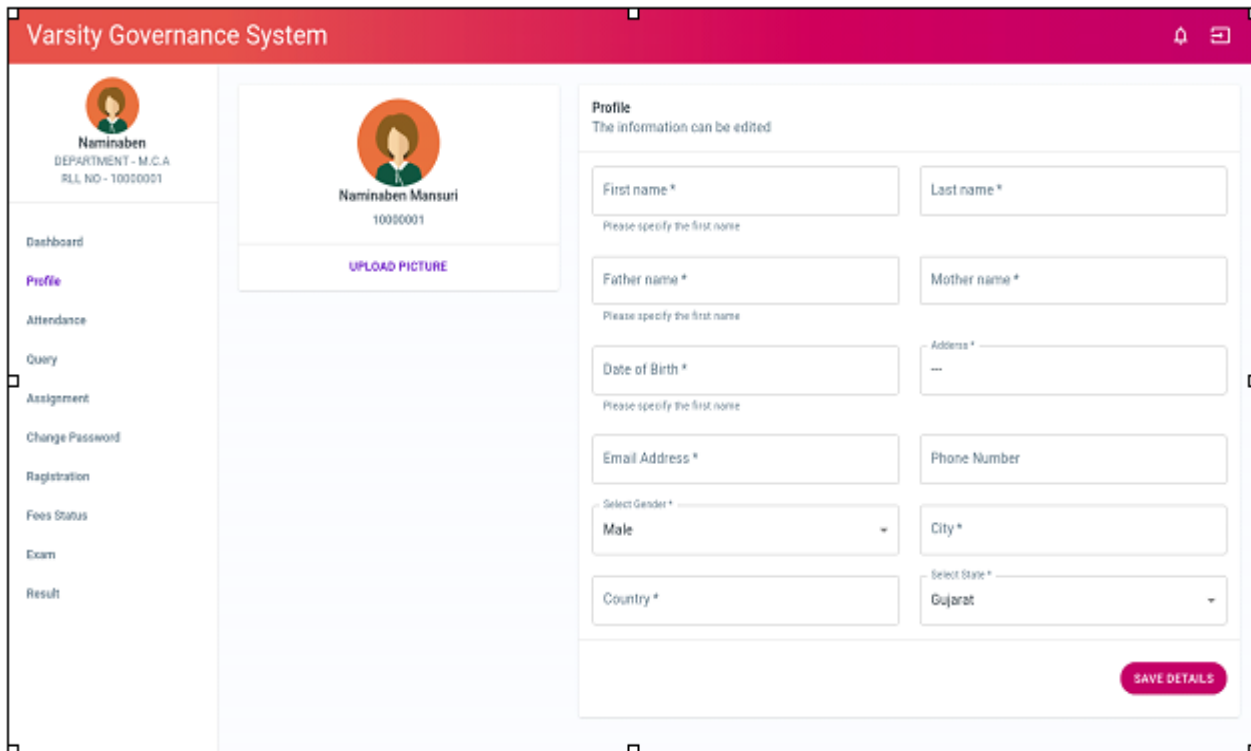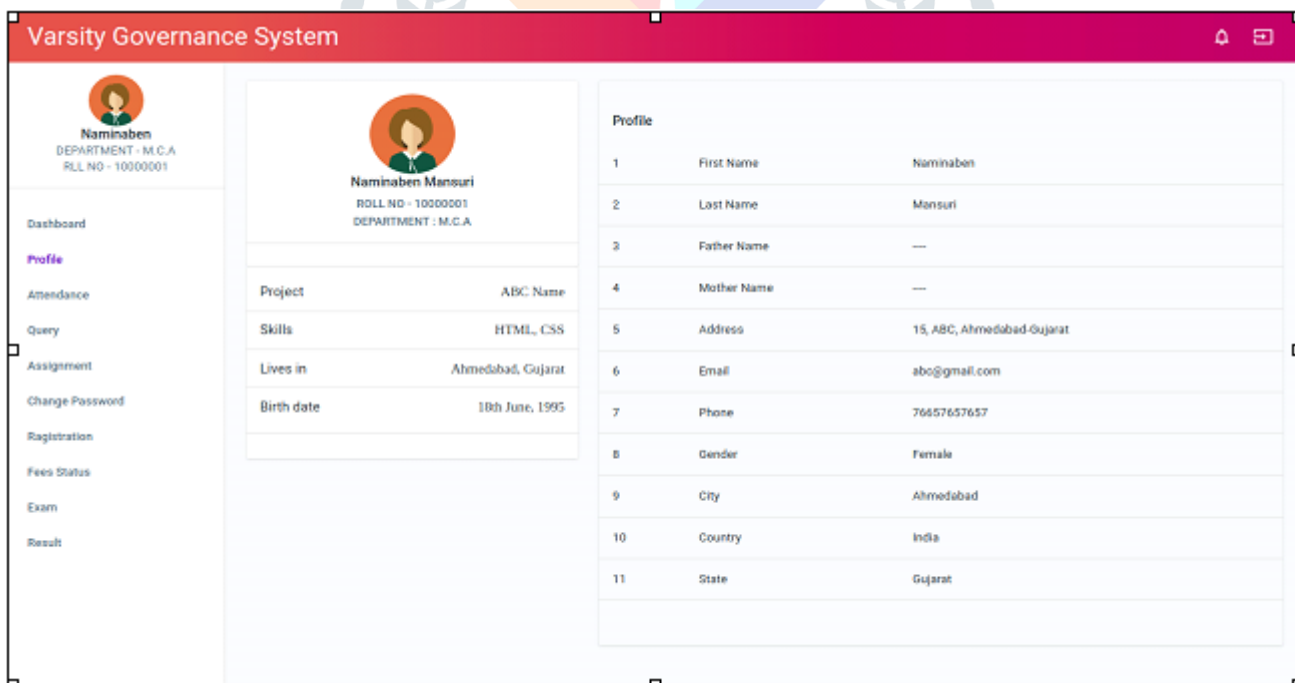


Figure 4  student Profile



Figure 5 Profile Details

- Conclusion:

This work mainly focuses on MERN Techniques to handle the code and other stuff. This is a paperless work. It can be monitored and controlled remotely. It reduces the man power required. It provides accurate information always.

All years together gathered information can be saved and can be accessed at any time. The data which is stored in the repository helps in taking intelligent decisions by the management. So it is better to have a Varsity Governance System. All the stakeholders, faculty and management can get the required information without delay. This system is essential in the colleges/hostels and universities.

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