

HERBIVICUS: A FULL STACK WEBSITE WITH CHATBOT AND GOOGLE API

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in Computer Science and Engineering

by

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
SCHOOL OF COMPUTING

SATHYABAMA

INSTITUTE OF SCIENCE AND
TECHNOLOGY (DEEMED TO BE
UNIVERSITY)

Accredited with Grade "A" by NAAC | 12B Status by UGC | Approved by
AICTE

JEPPIAAR NAGAR, RAJIV GANDHI SALAI, CHENNAI - 600 119

March 2021



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Khushboo Kumari (37110343)**, **Aishwarya Srivastava (37110023)** who carried out the project entitled “HERBIVICUS: A FULL STACK WEBSITE WITH CHATBOT AND GOOGLE API” under my supervision from November 2020 to March 2021.

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DECLARATION

I **KHUSHBOO KUMARI(37110343), AISHWARYA SRIVASTAVA(37110023)** hereby declare that the Project Report entitled “**HERBIVICUS: A FULL STACK WEBSITE WITH CHATBOT AND GOOGLE API**” is done by me under the guidance of **Dr. T. Sasikala, M.E., PhD.**, Department of Computer Science and Engineering at Sathyabama Institute of Science and Technology is submitted in partial fulfilment of the requirements for the award of Bachelor of Engineering degree in Computer Science and Engineering.

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PLACE: Chennai

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Abstract

Web development can go from creating a basic single static page of plain content to complex online web applications. Web development usually alludes to web designing, website architecture, customer/worker side scripting. As we probably are aware, software engineering joined with ecological science dominant part centres around topographical interaction affecting earth, climate, earth, woodlands and water bodies. Similarly, this venture centres after empowering individuals towards ranch and encouraging them by starting from their home itself. The venture is entitled as "Herbivicus" . The goal of "Herbivicus" is to illuminate various parts of plants. This time individuals have thought little of the force of vegetation. From expanding oxygen levels to lessening feeling of anxiety, they can do everything and change one's home into green desert garden. The highlights associated with this undertaking are Front web-development, chatbot (Artificial knowledge), structures, APIs and UI planning. There are many people in the world who has colour blindness problem so to overcome that colour theory has been implemented. Last yet not the most un-this undertaking spreads a word to re-establish greenery as well as is a stunner for individuals to comprehend the value of house plants.

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LIST OF ABBREVIATIONS

- CSS: Cascading Style Sheet
- CV: Curriculum Vitae
- DBMS: Database Management System
- HTML: Hypertext Mark-up Language GUI: Graphical User Interface
- ISO: International Organization for Standardization
- SQLite: Structured Query Language
- RDBMS: Relational Database Management System
- PHP: Hypertext Pre-processor
- NLP: Natural Language Processing
- MVC: Model View Controller
- MVT: Model View Template

CHAPTER 1

INTRODUCTION

1.1 Introduction

A houseplant is a plant that is filled inside in spots like homes and workplaces, in particular for embellishing purposes, however contemplates have likewise shown them to have positive mental impacts and just as help with indoor air cleaning, since certain species, and the dirt dwelling microorganisms related with them, decrease indoor air contamination by retaining unpredictable natural mixtures including benzene, formaldehyde, and trichloroethylene. While by and large poisonous to people, such contaminations are consumed by the plant and its dirt dwelling organisms without hurt. Basic houseplants are typically tropical or semi-tropical epiphytes, succulents or desert plants. Houseplants need the right dampness, light levels, soil combination, temperature, and mugginess. Too, houseplants need the legitimate compost and right measured pots.

That is what inspired us to come up with this project, we have developed a web-based application that showcases all the information about house plants and it's benefits. If you want to know about any house plants then there will be lots of information related to that such as its scientific and household name, pictures, amount of water and sunlight required for the growth of plant, from where to get that plant and many more.

The main highlights of this project are chatbot, colour theory and Google location, where chatbot maintains the communication with the users and provide them with the necessary as per their requirement, colour theory implementation helps colour blind people to see the mixture of colour and google api helps the end-user to get the details about the nurseries where the house plants is currently available.

Full stack development is a part of web development which broadly refers to the tasks associated with developing websites for hosting via intranet or internet. It is the development of a complete application both the front end, which we refer to as the client-side, and back-end the server-side. Due to the introduction of artificial intelligence there have been drastic changes in the field of Full Stack Development and how it has affected the development. Artificial intelligence consists of various services and has many advantages.

1.2 Aims of Research

People in contemporary society spend 80% to 90% of their time indoors every day. Thus, having a comfortable indoor environment with favorable indoor air quality is imperative, as indicated by the increasing prevalence of sick building syndrome. In the United States alone, roughly 27 million office workers are at risk of sick building syndrome, and 30% of new buildings worldwide are associated with indoor air pollution problems. Moreover, indoor air pollution is generally 2 to 5 times worse than outdoor air pollution.

This may be one of the reasons that people in contemporary society are experiencing increasingly severe physical and mental health problems, along with declining general wellbeing. By contrast, exposure to nature is considered beneficial to physical and mental health. This is why people often grow plants indoors to improve the quality of their living environment and workspace, because plants represent nature.

The main aim of the research is to develop a full stack website where people can find all the information about the house plants, get the location of nearby nursery and talk to chatbot springbot to get instant reply and help according to their need.

1.3 Objectives of Research

The objectives of this research are:

- To detect and identify the house plants which people might need in their life.
- To design, develop and implement an effective and efficient website.
- To develop a one stop platform where people can search via search bar, solve queries through the chatbot and use google map for navigation.

- To minimize the time consumed in searching process and provide 24/7 accessibility

1.4 Scope and Limitations of the Research Work

Some of the features of this system are:

- It lets user download the plant guide which consists all the information about plants.
- End users can use google map for ease in navigation.
- It keeps information about people visiting the website and using chatbot.
- Communication between machine and human being.
- It contains feedback mechanisms.

Every research or study has its own challenges and consequently, this research work has its limitations. Ordering plants online is not included in this project.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This reviews some of the works various researchers have provided in an attempt to explain the concept of manual or traditional ways for job procurement. It also sells at the relationship of the proposed research for purposes of good representation and critical review of the existing literature and also critically examines the process of employee recruitment in an organization and from the perspective of human resource management and compare to that of online processes.

There have been lot of full stack website project and chatbot features but not included all together. Nowadays, artificial intelligence is emerging rapidly and it is also very useful as people find it very to use. The work that we looked up is to combine the chatbot, google map and search bar in the full stack website. It is a one stop destination for plant likers to get to know each and every detail about the house plants, it's uses and also from which nearby nursery to buy them. If any end-user has any doubt then they can clarify the doubts with the chatbot.

These applications had a few drawbacks therefore, the approach we focused on was making the chatbot and user interface more interactive and fix the drawbacks that the other chatbot and full stack websites had.

The paper “Desirable Features of a Chatbot-building Platform” by Saurabh Srivastava et all [1], shows the desirable features of commercial platforms where chatbots can be created using different mechanisms. It could be implemented using both the IT professionals and Non-IT professionals. It is doing the relative comparison between the few professional platforms and their hierarchy. They assessed the stages for all the highlights at the each level. They evaluated the stages on a size of 0 to 1 for each include. In the event that the element was not accessible on the stage, they relegated an estimation of 0. In the event that the component was accessible and simple to utilize, we doled out an estimation of 1. For situations where a highlight was either mostly present, or, its use was definitely not simple, they allotted an incentive somewhere in the range of 0 and 1, with three diverse middle of the road levels - 0.25, 0.5 and 0.75.

In the paper “A Method of Optimizing Django Based On Greedy Strategy” by Jian Zhou et al [2], they provide an approach to optimize the Django framework using greedy strategy. It is focussing on the memory efficiency as the runtime of python is less efficient. It refined three defects of Python VM's integer management, and then improve the memory usage efficiency of Python VM.

The paper “The New Era of Full Stack Development” by Akshat Dalmia et al [3], mark-out the new technologies that can be used in the development of full stack website such as using cloud. Their study shows the advancement of a complete application both the front end, which we allude to as the customer side, and back-end the worker side. Because of the presentation of distributed computing there have been radical changes in the field of Full Stack Development and how it has influenced the turn of events. Distributed computing comprises of different benefits and has numerous preferences. They have described so many network topologies and the importance of cloud computing in order to make the full stack website more advanced in the new era.

The paper “A Django Based Educational Resource Sharing Website” by Adamyia Shyam et al [4], delineates a site model with the assistance of which Students can have the option to get to class notes, earlier year question papers, prospectus, and can sell their old books from a similar advanced stage too. The paper additionally portrays the part of programming in task improvement. The task is created on Django Framework; the backend improvement is in Python, Jinja2 and SQLite. The frontend comprises of HTML, CSS and Java. the venture is created utilizing the appropriate programming measure, following the Iterative Model of SDLC. The methodology utilized in the System Development Model can act as a guide for the improvement of comparable sorts of Web Applications proficiently. The venture is created utilizing the appropriate programming measure, following the Iterative Model of SDLC. The methodology utilized in the System Development Model can act as a guide for the improvement of comparable sorts of Web Applications proficiently.

In the paper “The Influence of House Plants on Indoor CO₂” by Hakan Sevik et al [5] here, the investigation pointed toward deciding the impact of carbon dioxide (CO₂) in the interior climate of various indoor plants as the new ascent in urbanization has prompted expanded populace thickness, especially in metropolitan zones.

Thus the number of individuals per unit zone has expanded.

These days, metropolitan individuals spend in any event 80% of their lives in indoor conditions as a result of expanded lodging and evolving life conditions. The investigation was led in a plant development chamber that was not in contact with outside air and whose inner volume was known. The light and temperature states of the chamber were resolved autonomous of the outside climate. Their study also describes that how natural conditions impressively impact rates of photosynthesis of plants and along these lines their impact on CO₂. Hence, consideration of variables, for example, temperature, light, plant size, and leaf structure in future research is significant for figuring out which plants are more successful in explicit ecological conditions.

The paper “Bootstrap Framework” by Suraj Shahu Gaikwad et al [6], showcases the benefits of Bootstrap framework. They have also mentioned various tool of Bootstrap framework which is used to create the static website. Bootstrap takes into account quick, responsive advancement that is predictable and very much upheld by the turn of events and plan local area .As the system proceeds to create, the motivations to utilize Bootstrap continue to mount. The structure takes into account quick, responsive advancement that is reliable and well upheld by the turn of events and plan local area.

The website “<https://nurserylive.com/>” [7] is developed only for the commercial purpose. The customers can see artificial plants live and order. It also has chatbot feature which requires a manual instruction. It is not automated and it doesn’t understands the user inputs properly. The website doesn’t provide any information about any plants, specially house plants.

The website “<https://www.gardeningknowhow.com/>” [8] is all about the tips and tricks and gardening. It doesn’t have features like chatbot and google map. Here, user cannot get instant reply of their query and suppose if they want to buy that specific plants they have to search somewhere else for that particular plant.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This section of the project describes or includes three main areas: data collection procedures, software development methodology and development tools and platform. In the development of a system, it is important to obtain the accurate, necessary and needed requirements to ensure good and quality system development.

3.2 Data Collection

Data collection is the process of gathering and measuring information on targeted variables in an established systematic fashion, which then enables one to answer relevant questions and evaluate outcomes (Anon., n.d.). Most common approaches for application development studies include Inquisitive techniques (interviews, questionnaires, Brainstorming and Focus Groups) and Observational techniques (Work Diaries, Participant Observation).

The data collection approaches used are as follows:

3.2.1 Interview

Interview is a very powerful method or tool for gathering data since it allows the person conducting the interview clarify a number of issues and also achieve detailed information. This provided the opportunity to get the in depth understanding of the users' needs and requirements. Unstructured interview gives the chance to ask open-ended questions which helps identifies most of the system requirements. With interview, there is opportunity to ask most relevant questions customized for each respondent.

3.2.2 Observation

Observation is the process of monitoring something or someone closely to get an information. It helps one to gather life information or data from naturally occurring situation. This means that hidden or concealed data would be revealed or disclosed. First-hand information rather than second-hand information would be collected by looking at what is taking place in the real situation again.

Observing or seeing the current system in action gives a thorough understanding and additional perspective of system procedures.

3.2.3 Secondary Source

Secondary sources of data were also used in this project. This includes obtaining or gathering data from library source, newspapers, Internet, journals, articles, reports, bulletins, newsletters. Most of the data collected have been covered in the chapter two, the literature review, of the project.

3.3 Software Development Methodology

A software development methodology in software engineering is a framework that is used to structure, plan and control the process of developing an information system. A methodology defines a paradigm (i.e. approach) to be used and a precise lifecycle to be used.

In the development of this system, an Iterative and Waterfall Methodology was used to ensure systematic and sequential flow of the system stages and also considering error fixing during and after development.

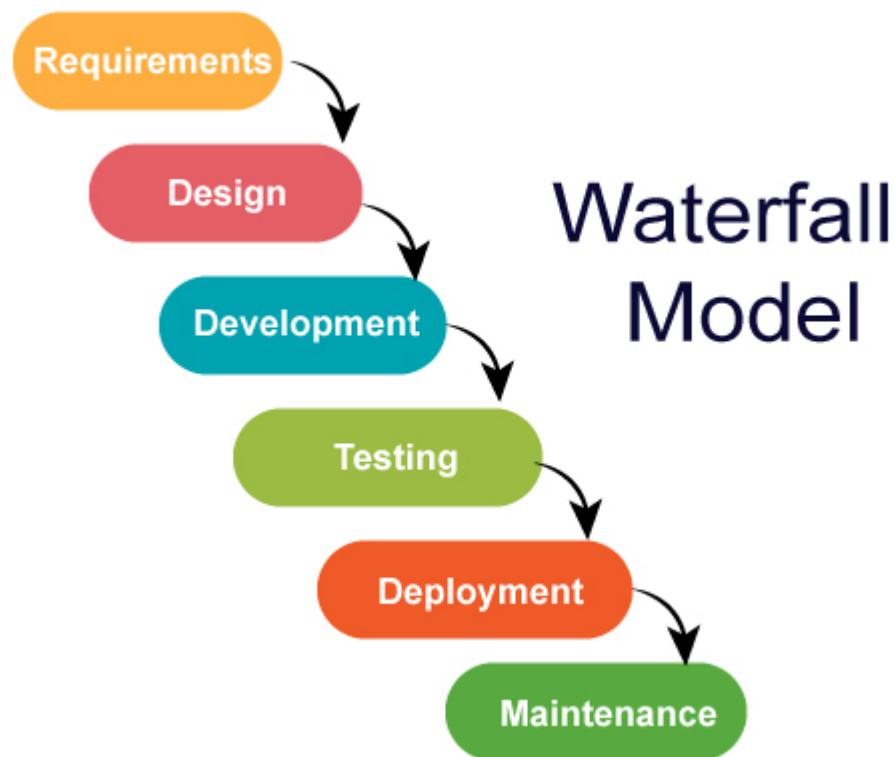


Figure 3. 1 Waterfall methodology

This methodology was chosen for its classic life cycle, systematic and sequential.

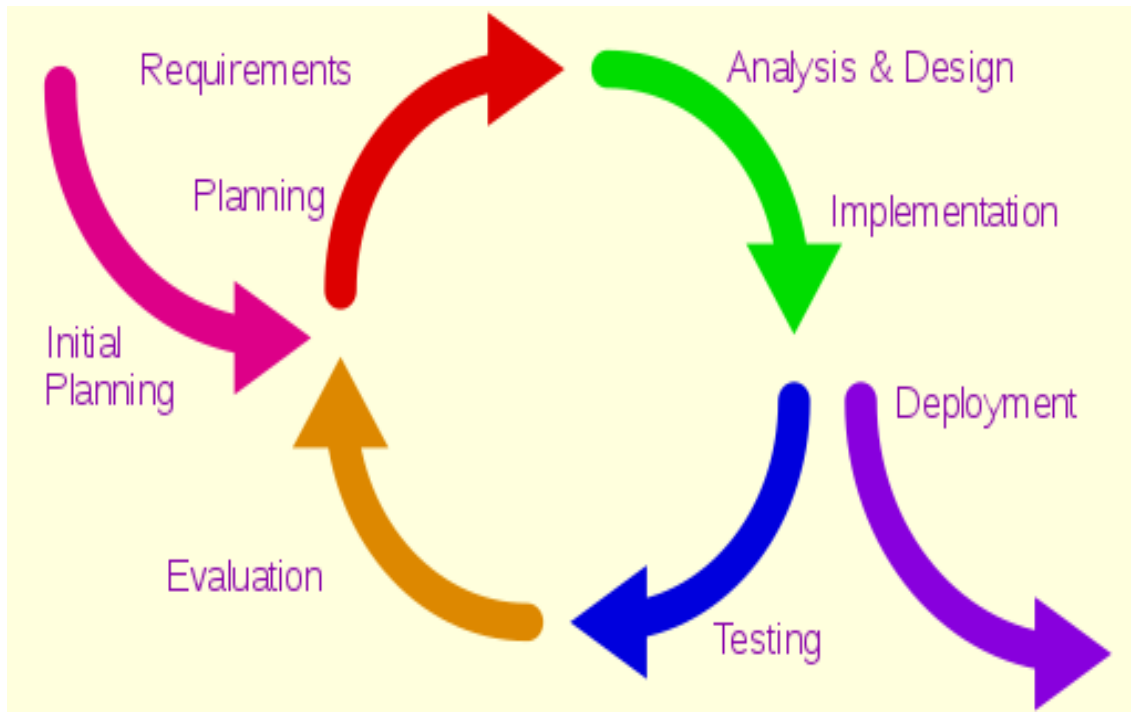


Figure 3. 2 Iterative Methodology

This methodology was chosen for its classic life cycle that enable error fixing during and after development.

3.4 Development Tools and Platform

This system was developed using the following architecture and tools;

- Microsoft Windows 10
- SQLite3
- PHP, HTML, CSS and JavaScript
- Bootstrap
- Browser (Chrome and Firefox)
- Python, Django
- Google API
- Visual Studio Code

3.4.1 Bootstrap

Bootstrap is a framework to help you design websites faster and easier.

It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels, etc. It also gives you support for JavaScript plugins.

- Bootstrap's responsive CSS adjusts to phones, tablets, and desktops
- Mobile-first styles are part of the framework
- Bootstrap is compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera)

3.4.2 CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a mark-up language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colours, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate . CSS file which reduces complexity and repetition in the structural content as well as enabling the . CSS file to be cached to improve the page load speed between the pages that share the file and its formatting.

3.4.3 PHP

PHP is an acronym for “Hypertext Pre-processor” and is a server-side programming language used for web development. It is a widely used, open source scripting language. PHP language has its roots in C and C++ so it is easy to learn and manipulate. PHP can run on both UNIX and Windows servers. In the development of this job portal system, PHP was chosen because it is dynamic, cheap and easy to setup, secure, fast, reliable and can interact with many different relational database management systems (DBMS).

3.4.4 SQLite

SQLite is a C-language library that implements a small, fast, self-contained, high-reliability, full-featured, SQL database engine. SQLite is the most used database engine in the world. SQLite is built into all mobile phones and most computers and comes bundled inside countless other applications that people use every day. The SQLite file format is stable, cross-platform, and backwards compatible and the developers pledge to keep it that way through at least the year 2050. SQLite database files are commonly used as containers to transfer rich content between systems and as a long-term archival format for data. SQLite source code is in the public-domain and is free to everyone to use for any purpose.

3.4.5 Django

Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of Web development, so you can focus on writing your app without needing to reinvent the wheel. It's free and open source.

Features Of Django :

- Python Web-framework
- SEO Optimised
- High Scalability
- Versatile in Nature
- Offers High Security
- Thoroughly Tested
- Provides Rapid Development

3.5 Chatbot

Conventionally web-bots exist; web-bots were created as text based web-friends, an entertainer for a user. Furthermore, and separately there already exists enhanced rich site summary (RSS) feeds and expert content processing systems that are accessible to web users. Text-based web-bots can be linked to function beyond an entertainer as an informer, if linked with, amongst others, RSS feeds and or expert systems. Such a friendly bot could, hence, also function as a trainer providing realistic and up-to-date responses.

The convenience could be improved if the system is not only text based but also voice-based & voice trained. This is the problem addressed by this paper. A conversation is an assimilation of information where one creates differences and similarities during the duration of a conversation. Depending on the level of intelligence the experience would be enjoyable and a true emulation of a virtual entity. The gradient of intelligence is not the number of correct and incorrect statements but the ability to learn and add to its knowledge base. To create a more user accessible chat system; a simpler input method using voice is introduced; creating and catering for a more personal and convenient experience.

Chatbots, additionally called chatterbots, is a type of computerized reasoning (AI) utilized in informing applications. This apparatus helps add comfort for clients—they are robotized programs that associate with clients like a human would and cost little to nothing to draw in with.

3.5.1 Algorithm used in Chatbot Mechanism

1. Natural Language Processing(NLP):

- Natural language processing (NLP) is a subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data.
- The result is a computer capable of "understanding" the contents of documents, including the contextual nuances of the language within them. The technology can then accurately extract information and insights contained in the documents as well as categorize and organize the documents themselves.

2. Multinomial Naive Bayes algorithm:

- This is a classic algorithm for text classification and natural language processing (NLP).
- This classifier is “naive” because it assumes independence between “features”, in this case: words. Said differently: each word is treated as having no connection with other words in the sentence being classified.

- To conclude, chatbots can be built using the Naive Bayes approach in which we just have to give each training question a corresponding label number of the answer and our classifier will predict the label of the user input. This label number is an index of a corresponding response in our answers' dataset. This way, we do not need to worry much about Regular expression pattern matching like in regular rule-based chatbot approach. The chatbot built above is trained on a very smaller dataset as this is supposed to be a simple explanation of the new approach. The companies may create their datasets according to the specific application.
- For a production system, you will want to consider one of the existing bot frameworks and integrating this approach into it; this way, you do not have to start from scratch. The Internet is full of resources and after reading this article you may want to create a chatbot of your own.

Below Figure 5 is the mechanism of chatbot. This is how the chatbot works:

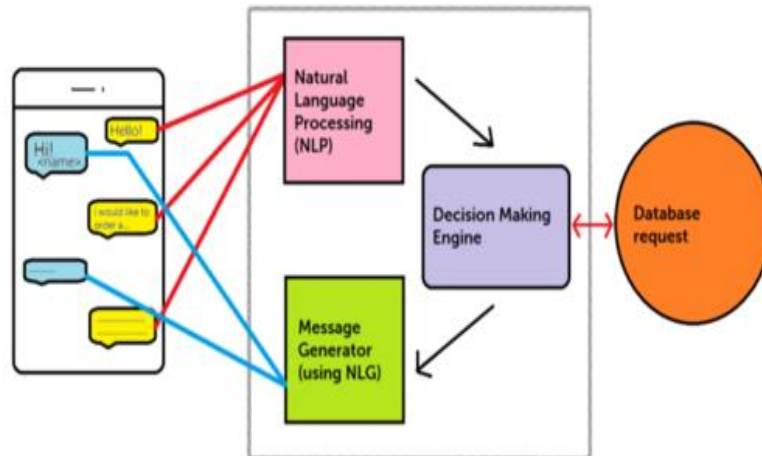


Figure 3.3 Architecture of Chatbot

3.5.2 The teaching method

Of course being a machine is hard to know all the answers in the world but the hardest thing is to make him respond to personal questions. And this is the moment where we can step in and teach the “child” the best answers we can give to him.

This is hard too because the answers have to be a little bit tricky to fool people, making them think it is a real person. We can make it our as-we-wish loyal chat partner.

When you ask it a question that it does not know the answer to, it brings you an input to write the correct answer. After this step, it thanks you for your support, and indeed it helps the application a lot because you grow the database and it will know what to answer the next time you ask it the same question.

3.6 Colour Theory

Shading hypothesis is both the science and specialty of utilizing shading. It clarifies how people see tone; and the enhanced visualizations of how shadings blend, match or differentiation with one another. Shading hypothesis likewise includes the messages tones convey; and the strategies used to repeat tone.

Shading is insight. Our eyes see something (the sky, for instance), and information sent from our eyes to our minds reveals to us it's a sure tone (blue). Items mirror light in various blends of frequencies. Our minds get on those frequency mixes and make an interpretation of them into the wonder we call tone.

Color is perception. Our eyes see something (the sky, for example), and data sent from our eyes to our brains tells us it's a certain color (blue). Objects reflect light in different combinations of wavelengths. Our brains pick up on those wavelength combinations and translate them into the phenomenon we call color.

Humans see colors in light waves. Mixing light—or the **additive color mixing model**—allows you to create colors by mixing red, green and blue light sources of various intensities. The more light you add, the brighter the color mix becomes. If you mix all three colors of light, you get pure, white light.

TVs, screens and projectors use red, green and blue (RGB) as their primary colors, and then mix them together to create other colors.

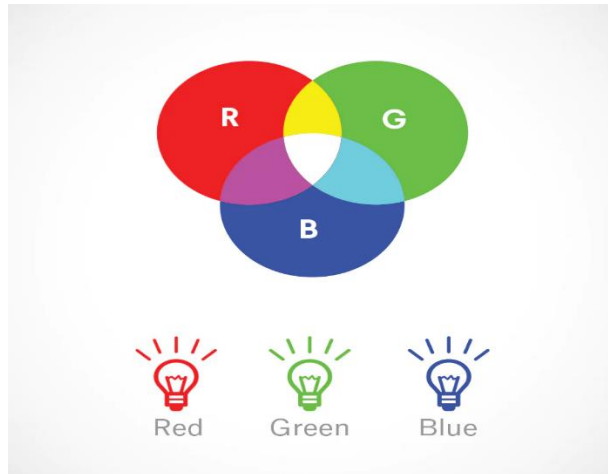


Figure 3.4 Colour theory

In this website we have used the following two mixture of colours:

- i. **Forest Green, Olive Green, Lime Green and light grey**

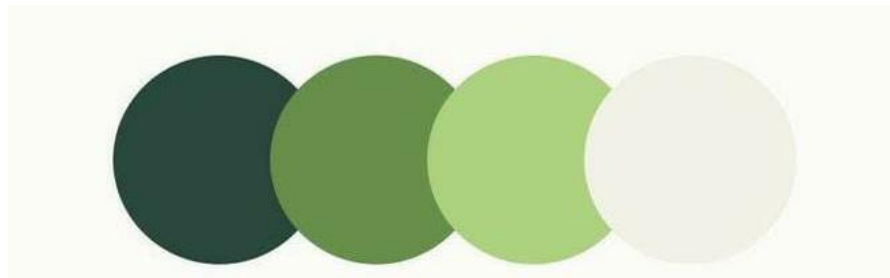


Figure 3.5 Combo of green colour

- ii. **Royal Blue, Prussian Blue, Azure and Turquoise**



Figure 3.6 Combo of blue colour

3.7 Google Map

Digital Maps have become more common, and physical maps have been replaced essentially by digital maps. This is because digital map offers the most up-to-date contents. City environments sound and maps can be associated with each other; users may want to know precisely what the environment sound look like when selecting locations in map. When people are looking for some place to live, they might want to know whether it is a noisy or a quite area.

Likewise, system beneficiaries might be City Planner, Environment and Urban Planning Ministry, and Housing and Urban institutes. They might use this data to have an idea where is the noisy area in order to do some noise controller. Moreover, it's a useful material and good to be submitted and published online for researches. The purpose is to build a web-based tool for exploring acoustic map data. Users will be presented with a map and will be able to select location to hear what the sound like.

This is done by soring the data on a server to make it accessible over the internet, and then build extra tools for uploading the user's own data. This encourages people to record their own data and upload it into the same server and over the time we can collect more audio data.

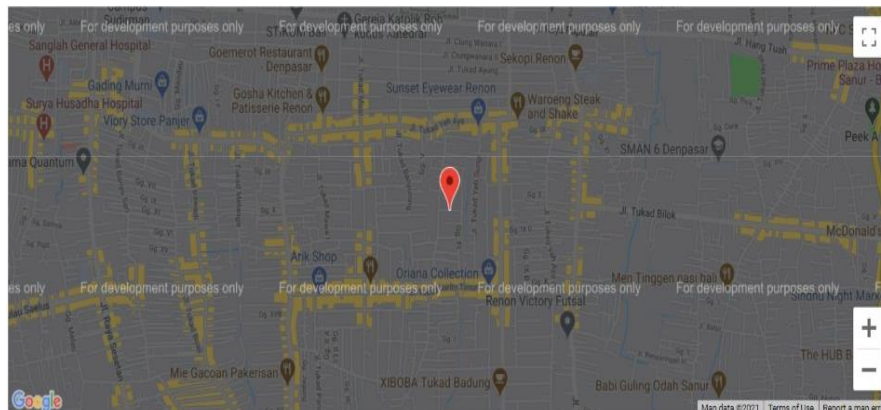


Figure 3.7 Google Map

CHAPTER 4

SOFTWARE REQUIREMENTS SPECIFICATIONS

4.1 Introduction

Software requirements specification gives a complete description of the behaviour of the system being developed. This includes the minimum requirements (hardware and software requirements) that is required by the system to ensure high performance. For developers to derive requirements of a system, it is important to get a clear and thorough understanding of the products or system being developed. This is achieved through detailed communication with users of the system.

These requirement identifications and gathering of the system is what is acknowledged in technical terms as specifications.

4.2 Functional Requirements

A function is described as a set of inputs, the behaviour and outputs. Functional requirements define the functions of a system or its components. It also describes the services that a system is expected or can provide. The following are some of the functionalities the system will provide;

4.3 MVT Django Diagram

The MVT (Model View Template) is a software design pattern. It is a collection of three important components Model View and Template. The Model helps to handle database. It is a data access layer which handles the data.

The Template is a presentation layer which handles User Interface part completely. The View is used to execute the business logic and interact with a model to carry data and renders a template.

Although Django follows MVC pattern but maintains it's own conventions. So, control is handled by the framework itself.

4.3.1 MVT Django

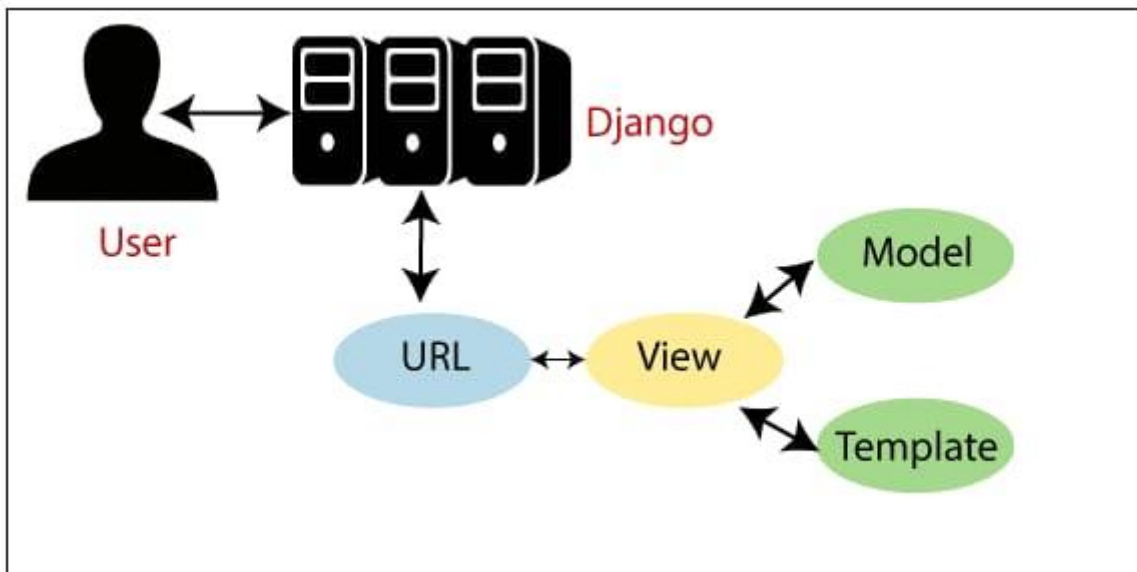


Figure 4.1 MVT Diagram

4.4 Visual Studio Code

Visual Studio Code is a freeware source-code editor made by Microsoft for Windows, Linux and macOS.[9] Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git. Users can change the theme, keyboard shortcuts, preferences, and install extensions that add additional functionality.

Microsoft has released Visual Studio Code's source code on the microsoft/vscode (Code - OSS) repository of GitHub, under the permissive MIT License, while the releases by Microsoft are freeware.

In the Stack Overflow 2019 Developer Survey, Visual Studio Code was ranked the most popular developer environment tool, with 50.7% of 87,317 respondents reporting that they use it.

4.5 Non-Functional Requirements

A non-functional requirement is a requirement that specifies criteria that can be used to judge the operations of a system rather than specific behaviours. This includes performance requirements, security, reliability, maintainability, scalability and usability.

The following are the non-functional requirements of the system;

- Ease of use
- Easy to learn (learnability)
- User friendliness
- 24/7 availability
- Secured enough to allow only authorized users
- This system can be accessed from any type of platform.
- Information in fields like phone numbers, email, names are validated
- Efficiency
- Speed
- Maintainability

CHAPTER 5

SYSTEM DESIGN AND IMPLEMENTATION

5.1 System Architectural Design

The architectural design of a system emphasizes the design of the system architecture that describes the structure, behaviour and more views of that system and analysis.

The three-tier architecture model was used in the development of this system. This type of design consists of three tiers;

- The client tier – this is usually the interface, web browser, that interacts with the application. Examples of web browsers are Internet Explorer, Mozilla Firefox, Google Chrome, Microsoft Edge, Opera, etc.
- The second/middle tier – this consists of the application logic that communicates data or information between other two tiers.
- The database tier – this consists of the database managements system that manages the database.

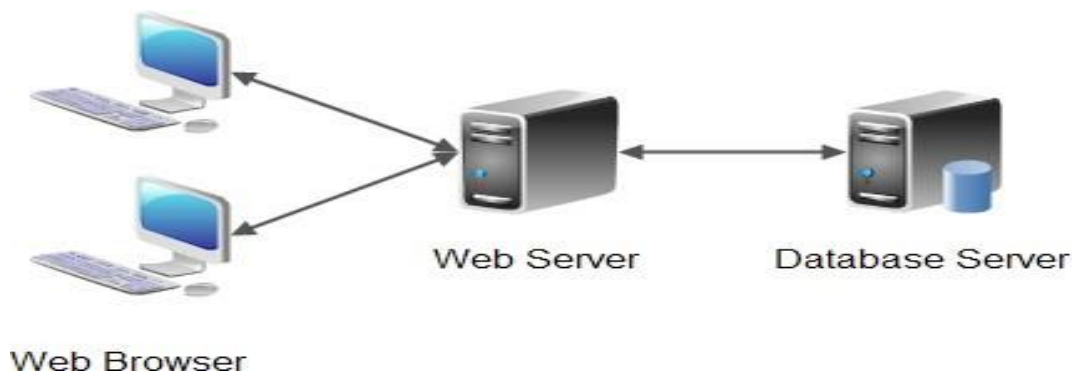


Figure 5.1 The 3-Tier Architecture Design

The figure below shows the system architectural design of system

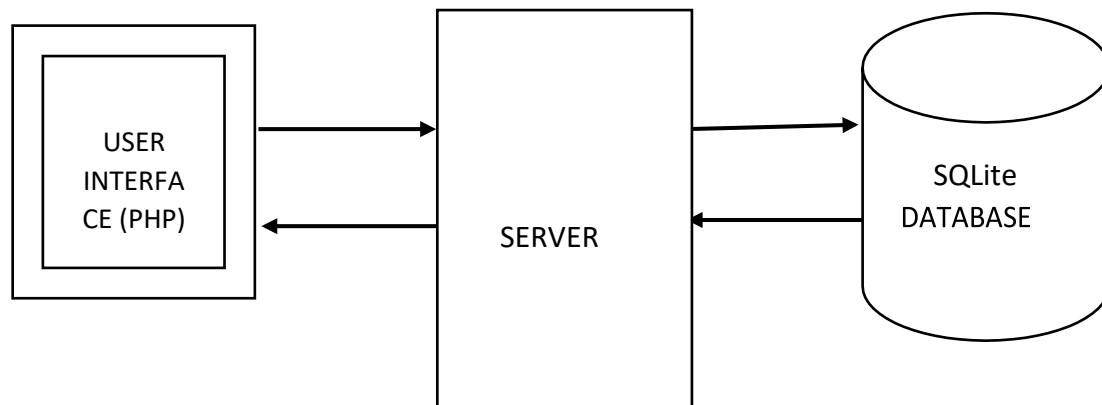


Figure 5.2 Architectural design of system

5.2 User Interface Design

User Interface design (UI) is the design of user interfaces for machines and software such as computers, home appliances, mobile devices and other electronic devices with the focus of maximizing usability and the user experience. The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals. Making user interaction with the system as simple and efficient as possible when designing and developing the GUI is very important.

There are ten usability principles developed by Nielsen (2001) and his colleagues that must be followed to design good GUI for system.

- **Visibility of system status** - always keep users informed about what is going on, through providing appropriate feedback within reasonable time.
- **Match between system and the real world** - speak the users' language, using words, phrases and concepts familiar to the user, rather than system-oriented terms.

- **User control and freedom** - provide ways of allowing users to easily escape from places they unexpectedly find themselves, by using clearly marked 'emergency exits'.
- **Consistency and standards** - avoid making users wonder whether different words, situations, or actions mean the same thing
- **Help users recognize, diagnose, and recover from errors** - use plain language to describe the nature of the problem and suggest a way of solving it
- **Error prevention** - where possible prevent errors occurring in the first place
- **Recognition rather than recall** - make objects, actions, and options visible so that users will easily remember.
- **Flexibility and efficiency of use** - provide accelerators that are invisible to novice users, but allow more experienced users to carry out tasks more quickly
- **Aesthetic and minimalist design** - avoid using information that is irrelevant or rarely needed
- **Help and documentation** - provide information that can be easily searched and provides help in a set of concrete steps that can easily be followed.

A usable interface has three main outcomes:

- It should be **easy for the user to become familiar with and competent in** using the user interface during the *first* contact with the website. For example, if a travel agent's website is a well-designed one, the user should be able to move through the sequence of actions to book a ticket *quickly*.
- It should be **easy for users to achieve their objective** through using the website. If a user has the goal of booking a flight, a good design will guide him/her through the *easiest* process to purchase that ticket.
- It should be **easy to recall the user interface and how to use it on subsequent visits**. So, a good design on the travel agent's site means the user should *learn* from the first time and book a second ticket *just as easily* (Foundation, n.d.).

5.3 Architecture of Current System

5.3.1 Front End Development:

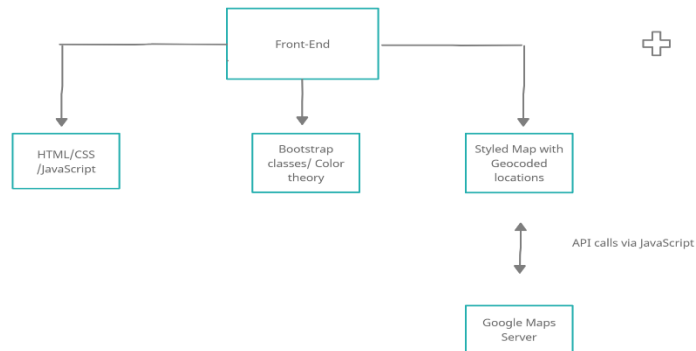


Figure 5.3 Front end architecture with API

5.3.2 Back End Development:

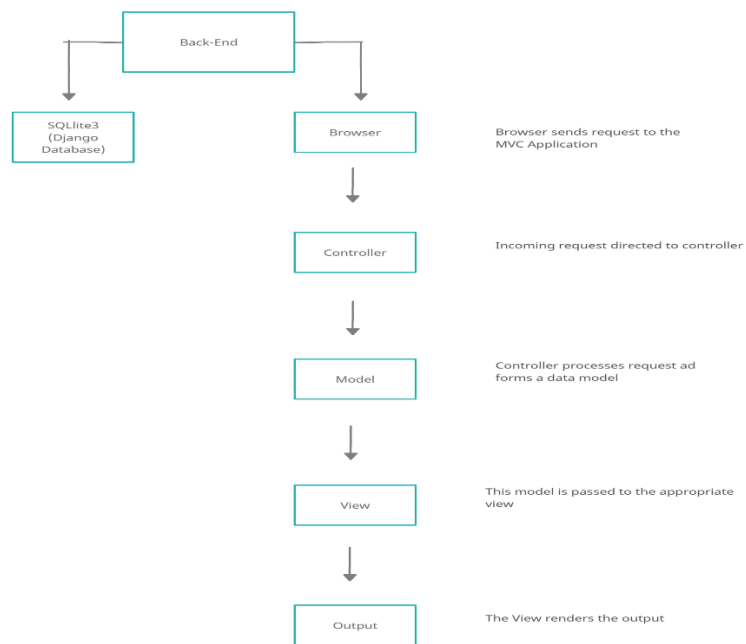


Figure 5.4 Back end architecture with MVC application

5.3.3 Chatbot Architecture:

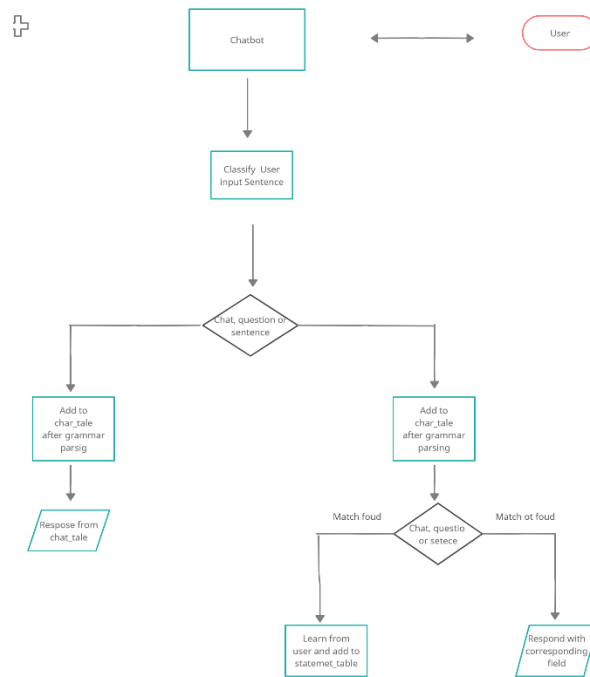


Figure 5.5 Chatbot architecture

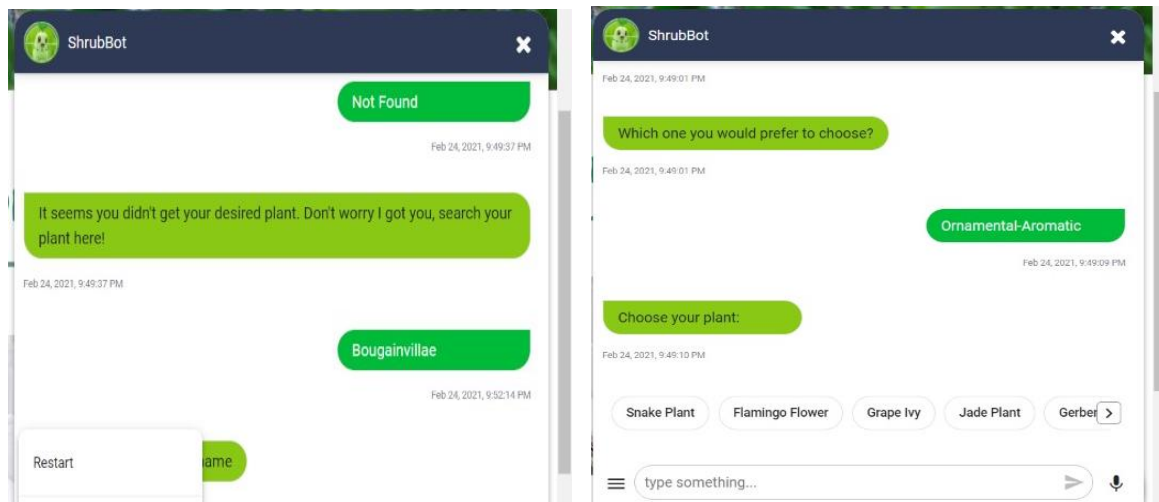
CHAPTER 6

SUMMARY AND CONCLUSION

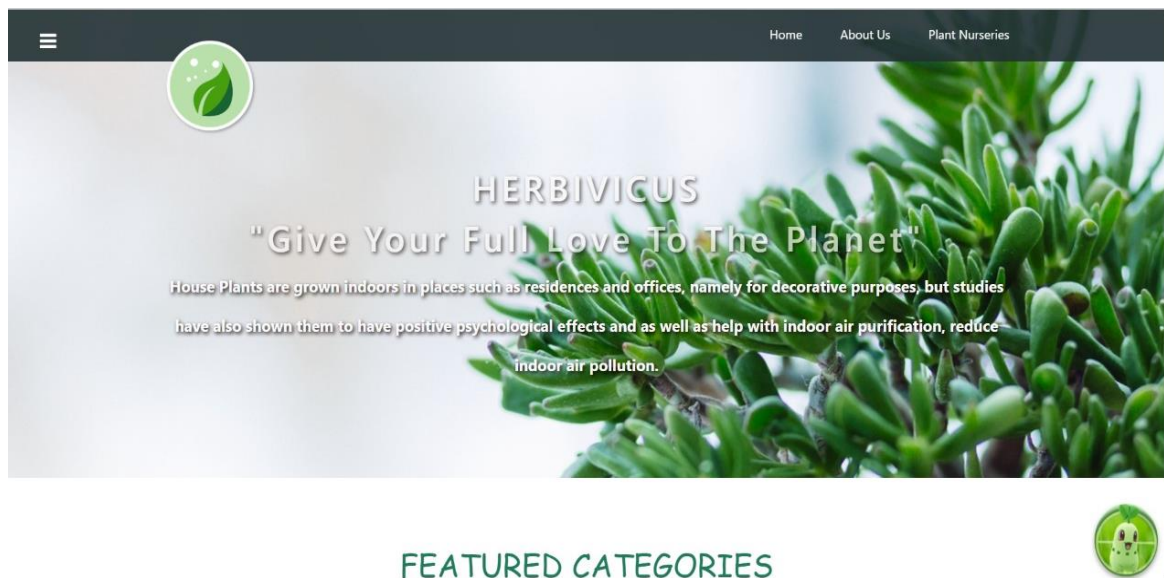
The full stack website has been created successfully and all the tools and technologies are used appropriately. Few limitations which people had during the usage of chatbot has been cleared here. It's a one stop destination where people can easily get all the details about the house plants, their uses & benefits. The search bar enables more features where user can search directly according to their requirement. The chatbot feature provides all the input which a user can ask a live chat agent. The chatbot has custom input and user can opt-in their options to get results. The google map helps the end user to find the locations of various nurseries nearby with so many map views and marker points out the exact destination.

OUTPUT SNAPSHOTS

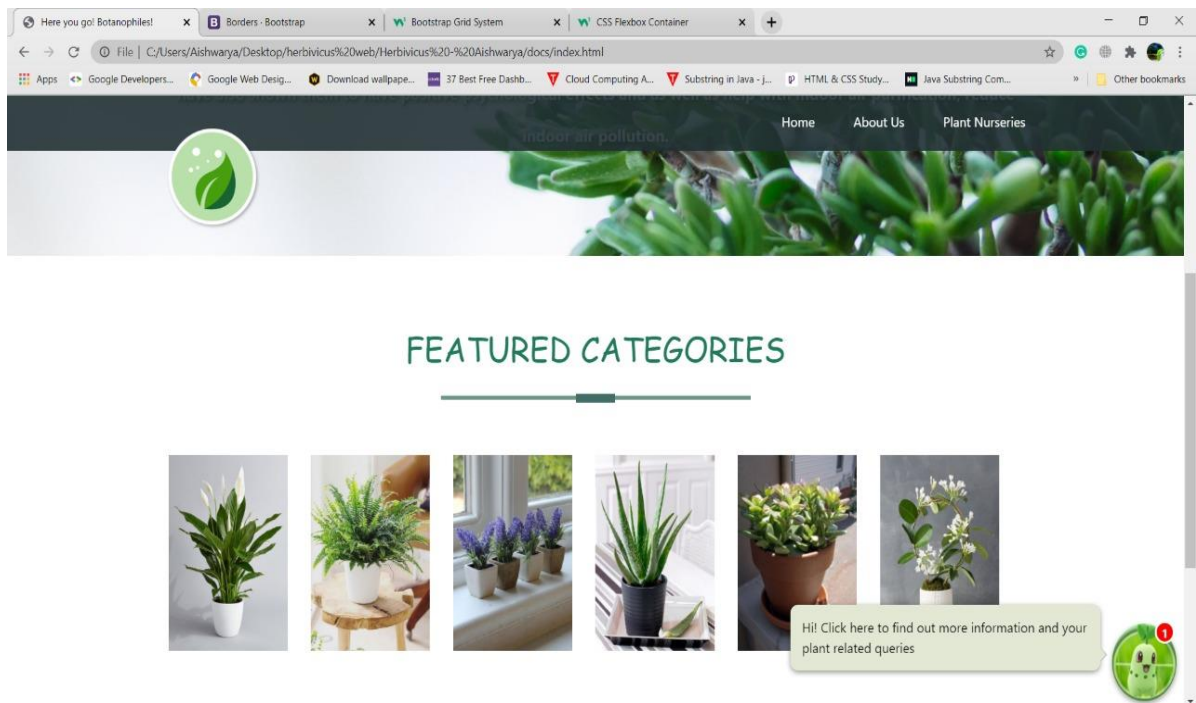
1. Chatbot – named as ShrubBot



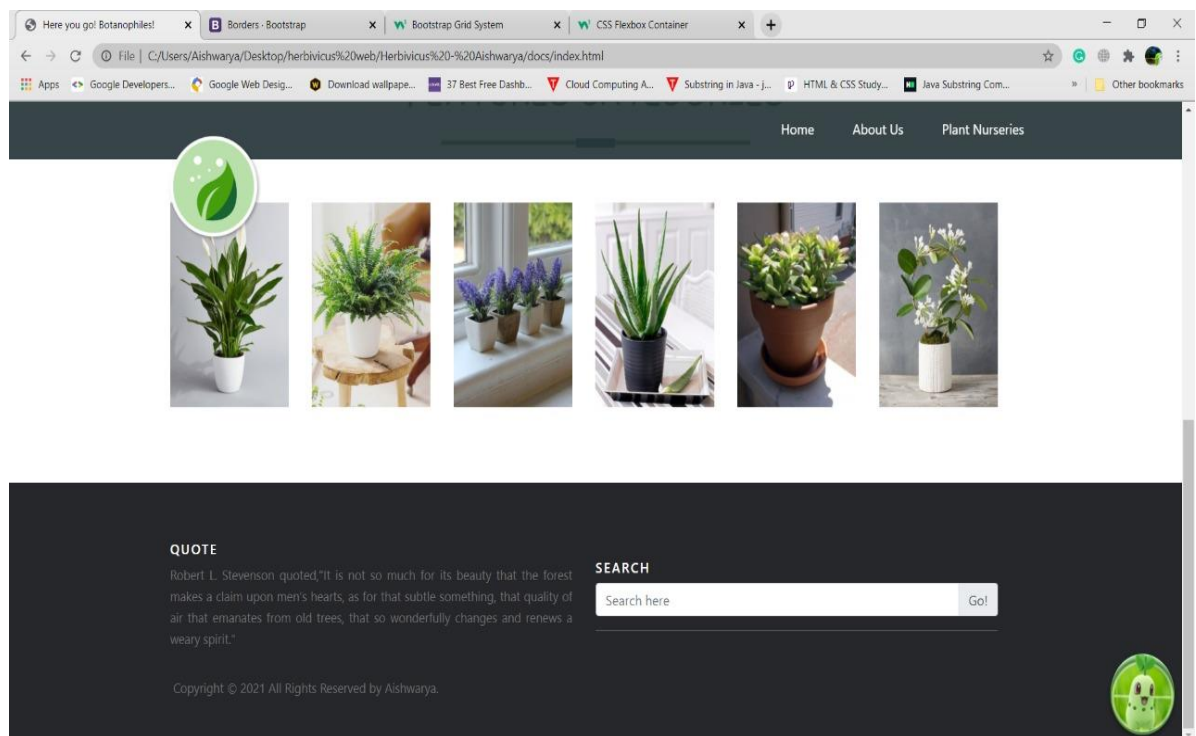
2. Home Page



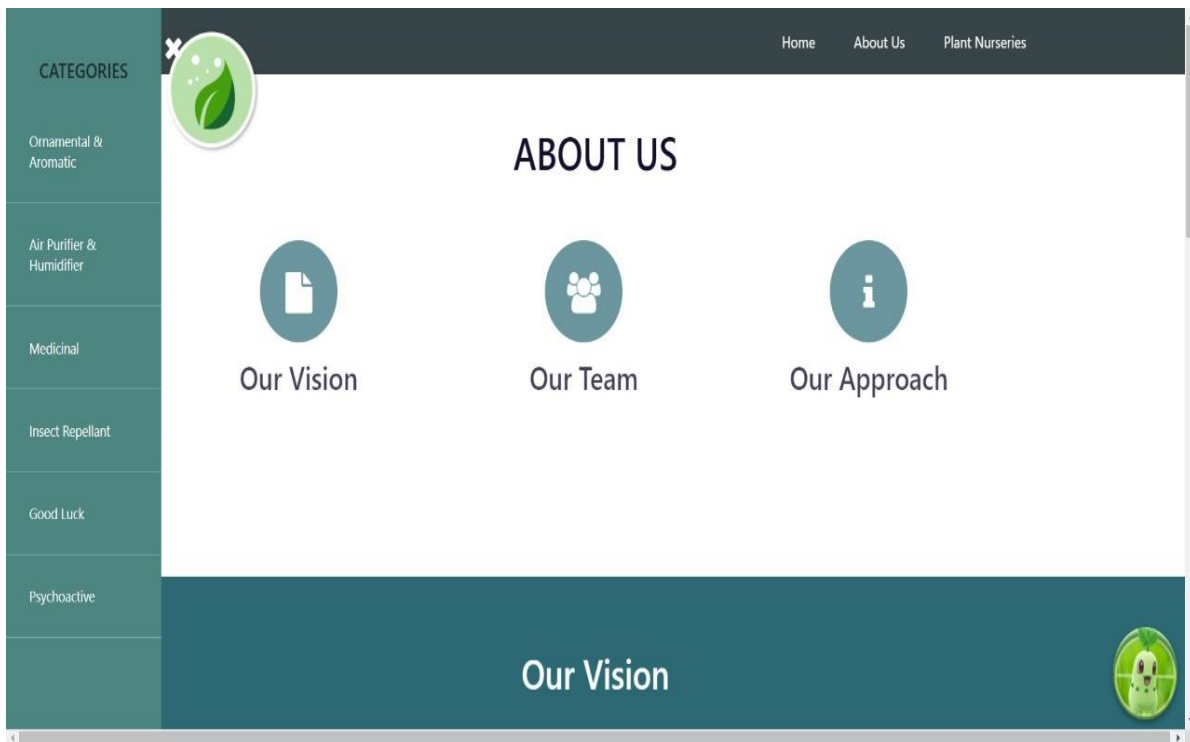
3. Featured Page



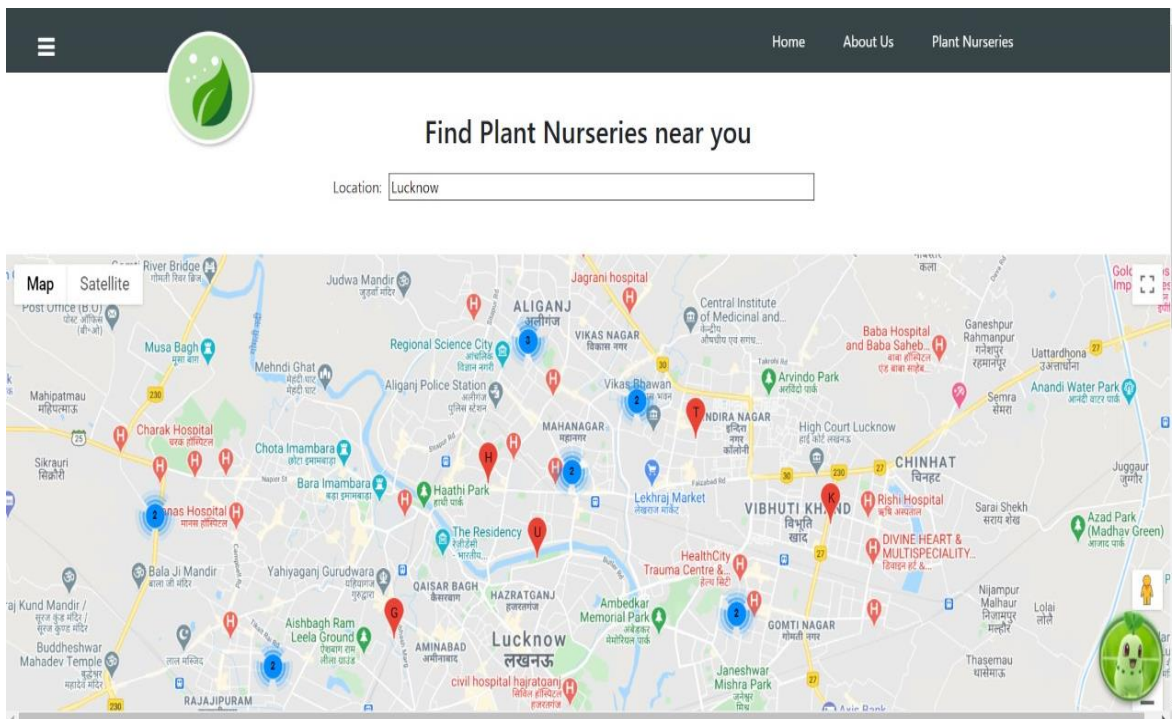
4. Search Bar



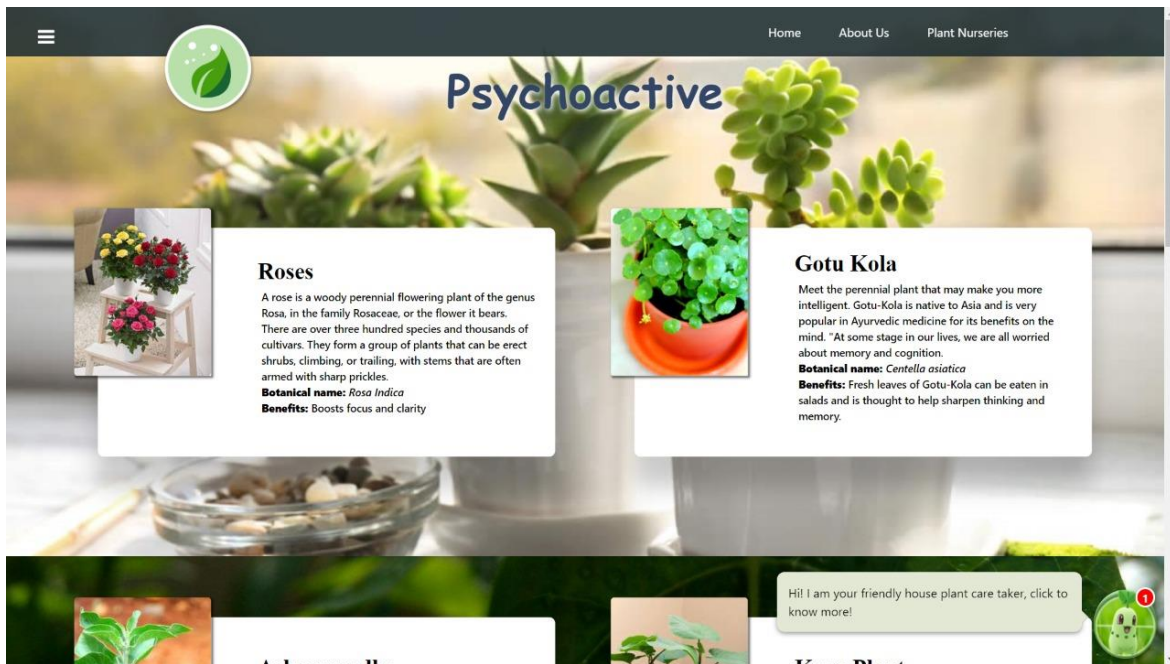
5. About Us Page



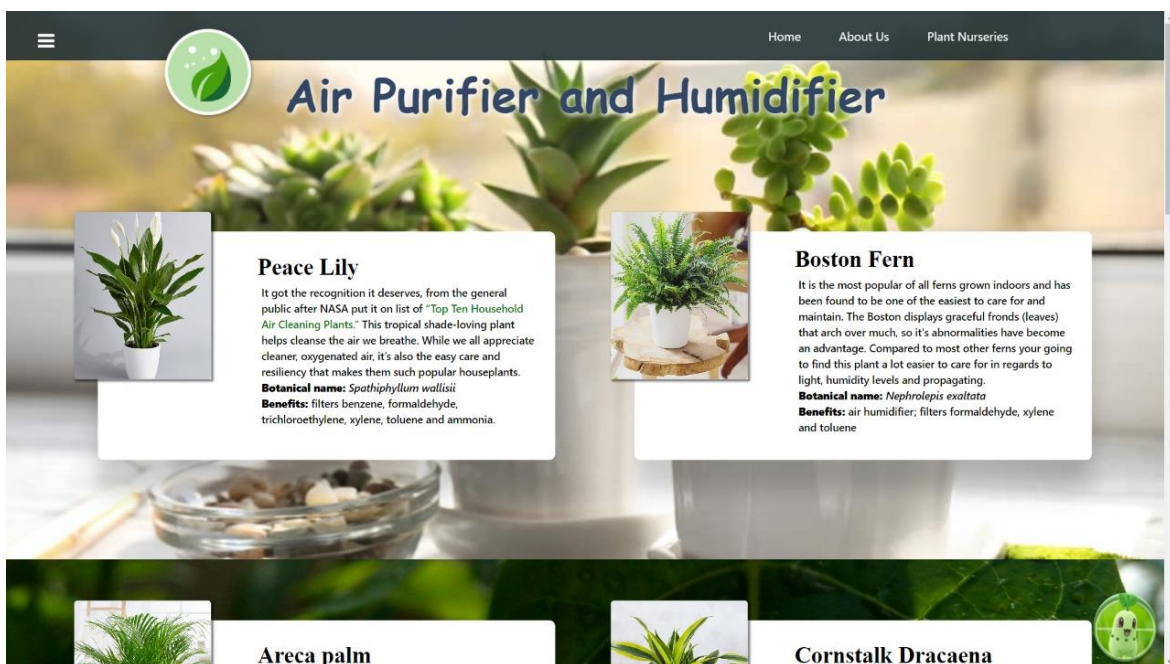
6. Google Map



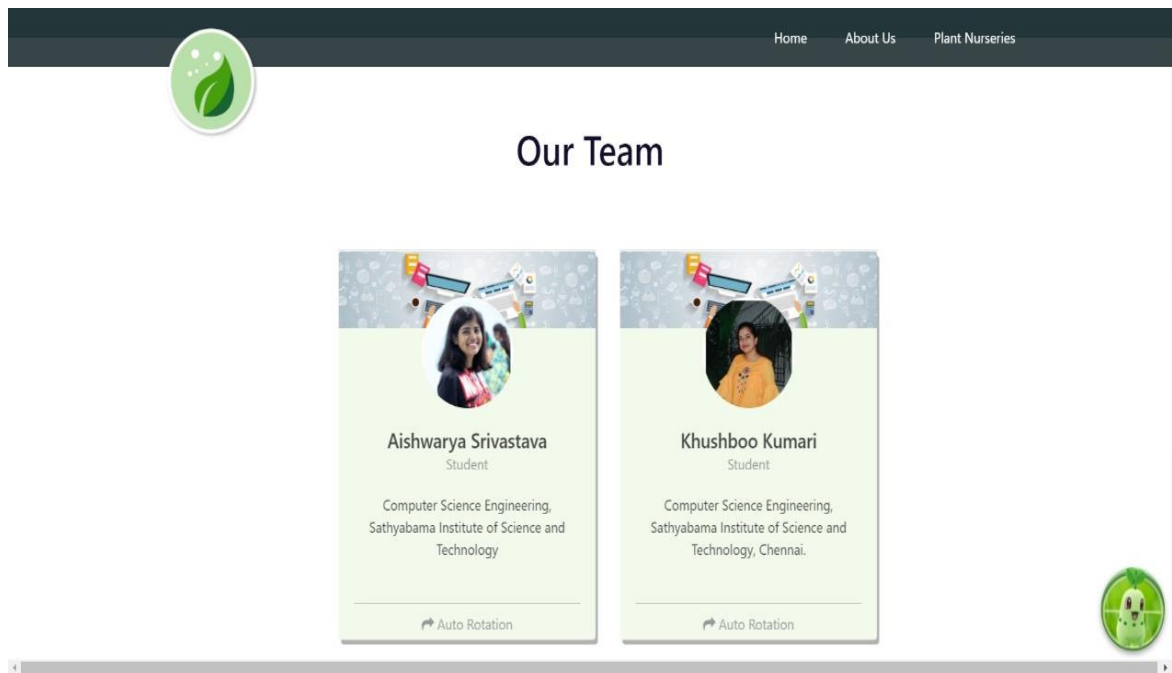
7. Types Of Plant – Psychoactive



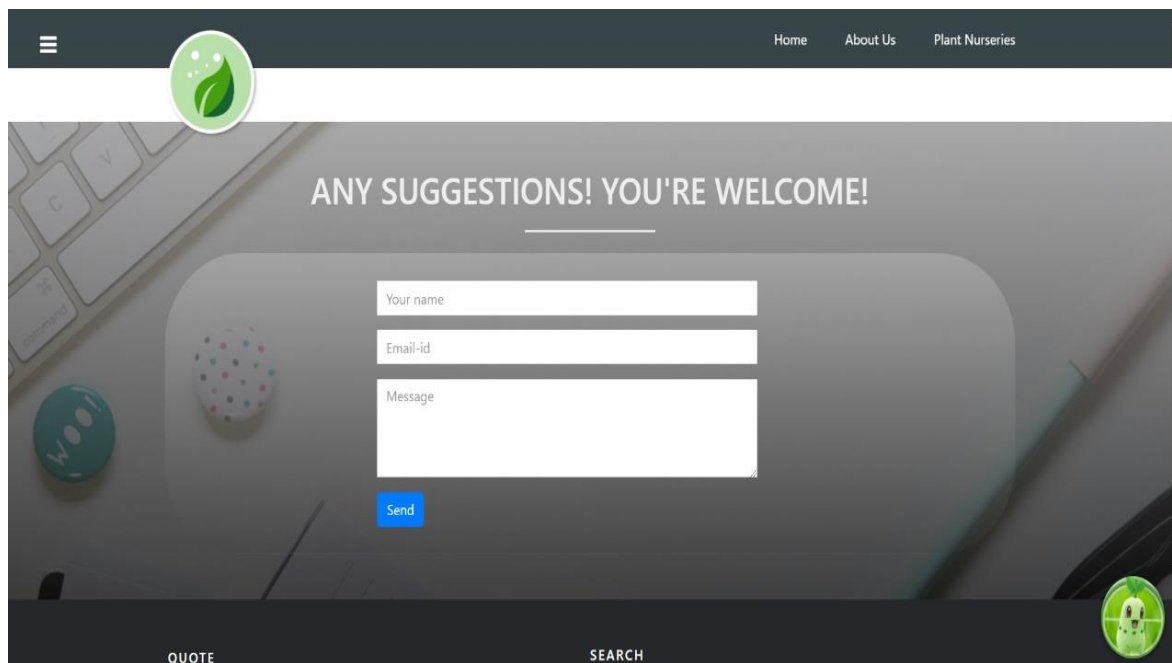
8. Types Of Plant – Air Purifier and Humidifier



9. Our Team Page



10. Contact Us Page



Paper Acceptance

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Title : Herbivicus: A full stack website with Chatbot and Google API

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HERBIVICUS: A FULL STACK WEBSITE WITH CHATBOT AND GOOGLE API

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Abstract

Web development can range from creating fundamental static pages to compound web applications. It usually alludes to web designing, website architecture, customer/worker side scripting. As we probably are aware, software engineering joined with ecological science dominant part centres around topographical interaction affecting earth, climate, earth, woodlands and water bodies. Similarly, this venture centres after empowering individuals towards ranch and encouraging them by starting from their home itself. The venture is entitled as "Herbivicus". The goal of "Herbivicus" is to illuminate various parts of plants. This time individuals have thought little of the force of vegetation. From expanding oxygen levels to lessening feeling of anxiety, they can do everything and change one's home into green desert garden. The highlights associated with this undertaking are Front web-development, chatbot (Artificial knowledge), structures, APIs and UI planning. There are many people in the world who has colour blindness problem so to overcome that colour theory has been implemented. Last yet not the most un-this undertaking spreads a word to re-establish greenery as well as is a stunner for individuals to comprehend the value of house plants.

Keywords: Web development, Chatbot, House plants

I. Introduction

A houseplant is a plant that is filled inside in spots like homes and workplaces, in particular for embellishing purposes, however contemplates have likewise shown them to have positive mental impacts and just as help with indoor air cleaning, since certain species, and the dirt dwelling microorganisms related with them, decrease indoor air contamination by retaining unpredictable natural mixtures including benzene, formaldehyde, and trichloroethylene. While by and large poisonous to people, such contaminations are consumed by the plant and its dirt dwelling organisms without hurt.

Basic houseplants are typically tropical or semi-tropical epiphytes, succulents or desert plants. Houseplants need the right dampness, light levels, soil combination, temperature, and mugginess. Too, houseplants need the legitimate compost and right measured pots.

That is what inspired us to come up with this project, we have developed a web-based application that showcases all the information about house plants and it's benefits. If you want to know about any house plants then there will be lots of information related to that such as it's scientific and household

name, pictures, amount of water and sunlight required for the growth of plant, from where to get that plant and many more.

The main highlights of this project are chatbot, colour theory and Google location, where chatbot maintains the communication with the users and provide them with the necessary as per their requirement, colour theory implementation helps colour blind people to see the mixture of colours and google api helps the end-user to get the details about the nurseries where the house plants is currently available.

A. Front-end Development:

The web creation in front is the change of information with the use of JavaScript, CSS and HTML to a graphical environment to allow customers to view and collaborate with this information.

1. Hyper Text Mark-up Language

Terminology for Hyper Text (HTML) is the cornerstone of any website creation process that does not have an internet page. Clicking on a word or sentence with a hyperlink, a person can hold a website. A vocabulary means that text is often used as photographs, charts, links, etc. It is the HTML code that provides an overview of how the site looks. Tim Berners-Lee created HTML. HTML 5 is the current edition and was released on the W3 recommendation on October 28, 2014. This edition provides innovative and effective ways to use components such as video and audio files.

Following Figure 1 is the sample HTML code which is used for "Footer" of website:

```
<footer class="site-footer">
  <div class="container">
    <div class="row">
      <div class="col-sm-12 col-md-6">
        <h6>Quote</h6>
        <p class="text-justify">Any nature/plant/flower quote of your choice by renowned author/poet</p>
      </div>
      <div class="col-sm-6 col-md-6">
        <h6>Search</h6>
        <div class="input-group">
          <input type="text" class="form-control" placeholder="Search here">
          <div class="input-group-append">
            <span class="input-group-text">Go!</span>
          </div>
        </div>
      </div>
    </div>
  </div>
</footer>
```

Figure 1: Footer HTML code

2. Cascading Style Sheets (CSS)

Cascading Style Sheets (CSS) governs the location's appearance feature and enables the website to have its own distinctive look. It does so through the preservation of style sheets on the other rules of the style and other inputs such as the show and dedication are assisted. CSS stands for Style Sheets with Cascading. It shows how HTML components can be shown on the phone, document or other media. A lot of effort is saved by CSS. The construction of various pages can be handled simultaneously CSS records are deleted from external models.

Following Figure 2 is the sample Animation CSS code which is used for "About Us" of website:

```
.about{
  cursor: pointer;
  color: #13102e;
  padding-top: 80px;
  padding-bottom: 60px;
}
.about h1 {
  padding: 10px 0;
  margin-bottom: 50px;
  font-size: 44px;
}
.about h2 {
  opacity: .8;
  margin-top: 15px;
}
.about span {
  display: block;
  width: 100px;
  height: 100px;
  background-color: #2c6975;
  border: 2px solid #2c6975;
}
```

Figure 2: Animation CSS code

3. JavaScript

JavaScript (as for HTML's declarative language model) is an event-based persuasive programming language which can turn an HTML static page into a dynamic interface. In order to monitor an internet page in response to events such as the user IT, JavaScript code can use the Document Object Model (DOM) given by HTML. JavaScript coding can also dynamically recover content online using the methodology called AJAX (independent of the first HTML page recovery), and also react to server incidents, bringing a very complex nature to the experience of the online page.

Following Figure 3 is the sample Animation JavaScript code which is used for "About Us" of website:

```
$().ready(function(){
  $('[rel="tooltip"]').tooltip();
});
function rotateCard(btn){
  var $card = $(btn).closest('.card-container');
  console.log($card);
  if($card.hasClass('hover')){
    $card.removeClass('hover');
  } else {
    $card.addClass('hover');
  }
}
```

Figure 3: Animation JS code

4. Bootstrap

Bootstrap's choices on colouring, scale, text style and architecture for this project play a crucial role in bringing it to a web project.

In this power, the key consideration is whether or not the designers in charge discover those decisions. If a project is added, Bootstrap provides all HTML elements with basic design concepts. The result is a consistent presence on internet browsers for printing, tables, and structural components. In addition, engineers may use the bootstrap CSS classes to further change their presence.

For instance, Bootstrap has provisioned for light-and dull shaded tables, page headings, more unmistakable force statements, and text with a feature. Bootstrap likewise accompanies a few JavaScript parts as jQuery modules. They For context, Bootstrap provided light-and-dull tables, section headers, clearer force statements, and text with a function. As jQuery plugins, a few JavaScript bits are also accompanied by bootstrap. For eg, they have additional UI components such as speech boxes, tooltips and happy rounds. Any bootstrap section has an HTML structure, CSS statements, and the JavaScript code is presented every now and then. It also expands the utility of some existing interface elements providing an automatic capability for input fields, for example.

B. Back-end Development:

The back-end of the website is a computer, an interface and a data collection. A back-end developer creates and maintains the innovation that governs certain pieces that allow clients to try to live on the opposite side of the web.

1. Python

Python is known for its straightforward linguistic structure and short code length. This, matched with the way that there is likewise broad documentation and instructional exercises accessible on its utilization, makes it genuinely simple to learn. Besides, Python is additionally very flexible and all around planned. On the off chance that that wasn't sufficient, Python is a stage autonomous language, implying that product made utilizing Python can be utilized on a wide assortment of working frameworks with no need of a mediator. The entirety of this implies that software engineers can invest a ton of the energy they generally dedicate to getting the code to run or sorting out how it functions handling the more significant difficulties of their specific improvement project.

Python is an ideal backend language with regards to this territory of innovation. Since the language is basic and predictable, engineers can compose dependable frameworks, zeroing in on the issues of AI without stressing over any potential migraines usually connected with complex programming dialects.

2. Django

Django is a mainstream open-source Python web system worked by experienced designers. It targets utilizing robotization any place conceivable to accelerate web improvement and let programming engineers centre around the significant work. It is quick, secure and adaptable. It is a Python Web System of significant levels which allows fast events to turn and an immaculate, pragmatic plan.

Worked by professional developers, it solves a large part of the Site improvement problem, so you can write the application without wasting time. It's transparent and secure.

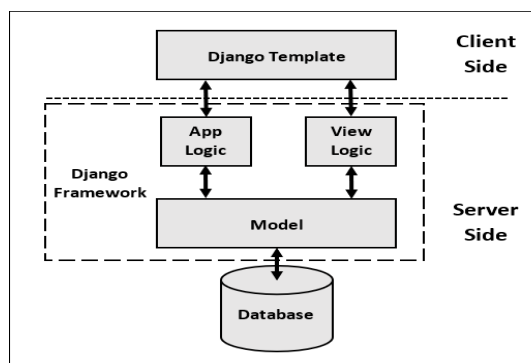


Figure 4: MVT architecture

Above Figure 4 is the architecture of Django framework and it illustrates the working mechanism of back end.

C. Database:

SQLite

SQLite is indeed a C library which supplies a streamlined plate-based database which does not have another user measurement required and enables data set to be accessed using an unstandardized SQL query language variation.

D. Colour Theory:

The theory and specialisation of blending is both shading concept. It affirms how viewers see tone and improves views on how shadings mix, fit, or differentiate. The concept of colouring also involves the tones of messages; and the repetition techniques.

Blending is insight. Our eyes see something (the sky, for instance), and information sent from our eyes to our minds reveals to us it's a sure tone (blue). Items mirror light in various blends of frequencies. Our minds get on those frequency mixes and make an interpretation of them into the wonder we call tone.

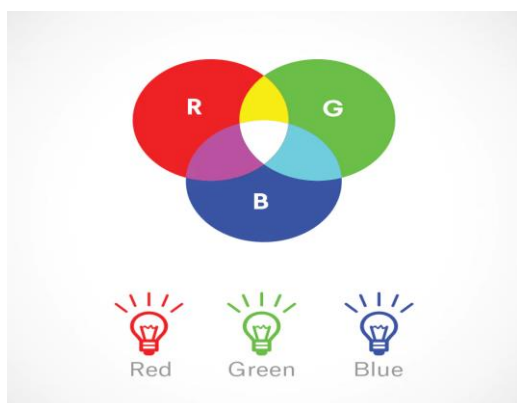


Figure 5: Colour theory

In this website we have used the following two mixture of colours:

i. Forest Green, Olive Green, Lime Green and light grey

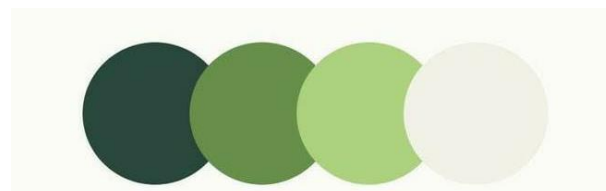


Figure 6: Combo of green colour

ii. Royal Blue, Prussian Blue, Azure and Turquoise



Figure 7: Combo of blue colour

E. Chatbot:

A virtual assistant is a product technology used for an online talk by text or text to speech rather than for a live human professional to give direct interaction. A chatbot is a sort of programming that can mechanize discussions and interface with individuals through informing stages. Chatbots, additionally called chatterbots, is a type of computerized reasoning (AI) utilized in informing applications. This apparatus helps add comfort for clients—they are robotized programs that associate with clients like a human would and cost little to nothing to draw in with.

Below Figure 5 is the mechanism of chatbot. This is how the chatbot works.

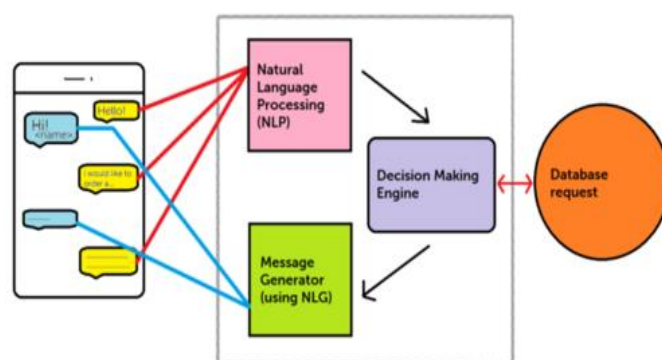


Figure 8: Architecture of chatbot

F. Google Map

The Google API has been used in this website in order to help the clients so that they can get the location details about the nearest nursery. They can get street view, satellite view and nursery information. It is styled in such a way that the users can see only nursery location is the map. They won't get confused with other locations. The marker has been used to point the exact nursery.

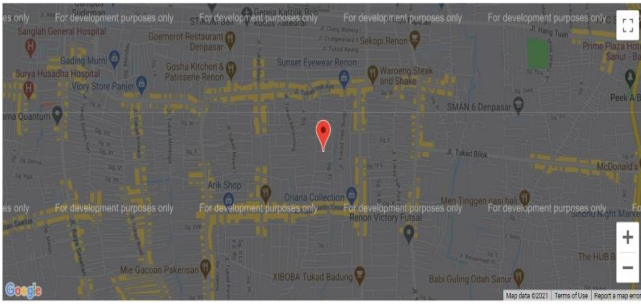


Figure 9: Google map

G. Search Bar

This is used to search anything directly without scrolling much. Following Figure 10 is the sample code related to search bar:

```
<div class="col-xs-6 col-md-6">
  <h6>Search</h6>
  <div class="input-group">
    <input type="text" class="form-control" placeholder="Search here">
    <div class="input-group-append">
      <span class="input-group-text">Go!</span>
    </div>
  </div>
</div>
<hr>
</div>
```

Figure 10: Sample code of search bar

II. Related Work

There have been lot of full stack website project and chatbot features but not included all together. Nowadays, artificial intelligence is emerging rapidly and it is also very useful as people find it very to use. The work that we looked up is to combine the chatbot, google map and search bar in the full stack website. It is a one stop destination for plant likers to get to know each and every detail about the house plants, it's uses and also from which nearby nursery to buy them. If any end-user has any doubt then they can clarify the doubts with the chatbot.

These applications had a few drawbacks therefore, the approach we focused on was making the chatbot and user interface more interactive and fix the drawbacks that the other chatbot and full stack websites had.

The paper “Desirable Features of a Chatbot-building Platform” by Saurabh Srivastava et al [1], shows the desirable features of commercial platforms where chatbots can be created using different mechanisms. It could be implemented using both the IT professionals and Non-IT professionals. It is doing the relative comparison between the few professional platforms and their hierarchy. They assessed the stages for all the highlights at the each level. They evaluated the stages on a size of 0 to 1 for each include. In the event that the element was not accessible on the stage, they relegated an estimation of 0. In the event that the component was accessible and simple to utilize, we doled out an estimation of 1. For situations where a highlight was either mostly present, or, its use was definitely not simple, they allotted

an incentive somewhere in the range of 0 and 1, with three diverse middle of the road levels - 0.25, 0.5 and 0.75.

In the paper “A Method of Optimizing Django Based On Greedy Strategy” by Jian Zhou et al [2], they provide an approach to optimize the Django framework using greedy strategy. It is focussing on the memory efficiency as the runtime of python is less efficient. It clarifies three flaws of Python VM's integer management, and then boost its memory utilisation efficiency.

The paper “The New Era of Full Stack Development” by Akshat Dalmia et al [3], mark-out the new technologies that can be used in the development of full stack website such as using cloud. Their study shows the advancement of an absolute implementation of the dynamic website, which we allude to as the customer side and the worker side. Because of the presentation of distributed computing there have been wide-ranging substitute in the realm of Full Stack Development and the way it has influenced the turn of events. Distributed computing comprises of different benefits and has numerous preferences. They have described so many network topologies and the importance of cloud computing in order to make the full stack website more advanced in the new era.

The paper “A Django Based Educational Resource Sharing Website” by Adama Shyam et al [4], delineates a site prototype with the assistance of which scholars can have the option to get the notes, earlier year question bank, prospectus, and put up old books for sale from a similar advanced stage too. The paper additionally portrays the part of programming in task improvement. The task is created on Django Framework; the server-side amelioration is in SQLite, Python and Jinja2. HTML, Javascript(es) and CSS altogether constitutes the front-end. The venture is created utilizing the appropriate programming measure, following the Iterative Model of SDLC. The methodology utilized in the System Development Model can act as a guide for the improvement of comparable sorts of Web Applications proficiently.

In the paper “The Influence of House Plants on Indoor CO2” by Hakan Sevik et al [5] here, the investigation pointed toward deciding the impact of carbon dioxide (CO2) in the interior climate of various indoor plants as the new ascent in urbanization has prompted expanded populace thickness, especially in metropolitan zones. Thus the number of individuals per unit zone has expanded. These days, metropolitan individuals spend in any event 80% of their lives in indoor conditions as a result of expanded lodging and evolving life conditions. The investigation was led in a plant development area that was kept away from the outside air and whose inner proportion was noted. The temperature & light states of the area were resolved autonomous of the outside climate. Their study also describes that how natural conditions impressively alter the rate of effect while the process of photosynthesis and also impacts on the amount of CO2. Hence, consideration of variables, for instance, leaf structure, temperature, plant size and light in upcoming research is notable for figuring out what kind of plants are more successful in definite ecological conditions.

nature also as the work done is entirely software oriented.

IV. Results

Our main objective in doing this project was to organize each and every module effectively so that the UI/UX doesn't become clumsy and hard to understand by the end user. The most challenging part of this project was to train the chatbot as it needs lots of information for processing and giving the desired output.

Following are some snapshots of the Herbivicus:

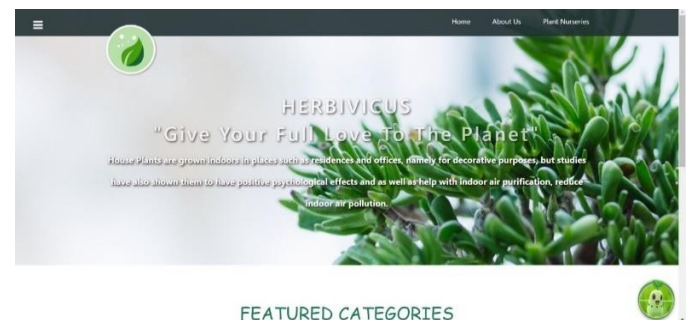


Figure 11: Home page

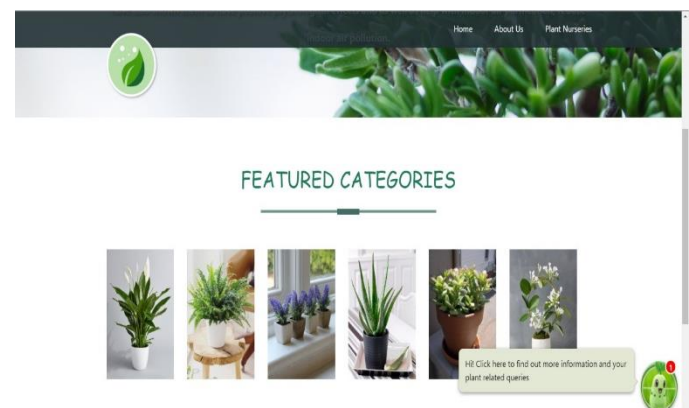


Figure 12: Featured page

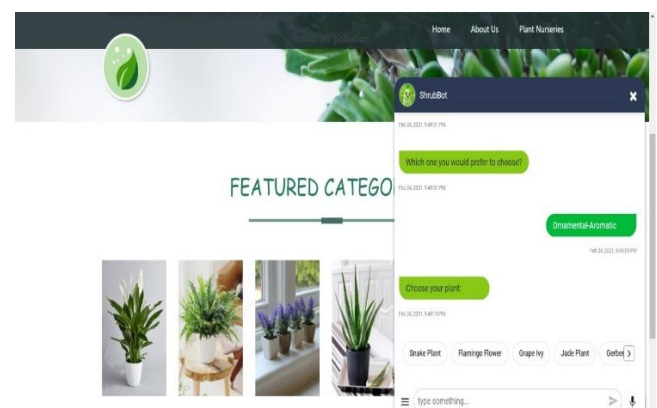


Figure 13: Chatbot

V. Conclusion

The paper "Bootstrap Framework" by Suraj Shahu Gaikwad et al [6], showcases the benefits of Bootstrap framework. They have also mentioned various tool of Bootstrap framework which is used to create the static website.

Bootstrap takes into account quick, flexible upgradation that is predictable and can be very much validated by the outcome and local area planning. As the framework continues to make, the utilization of Bootstrap continues to ascend.

The website "<https://nurserylive.com/>" [7] is developed only for the commercial purpose. The customers can see artificial plants live and order. It also has chatbot feature which requires a manual instruction. It is not automated and it doesn't understand the user inputs properly. The website doesn't provide any information about any plants, specially house plants.

The website "<https://www.gardeningknowhow.com/>" [8] is all about the tips and tricks and gardening. It doesn't have features like chatbot and google map. Here, user cannot get instant reply of their query and suppose if they want to buy that specific plants they have to search somewhere else for that particular plant.

III. Proposed System

To overcome the limitations of the existing system that will provide the user the facility of using the chatbot and google map for the ease of communication and navigation.

Features of Proposed system

- User Interface is friendly.
- It will maintain the information of the house plants which are essential in day to day life and can be accessed in nearby nurseries.
- User interface is developed in such a way that layman can understand it very well.
- It enables the search box through which the user can get their search results prompt and fast.
- Colour theory has been implemented. The combination of few colours has been used in entire website such that the people who has colour blindness can also see the website and its content properly.
- The exciting feature of the whole system is the chatbot. The chatbot enables online chat conversations with the bot.
- The chatbot is simple and hassle free, the user doesn't have to write sentences in the box they will all the inputs related to that website and can even download the plant guidelines.
- The Google map feature was also enabled as in the existing system users were not able to get the plant nursery's location at single website. So, Map will help users to get the details of nearby location of them.
- Above all, the existing system include a huge amount of colours and graphics which looks clumsy. Hence, the proposed system helps in protecting our beautiful

The full stack website has been created successfully and all the tools and technologies are used appropriately. Few limitations which people had during the usage of chatbot has been cleared here. It's a one stop destination where people can easily get all the details about the house plants, their uses & benefits. The search bar enables more features where user can search directly

References

- [1]. Saurabh Srivastava, T.V. Prabhakar “Desirable Features of a Chatbot-building Platform”, 2020 IEEE International Conference on Humanized Computing and Communication with Artificial Intelligence (HCCAI) DOI 10.1109/HCCAI49649.2020.00016, 2020.
- [2]. Jian Zhou, Lin Chen, Hui Ding, Jingxuan Tu, Baowen Xu “A Method of Optimizing Django Based On Greedy Strategy”, 2013 10th Web Information System and Application Conference, DOI 10.1109/WISA.2013.41, 2013.
- [3]. Akshat Dalmia, Abhishek Raj Chowdary “The New Era of Full Stack Development”, International Journal

of Engineering Research & Technology (IJERT), Vol. 9, Issue 04, April 2020.

according to their requirement. The chatbot feature provides all the input which a user can ask a live chat agent. The chatbot has custom input and user can opt-in their options to get results. The google map helps the end user to find the locations of various nurseries nearby with so many map views and marker points out the exact destination.

- [4]. Adamyia Shyam, Nitin Mukesh “A Django Based Educational Resource Sharing Website: Shreic”, Journal of Scientific Research, Volume 64, Issue 1, 2020.
- [5]. Hakan Sevik, Mehmet Cetin, Kerim Guney, Nur Belkayali “The Influence of House Plants on Indoor CO₂”, Pol. J. Environ. Stud. Vol. 26, No. 4, 2017.
- [6]. Suraj Shahu Gaikwad, Prof Pratibha Adkar “A Review Paper on Bootstrap Framework”, IRE Journals, Volume 2, Issue 10, APR 2019.
- [7]. <https://nurserylive.com/>
- [8]. <https://www.gardeningknowhow.com/>

Sample Code

1. Multi Item Carousel:

```
<div class="row">
    <div class="MultiCarousel" data-items="1,3,5,6" data-slide="3"
id="MultiCarousel" data-interval="1000">
        <div class="MultiCarousel-inner">
            <div class="item">
                <div class="pad15">
                    <p>As per the number of topics you want to include</p>
                    <a href="#">More</a>
                </div>
                <button class="btn btn-danger leftLst"><</button>
                <button class="btn btn-danger rightLst">>>/button>
            </div>
        </div>
    </div>
</div>
```

2. Footer:

```
<footer class="site-footer">
    <div class="container">
        <div class="row">
            <div class="col-sm-12 col-md-6">
                <h6>Quote</h6>
                <p class="text-justify">Any nature/plant/flower quote of your choice by
renowned author/poet</p>
            </div>
            <div class="col-xs-6 col-md-6">
```



```

<i class="fa fa-times" id="cancel"></i>
    </label>
<div class="sidebar">
    <h4>CATEGORIES</h4>
    <a href="ornamental.html">Ornamental & Aromatic</a>
    <a href="pureair.html">Air Purifier & Humidifier</a>
    <a href="medic.html">Medicinal</a>
    <a href="insrepel.html">Insect Repellant</a>
    <a href="goodluck.html">Good Luck</a>
    <a href="psychoactive.html">Psychoactive</a>
</div>

```

5. Multi Item Carousel CSS:

```

.MultiCarousel { float: left; overflow: hidden; padding: 15px; width: 100%;
position:relative; }

.MultiCarousel .MultiCarousel-inner { transition: 1s ease all; float: left; }

.MultiCarousel .MultiCarousel-inner .item { float: left;}

.MultiCarousel .MultiCarousel-inner .item > div
{
    text-align: center;
    color: white;
    border-radius: 5%;
    height: 150px;
}

.MultiCarousel .leftLst, .MultiCarousel .rightLst { position:absolute; border-
radius:50%; top:calc(50% - 20px); }

.MultiCarousel .leftLst { left:0; }

.MultiCarousel .rightLst { right:0; }

.MultiCarousel .leftLst.over, .MultiCarousel .rightLst.over { pointer-events:
none; background:#ccc; }

```

6. About Us Animation

```
<section class="text-center about">

  <h1>ABOUT US</h1>

  <div class="container">

    <div class="row">

      <div class="clearfix visible-md-block visible-sm-block"></div>

      <div class="col-lg-4 col-sm-6 col-ex-12 about-item wow lightSpeedIn" data-wow-
offset="200">

        <a href="#vision"><span class="fa fa-file"></span></a>

        <h2>Our Vision</h2>

        <p class="lead"></p>

      </div>

      <div class="col-lg-4 col-sm-6 col-ex-12 about-item wow lightSpeedIn" data-wow-
offset="200" >

        <a href="#team"><span class="fa fa-group"></span></a>

        <h2>Our Team</h2>

        <p class="lead"></p>

      </div>

      <div class="col-lg-4 col-sm-6 col-ex-12 about-item wow lightSpeedIn" data-wow-
offset="200">

        <a href="#approach"><span class="fa fa-info"></span></a>

        <h2>Our Approach</h2>

        <p class="lead"></p>

      </div>

    </div>

  </div>
```

</div>

</section>

7. Feedback Form:

<section id="services">

<div class="container">

<h1>ANY SUGGESTIONS! YOU'RE WELCOME!</h1>

<!--Get in touch-->

<section id="contact">

<div class="container">

<div class="row">

<div class="col-md-6">

<form class="contact-form">

<div class="form-group">

<input type="text" class="form-control" placeholder="Your name">

</div>

<div class="form-group">

<input type="number" class="form-control" placeholder="Phone no.">

</div>

<div class="form-group">

<input type="email" class="form-control" placeholder="Email-id">

</div>

<div class="form-group">

<textarea class="form-control" rows="4"
placeholder="Message"></textarea>

```
</div>
    <button type="submit" class="btn btn-primary">Send</button>
  </form>
</div>
</div>
</div>
</section>
</div>
</section>
```

References

- [1]. Adamya Shyam, Nitin Mukesh “A Django Based Educational Resource Sharing Website: Shreic”, Journal of Scientific Research, Volume 64, Issue 1, 2020.
- [2]. Jian Zhou, Lin Chen, Hui Ding, Jingxuan Tu, Baowen Xu “A Method of Optimizing Django Based On Greedy Strategy”, 2013 10th Web Information System and Application Conference, DOI 10.1109/WISA.2013.41, 2013.
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- [6]. Suraj Shahu Gaikwad, Prof Pratibha Adkar “A Review Paper on Bootstrap Framework”, IRE Journals, Volume 2, Issue 10, APR 2019.
- [7]. <https://nurserylive.com/>
- [8]. <https://www.gardeningknowhow.com/>