

# GUJARAT TECHNOLOGICAL UNIVERSITY

Chandkheda, Ahmedabad

Affiliated



Gujarat Technical University



## SARDAR VALLABHBHAI PATEL INSTITUTE OF TECHNOLOGY, VASAD

A Report On-

### LANGUAGE GRADER

DESIGN ENGINEERING – 2B

B. E. III, Semester –VI

(Computer Engineering)

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## Introduction

Our domain of work is Natural Language Processing. It includes creating a software through which we can make people interact with Digital systems better and increase their language ability by interaction with the same.

We have made our project based on school students who are the main protagonists. They have a lot of load with their submission and hence they do not concentrate on developing their language skills. Hence our product will be helpful to the children of India to develop their language skills and become proficient speakers.

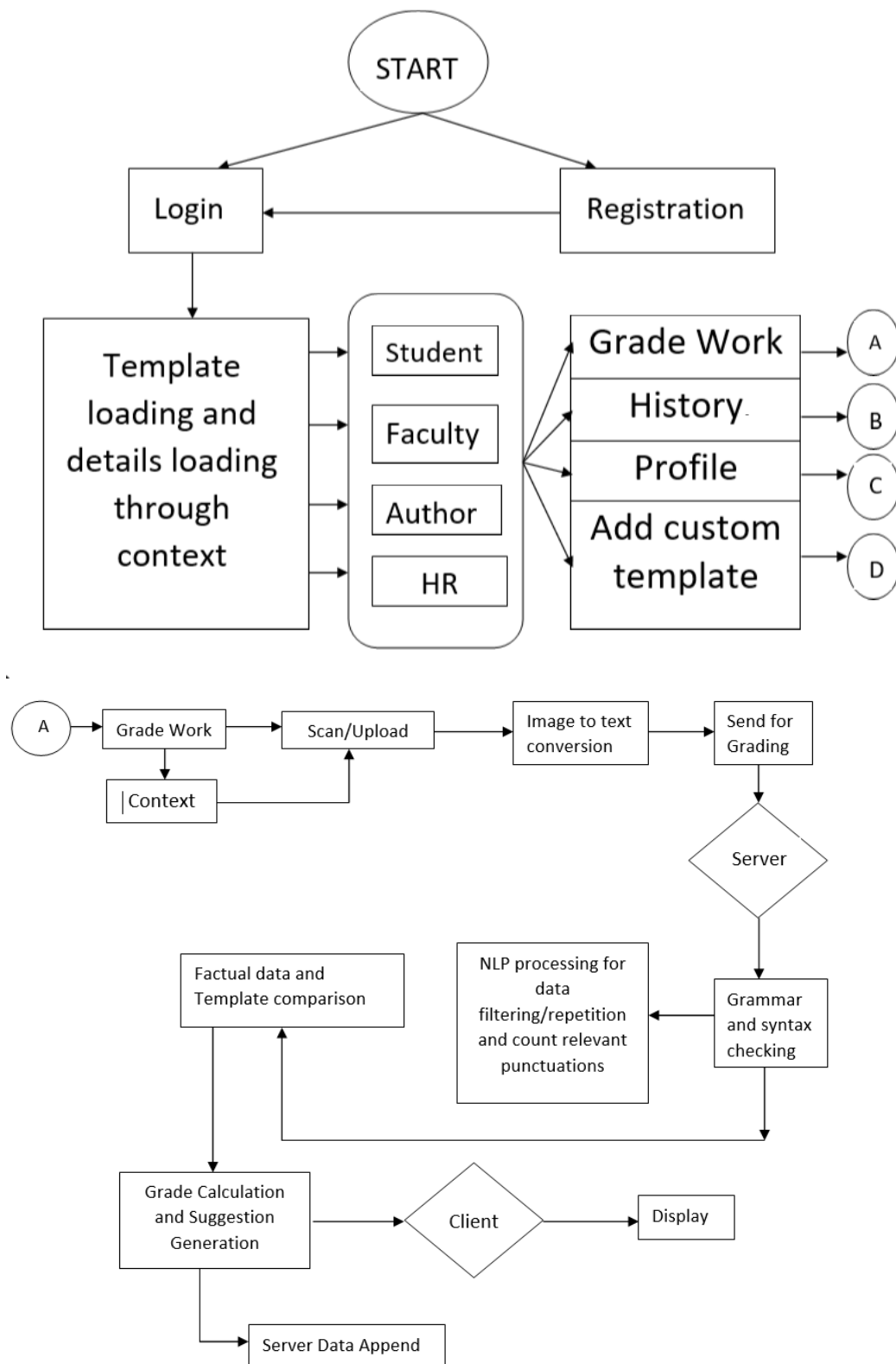
Our product caters to the users who do not have the resource to correct their language literature. It is advantageous to students in the village who have the resource of mobile and internet but don't have anyone to supervise and correct their mistakes.

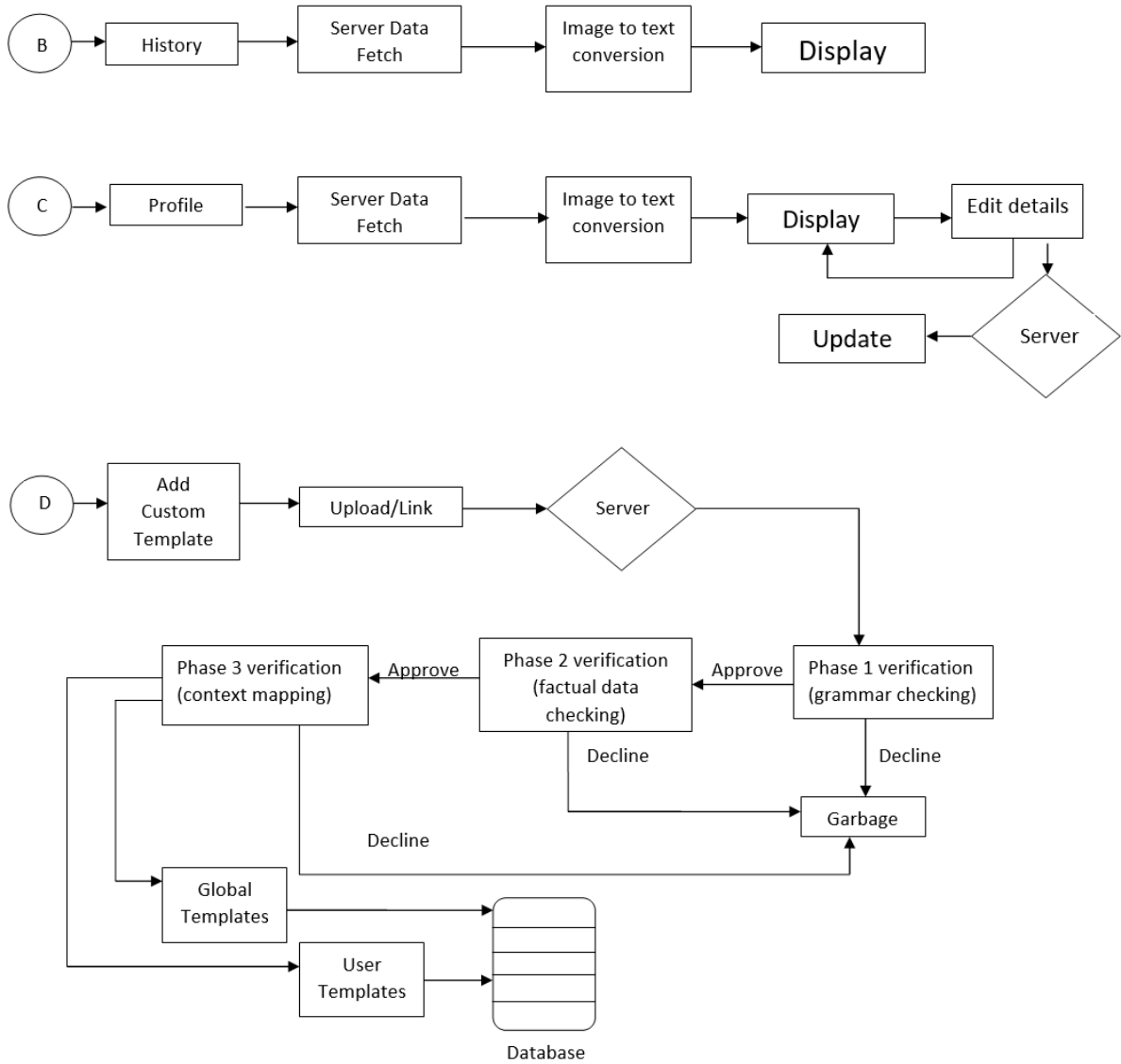
Responding to student papers can be a burden for teachers. Particularly giving feedback to a large group of students on frequent writing assignments can be pretty hectic from the teacher's point of view. We are creating a system that can be accurate in both providing the feedback as well as grading the performance and can also be time efficient. In our system the scores would be much more detail oriented than the ratings provided by two human raters.

Hence, our website or application will be creative and very helpful for today's fast learning environment of people.

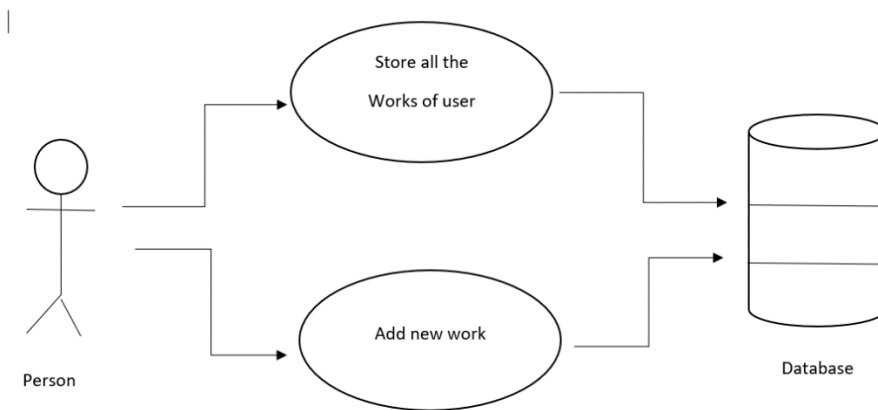
## Modelling and Analysis using Software

### Flow chart

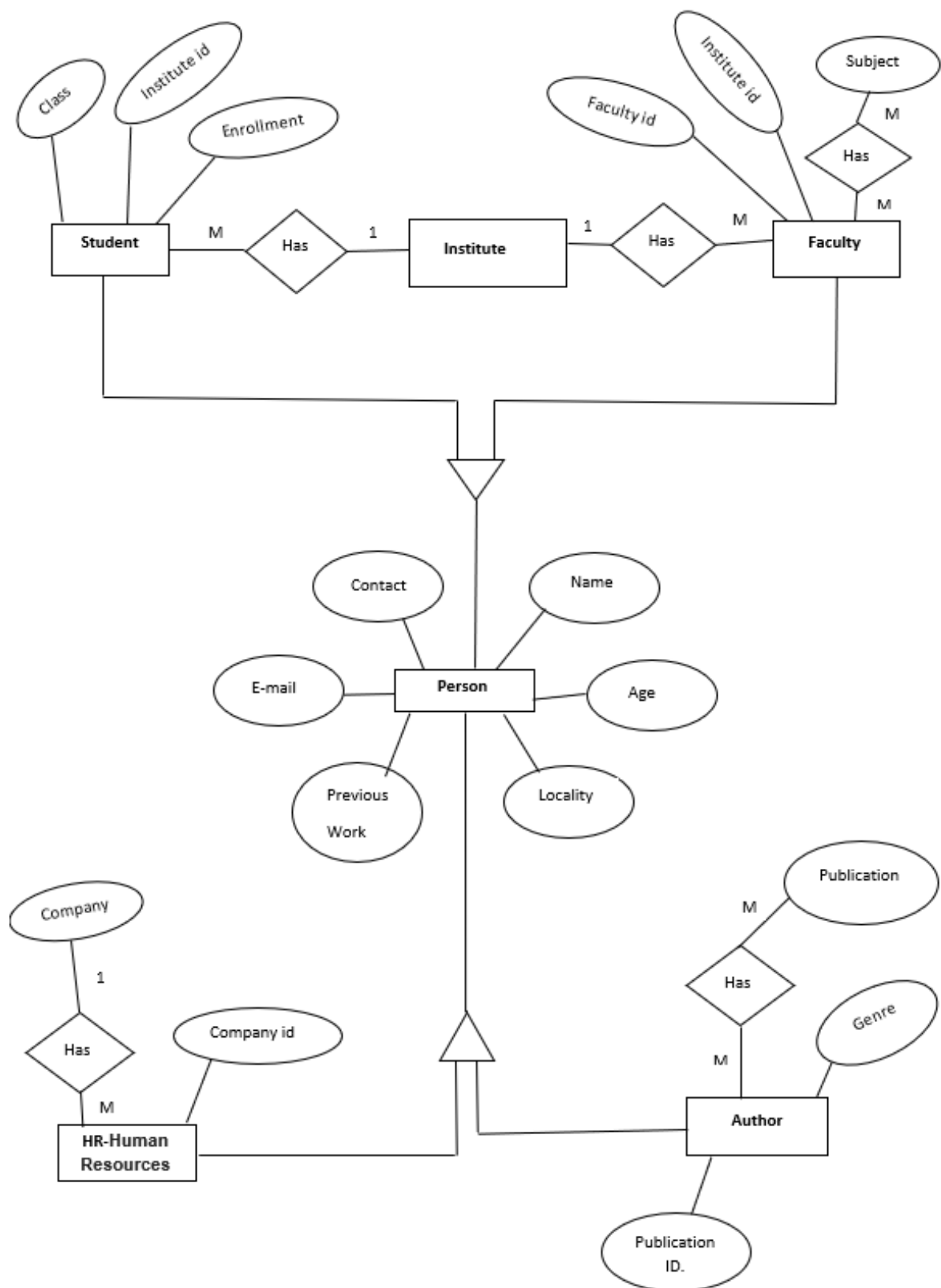




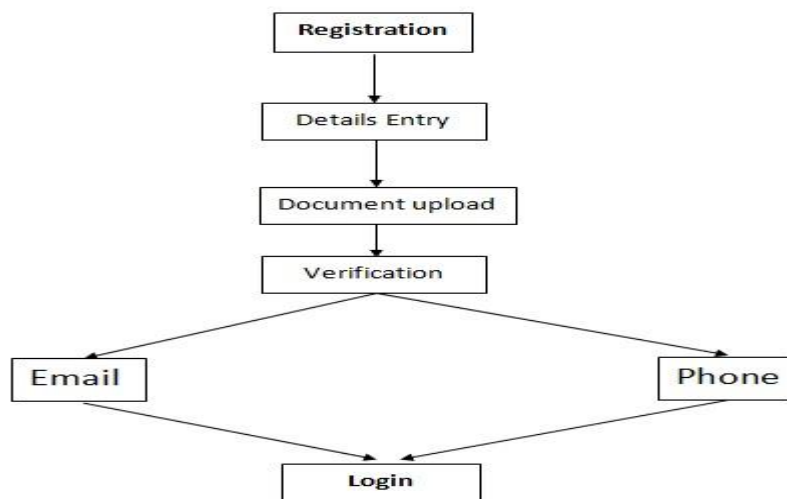
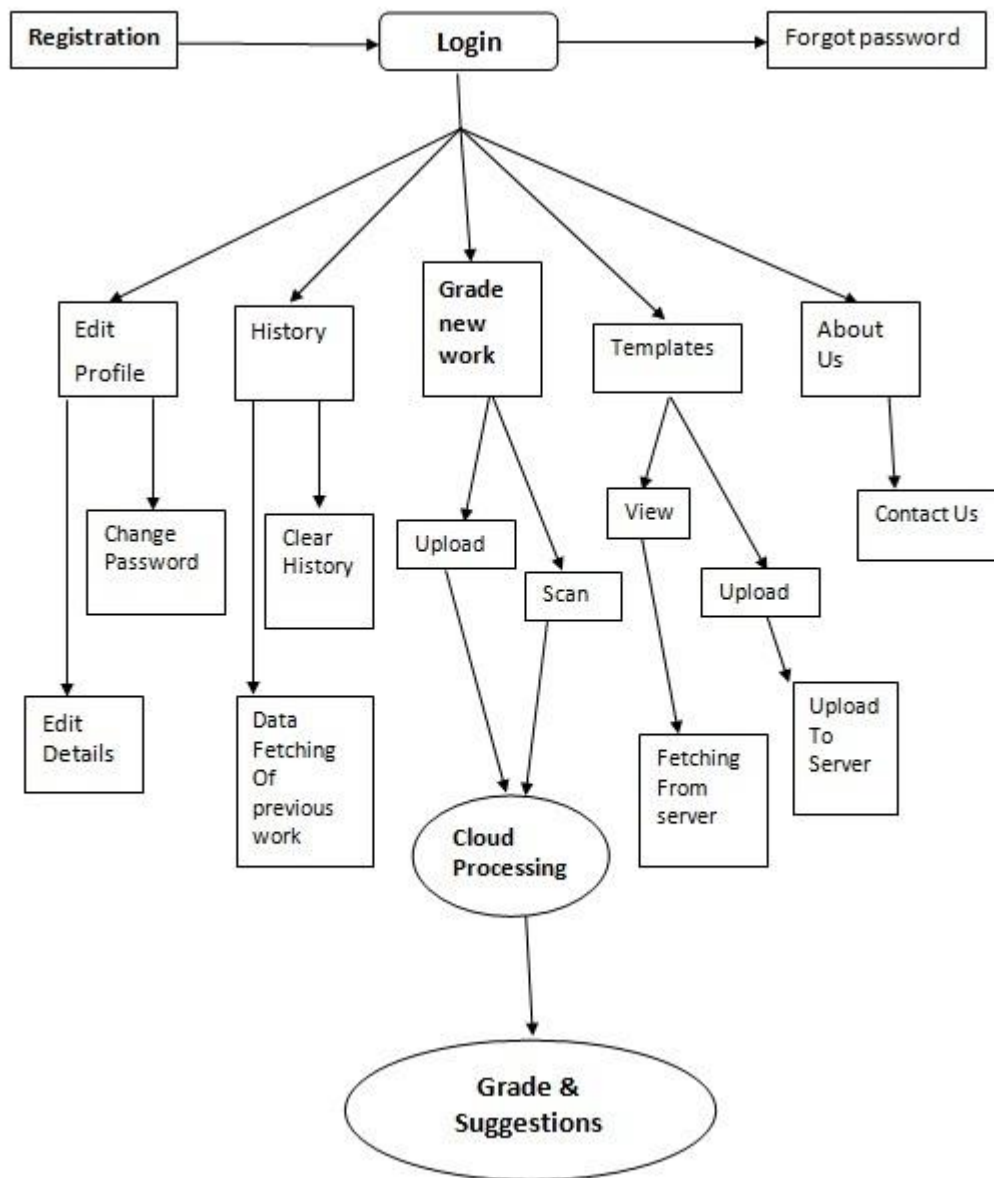
## Use Case Diagram:



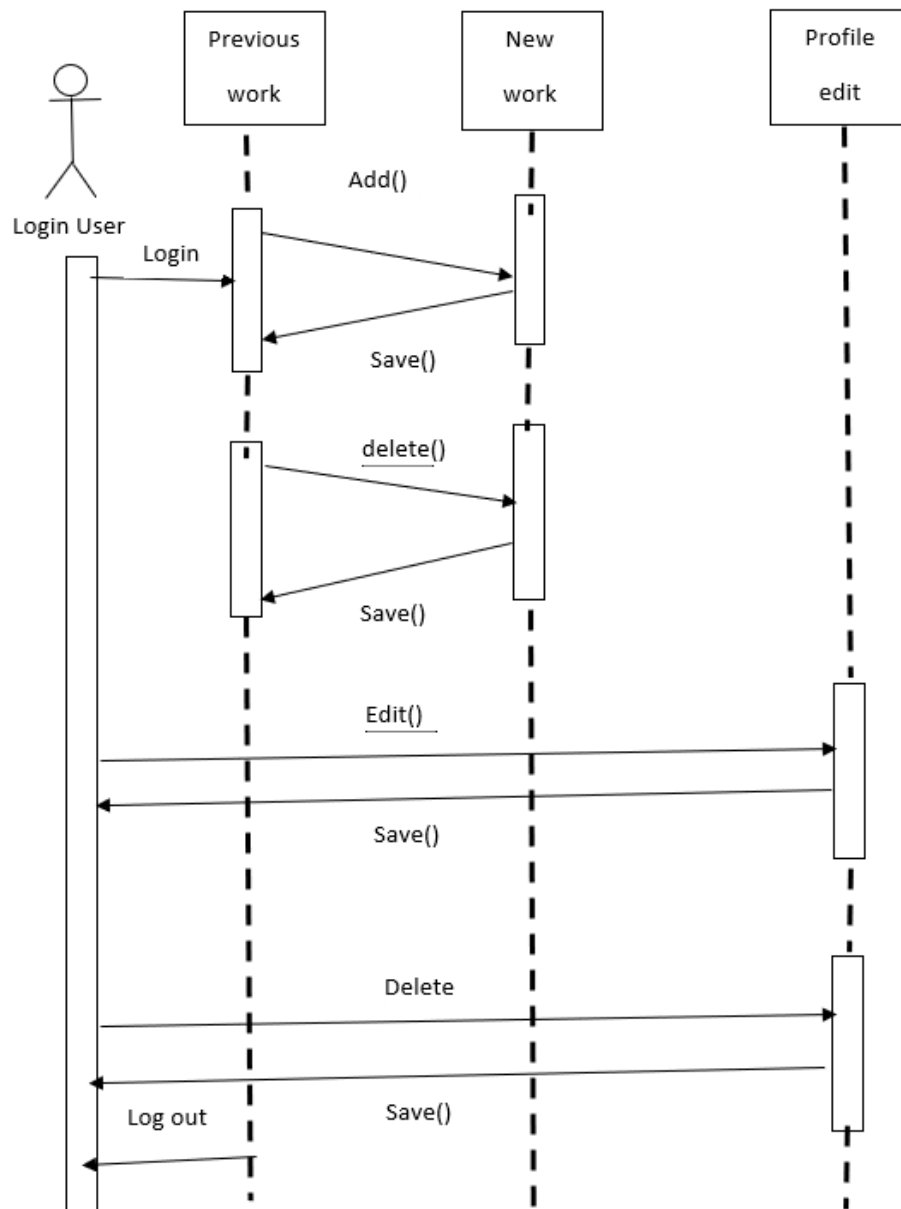
## E-R Diagram:



Activity diagram:

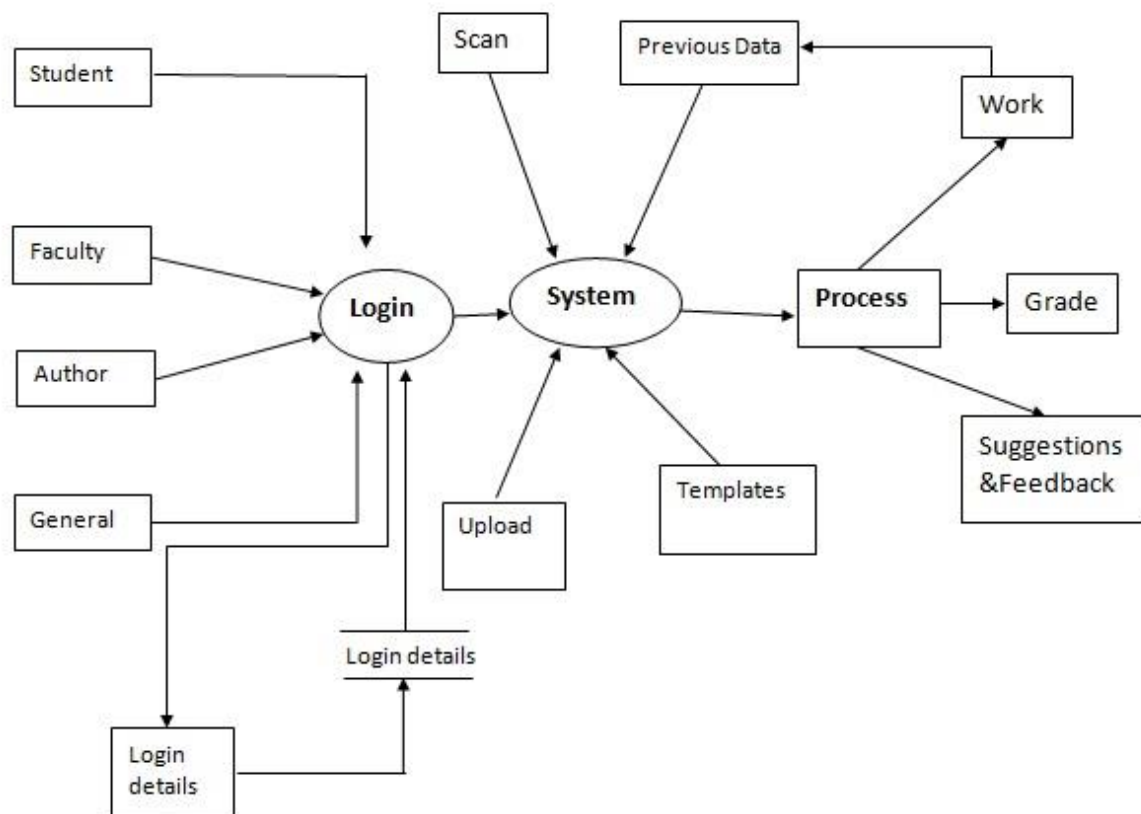


## Sequence Diagram





## Data Flow Diagram:



## Engineering Economics of Design

### Product Perspective

Our software is well-developed using HTML, CSS, JS ,Vue.JS technology, Python and Mysql. The primary requirement of our software is Mysql database and server running python.

Our hardware requirements are Computers or smart phone on client side and server capable of running instance of python server and Mysql server.

### Cost estimation

By definition, software cost estimation process is a set of techniques and procedures that is used to derive the software cost estimate. There is usually a set of inputs to the process and process uses the inputs to generate or calculate a set of inputs.

### Costing and Price

The project will cost around 25,000₹. In our project college server, Internet is necessary.

## Design for Reuse and Sustainability Use

### Design for use

The design phase involves converting the informational, functional, and network requirements identified during the initiation and planning phases into unified design specifications that developers use to script programs during the development phase. Program designs are constructed in various ways. Using a top-down approach, designers first identify and link major program components and interfaces, then expand design layouts as they identify and link smaller subsystems and connections. Using a bottom-up approach, designers first identify and link minor program components and interfaces, then expand design layouts as they identify and link larger systems and connections. Contemporary design techniques often use prototyping tools that build mock-up designs of items such as application screens, database layouts, and system architectures. End users, designers, developers, database managers, and network administrators should review and refine the prototyped designs in an iterative process until they agree on an acceptable design. Designers should carefully document completed designs. Detailed documentation enhances a programmer's ability to develop programs and modify them after they are placed in production. The documentation also helps management ensure final programs are consistent with original goals and specifications. Organizations should create initial testing, conversion, implementation, and training plans during the design phase. Additionally, they should draft user, operator, and maintenance manuals.

### Design for Sustainability

Database gets updated on time in order to give accurate results to user. Our Website can be accessed anywhere on the internet.

## Prototyping

### What is Prototyping?

Prototyping is getting ideas and explorations out of our head and into the physical world. A prototype can be anything that takes a physical form – be it a wall of post-it notes, a role-playing activity, a space, an object, an interface, or even a storyboard. The resolution of prototype should be commensurate with your progress in project.

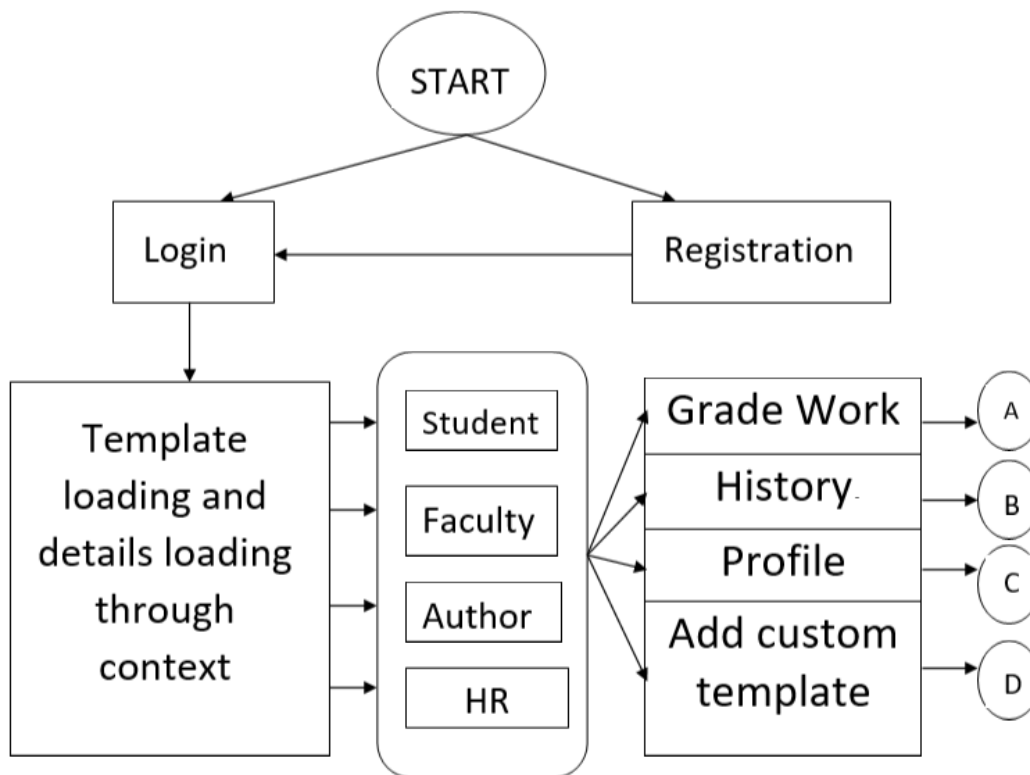
Prototypes are most successful when people (the design team, the user, and others) can experience and interact with them. What you learn from those interactions can help drive deeper empathy, as well as shape successful solutions.

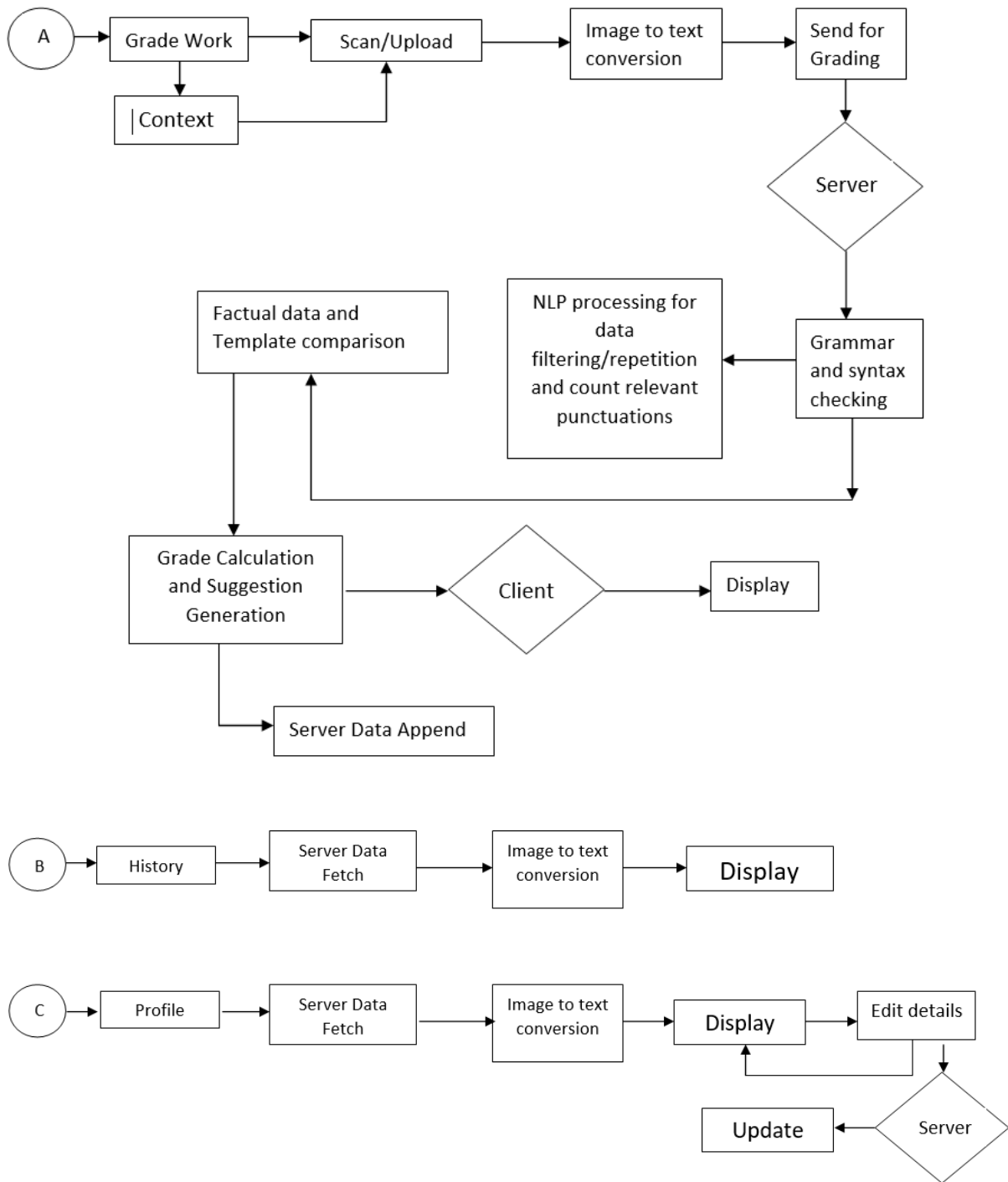
### Why Prototyping?

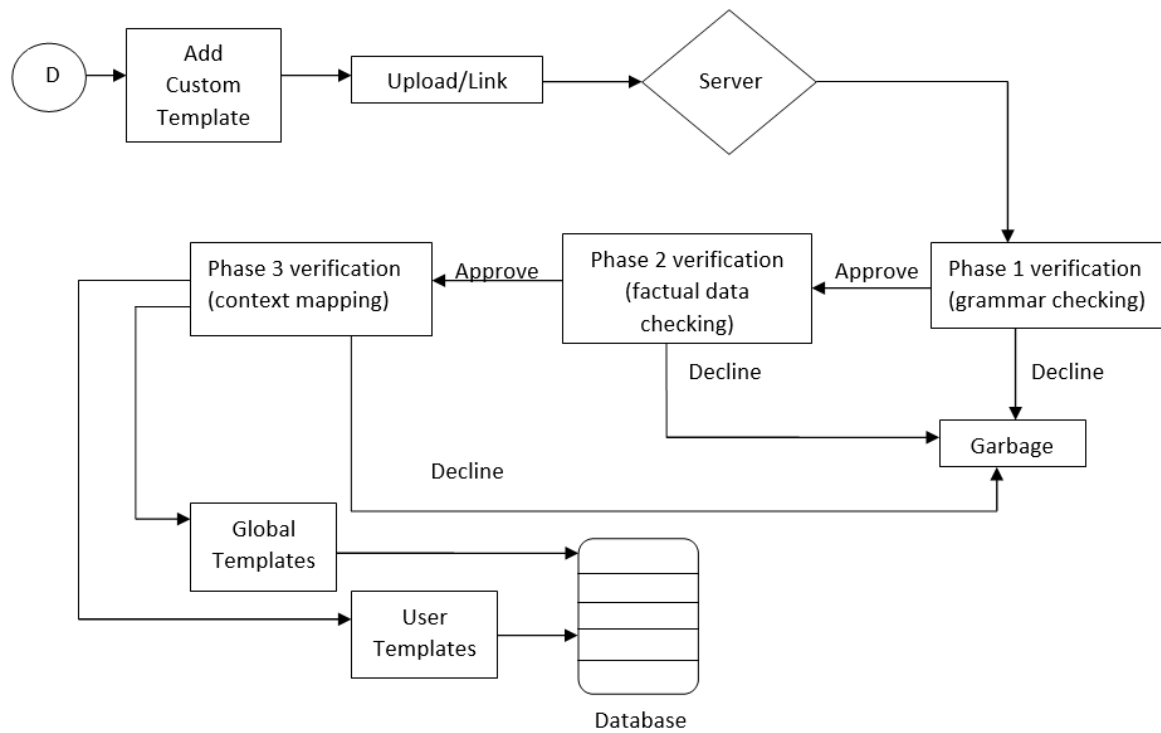
Traditionally prototyping is thought of as a way to test functionality. But prototyping is used for many reasons, including these (non-mutually-exclusive) categories:

- Empathy gaining: Prototyping is a tool to deepen your understanding of the design space and your user, even at a pre-solution phase of your project.
- Exploration: Build to think. Develop multiple solution options.
- Testing: Create prototypes (and develop the context) to test and refine solutions with users.
- Inspiration: Inspire others (teammates, clients, customers, investors) by showing your vision.
- Solve disagreements. Prototyping is a powerful tool that can eliminate ambiguity, assist in ideation, and reduce miscommunication.
- Fail quickly and cheaply. Creating quick and dirty prototypes allows you to test a number of ideas without investing a lot of time and money up front.
- Manage the solution-building process. Identifying a variable to explore encourages you to break a large problem down into smaller, testable chunks.

Prototype:








## Screenshots

**LANGUAGE GRADER**



**Email**

**Password**

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**Create New Account**

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**Phone Number**

**Select the Category:**

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Upload-Verify-Grade

# AUTOMATIC LANGUAGE GRADING

We are creating this for enhancement of proper English language

[Text Upload](#) [History](#)

## SERVICES

Text-checking and Grading



### Text-Upload

User can upload their content for grammar-checking and our product will parse it and give the grading to your content.



### Text-Checking

The uploaded content will be checked grammatically and our product will parse it and give the grading to your content.



### Text-Grading

The content will be graded and displayed to the user and user can ask for any queries.

## OUR AMAZING TEAM



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Word count: 105

Last edited: 31/05/2020



### Hello World

Cows are considered to be a sacred animal in the Hindu religion. The ardent followers of religion worship this animal like a Goddess. A cow has been honored with the status of a mother in Hinduism. This is why people refer to it as 'Gau Mata' which translates to Mother Cow. Many followers of religion consider it a sin to kill cows. Nowadays, India has a lot of organizations with the sole purpose of protecting cows. They work to help cows from any danger. They do not tolerate any kind of harm to cows. The government is also taking a lot of measures to protect cows from any injustice. People are coming forward in alliance to safeguard them. They do not prefer any kind of inappropriate behavior with cows. We must work together to protect cows and become the voice for the unspoken.

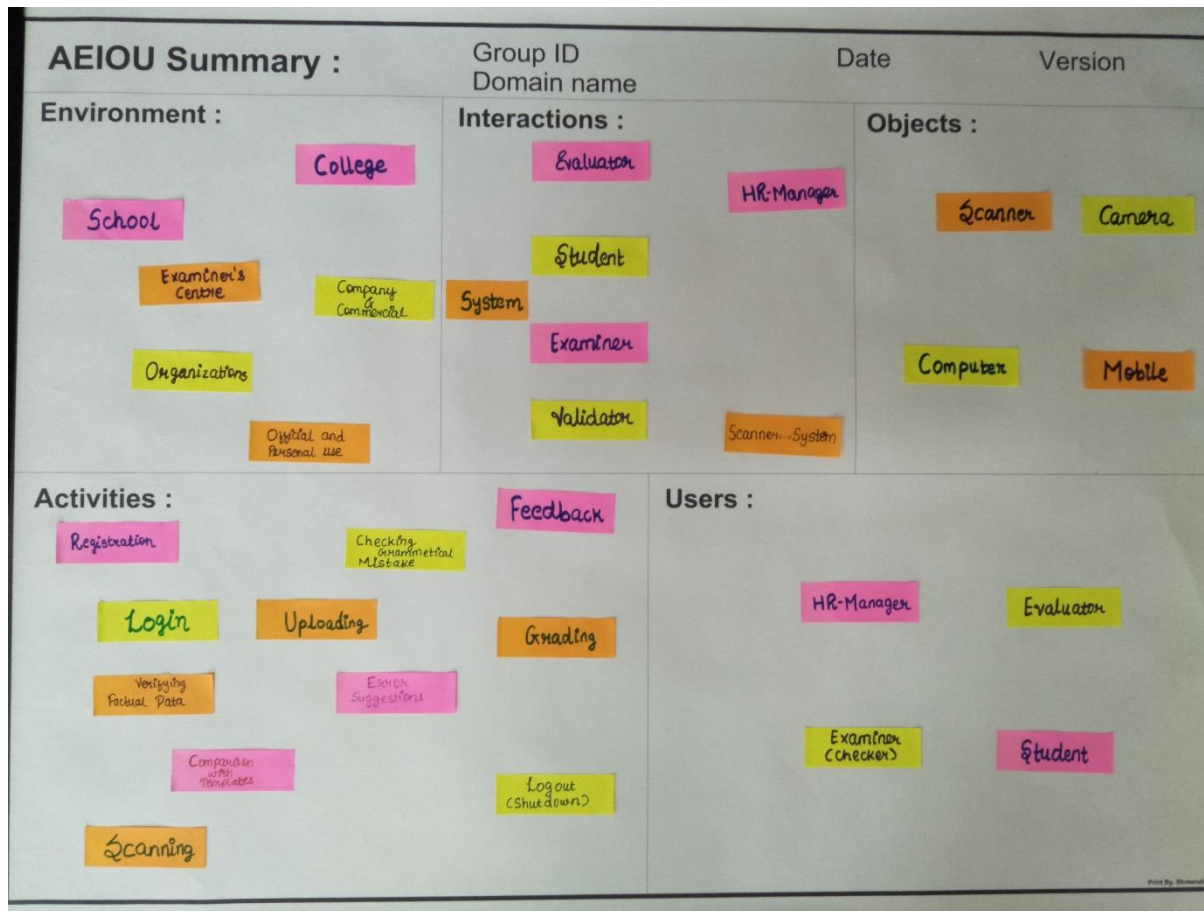
### Feedback Result

Spelling error	10%
Word Repetition	5%
Redundant words	5%
Readability	5%



# Appendix

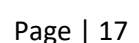
## AEIOU



AEIOU is a tool to help interpret observations gathered by ethnic practices in the field.

- **Activities:**
  - Through our app or services people will be able to access our databases and would be able evaluate and grade textual contents easily. For the same users would have to upload their textual content. Further users would have to complete their registration formalities before using our app.
- **Environment:**
  - Our product has multiple uses in the different environments like school, colleges, companies and so on. Any person affiliated with the relation to any literature material will be using our product.
- **Interactions:**
  - We are creating a network where people at different level can easily communicate, like Students, Evaluators, HR Managers and so on, so they can share their knowledge in literature, so that it would be will be beneficial to everyone and everyone would learn.
- **Objects:**

- ## Mind mapping canvas



satisfaction to them. It should be effective to the customers and their level of content should be matched in order to make them develop.

Lastly we thought of the problems in our product. Sometimes due to system failure there isn't any response and hence the writers who are eager to get their content checked become frustrated. Also incomplete feedback about their content is given which bring down the satisfaction level of the writers. It might happen that in particular area; the language is not so preferred, and hence, writers and enthusiasts cannot learn and gain knowledge.

## Empathy canvas

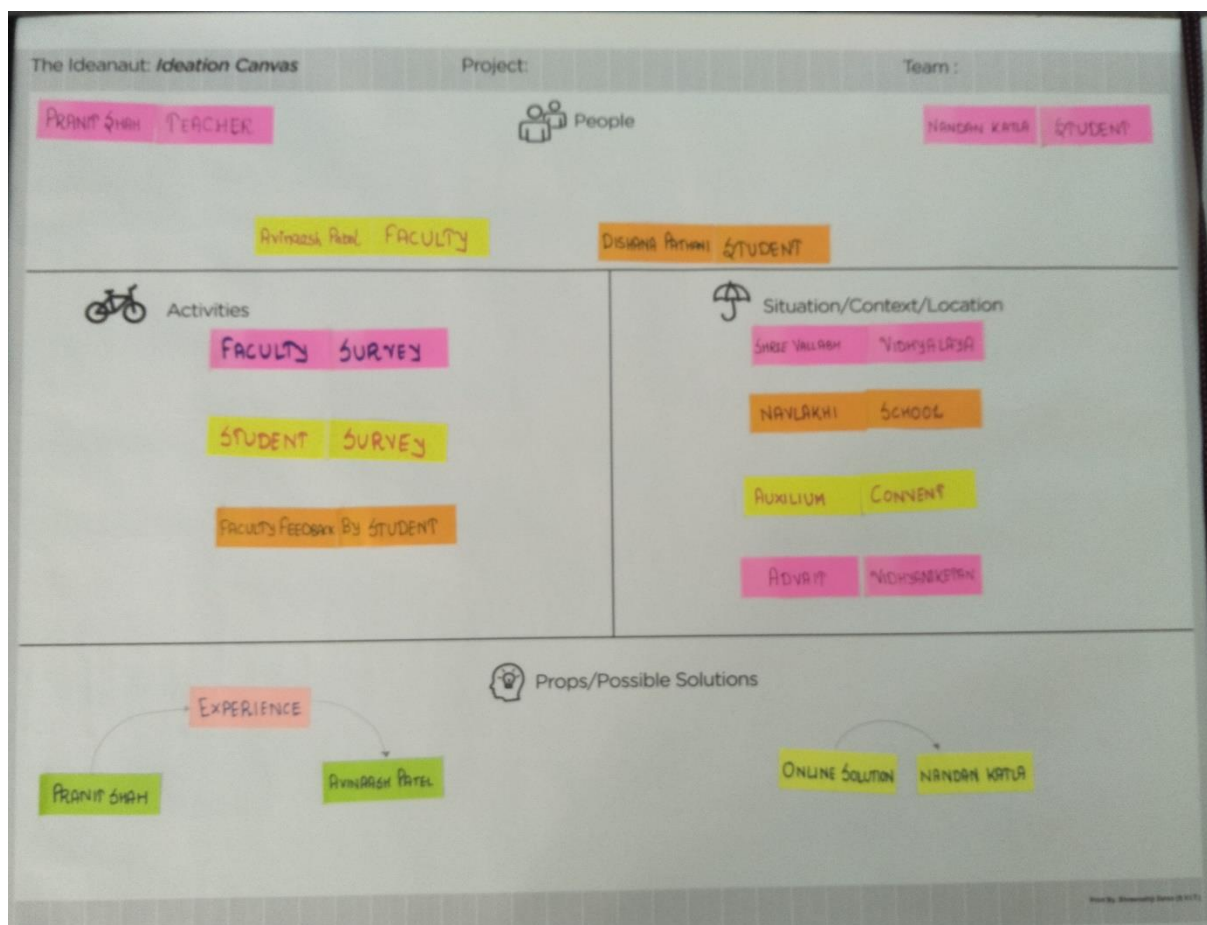
USER		STAKEHOLDERS	
FACULTY	STUDENT	AUTHOR	COLLEGES SCHOOLS PROFESSORS
<b>ACTIVITIES</b> SURVEY OF ASSESSING PAPERS AMONG TEACHERS SURVEY OF PREFERENCE OF SUBJECTS AMONG STUDENTS			
<b>STORY BOARD</b> <p><b>HAPPY</b> On the visit to Shree Vallabh Vidhyalaya, we encountered an English teacher, named Pankaj Singh who was proficient in English, was preparing for PhD in English essays and had much experience in creating and grading essays and reading contents. We asked and inquired about the time he took to check and grade 200 papers which contained an equal amount of essays, to which he replied it took him 2-2.5 hrs, i.e. 20-15 minutes. Hence, he could easily grade essays and save time for his personal life preparations.</p> <p><b>HAPPY</b> On our visit to Nalakh School, we encountered an 8<sup>th</sup> grade student, named Diksha Bhatnagar, whom we surveyed. Upon our data, we noticed she mentioned she preferred English language subject more than any other language subject. We asked for the reason to which she replied as to it was easy for her to firmly grasp the language as her mother would frequently help and check her notes and corrected her if she had done any grammatical mistakes.</p> <p><b>SAD</b> On the visit to Auxilium Convent School, we encountered a fresher recruited English faculty, named Avinash Patel, who had a nice grip over the language, but was inexperienced as this was his first job. Upon our survey, we noted that he took over 4 hrs to check and grade 200 papers which contained equal amount of essays. This bothered him and actually demoralized him as he couldn't adjust his time for his personal work, which resulted into his depression filled life.</p> <p><b>SAD</b> On our visit to Adarsh Vidhyapeeth, we surveyed a 9<sup>th</sup> grade class. Upon noticing the results, we noted a student named, Nandan Khatke, who said he didn't prefer English language subject as it was hard for him. Inquiring further, we found that his preference was related to his availability of supervisors. He didn't prefer the subject as no one was there to help him and correct him when he made mistakes. This generated his hatred towards English language subject as he neither could score marks nor become proficient in it.</p>			

Print By: Shreenathi Zorok (5.3)

An empathy map is a collaborative tool teams can use to gain a deeper insight into their customers. Much like a user persona, an empathy map can represent a group of users, such as a customer segment.

- User is who is going to use our solution, research or analysis.
- In this stage, we find the various users, which are directly or indirectly related to our project
- In this canvas different conditions of our project are discussed that is how our project is useful in different situations.

## Ideation canvas



Ideation basically means to form ideas. Whatever we have imagined thought or conceived we need to think that whether practically it is possible or not. We need to think on what tools or props would be required. It allows our idea to give implementation in real life.

### Situation / Context / Location:

These are the places we went to visit during our search for the problem. All of them were schools and we wanted to solve a problem of our juniors, the next generation.

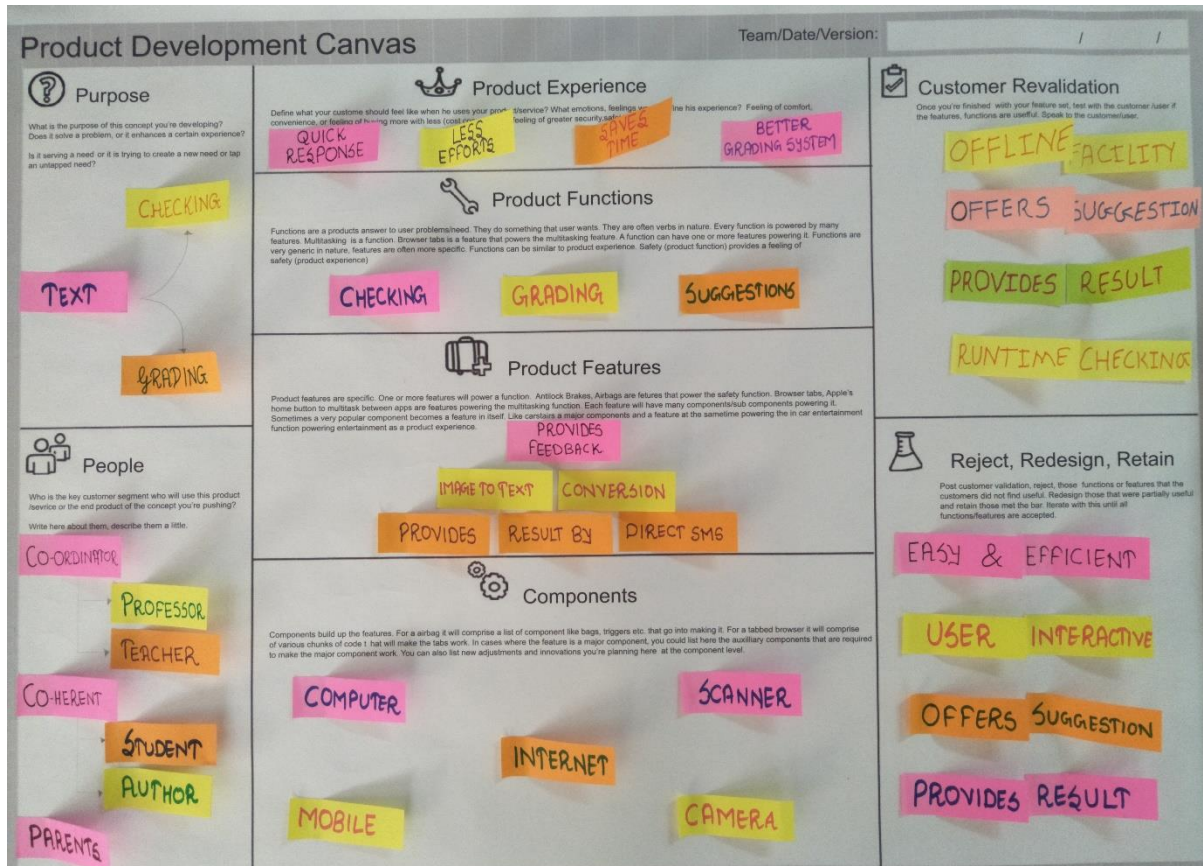
### Props:

Following props/possible solutions we found to the existing problems:



- Share experience of Pranita with Avinaash.
- Help nandan by giving an online general solution to his problem.

## Product Development Canvas



Product development is the process of designing, creating and marketing new products or services to benefit customers. Sometimes referred to as new product development, the discipline is focused on developing systematic methods for guiding all the processes involved in getting a new product to market.

- People and Product experience
  - After combining and refining the ideas in ideation process, we came to one problem definition i.e. - "A language checking system is needed as to make sue the people can learn and develop without the need of expensive resources". Thus we need to make such a system that will automatically evaluate your language level and guide to perfection.
  - Hence this system is useful for those who wish to improve their language level and prose proficiency. People like working Professors, teachers, students, authors can use this service.
- Purpose:
  - Hence using this system, users can save time, get quality feedback and useful suggestion will help them develop. Hence language will be easily available to everyone

- **Product Functions:**
  - Our system has many functions and hence is easy to use. Our product provides checking for grammatical mistakes, factual mistakes and language template mistakes and grades the content according to the templates provided. Further it will also provide useful suggestions for the needed to improve and develop their language prose.
- **Product Features:**
  - Our system has some very useful features like image to text conversion for going digital India, providing feedback so as to make sure the user stays in a healthy state of mind, and for teachers, an in-built SMS feature to make sure parents know what to do to improve their child's language skills.
- **Components:**
  - We are using an online database for storing templates and maintain that database. So we are going to use different programming language. We will make sure that our system is available to every platform so that every user can take advantage of our system. Further, a scanner or camera to make sure people don't waste time in converting physical paper work to digital work and to promote DIGITAL INDIA.
- **Customer revalidation:**
  - When we went to different customers for revalidation of our product, some revalidation were given such as to provide offline facility. For example if a student has registered in our app and if internet facility is not so strong in the area where the students reside. Other were such as it should provide grading and suggestions during its runtime execution. Other flaws were to offer suggestions and history result display.
- **Reject, Redesign, and Retain:**
  - We will ensure that our users have the best interactivity with our app for which we are planning on improving the user interactivity. Further we'll make it easier and more efficient so that to fit all kinds of people including elderly and the young generation.

**Purpose / Product concept**

- LANGUAGE
- CONTEXT

**During BE II / Stage I**

- FLASK
- NLTK
- TENSORFLOW
- ORANGE
- SCANN
- NEURAL NETWORK
- GRADIENT
- INTERNET ACCESS

**During BE III / Stage II**

- RANDOM
- FOREST
- CLASSIFICATION
- CONVOLUTION
- NEURAL NETWORK
- AXIOM

Other nodes: DJANGO, ANGULAR.js, ZOOKEEPER, HADOOP

1. Theories/Tools:
  - a. NLTK and TensorFlow
2. Design Standards/Principles
  - a. Neural Network
  - b. Machine Learning
3. Software Skills
  - a. Python
  - b. Orange

1. Theories / tools
  - a. Axios
  - b. Django
  - c. Flask
2. Design Standards/Principles and Experiments
  - a. Random Forest classification
  - b. Convolutional Neural Network
3. Software/Skills
  - a. Angular.JS
  - b. Vue.JS
  - c. JavaScript
  - d. HTML
  - e. CSS
  - f. Node.JS

## Conclusion

The initial cost of digitization is high but once digitization is introduced then cost to manage the collection will be cheaper. This project will make it easy and time saving for all the students and teachers and professionals out there to verify and correct their mistakes and learn new languages by practice. It will make the work of professionals and teachers faster and better with error-prone results.