

A Project report

on

NEWS APPLICATION USING ALAN AI

Submitted in partial fulfillment of the requirements

for the award of the degree of

BACHELOR OF TECHNOLOGY

in

Computer Science & Engineering

by

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SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

(Affiliated to JNTUA & Approved by AICTE)

(Accredited by NAAC with 'A' Grade & Accredited by NBA (EEE, ECE & CSE))

Rotarypuram Village, B K Samudram Mandal, Ananthapuramu-515701.

2021-2022

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Certificate

This is to certify that the project report entitled **News Application Using Alan AI** is the bonafide work carried out by **MANISH RANJAN** bearing Roll Number **184G1A0543**, **S. MOMEENA** bearing Roll Number **184G1A0548**, **G. HEMA SREE** bearing Roll Number **184G1A0523** and **B. DEVENDRA** bearing Roll Number **184G1A0513** in partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology** in **Computer Science & Engineering** during the academic year 2021-2022.

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Project Associates

DECLARATION

We, Mr. Manish Ranjan bearing reg no : 184G1A0543, Ms. S. Momeena bearing reg no : 184G1A0548, Ms. G. Hema Sree bearing reg no : 184G1A0523, Mr. B. Devendra bearing reg no: 184G1A0513, students of SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY, Rotarypuram, here by declare that the dissertation entitled “NEWS APPLICATION USING ALAN AI” embodies the report of our project work carried out by us during IV Year Bachelor of Technology under the guidance of Mr. C. Sudheer Kumar, M. Tech, (Ph. D), Assistant Professor, Department of CSE and this work has been submitted for the partial fulfillment of the requirements for the award of Bachelor of Technology degree.

The results embodied in this project report have not been submitted to any other Universities of Institute for the award of degree.

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LIST OF ABBREVIATIONS

NLP	Natural Language Processing
ASR	Automatic Speech Recognition
VSC	Visual Studio Code
NPM	Node Package Manager
STT	Speech To Text
TTS	Text To Speech

ABSTRACT

News websites are sites developed to deliver the headlines in a different format than television, print or radio. These sites include articles that have a large variety of information which consists of international, national, entertainment, games, sports, education or other miscellaneous information.

Reading newspapers takes up a lot of time and the reader usually spends reading about articles in which they are not interested. By using this project, the user can get to hear about all the important headlines of their chosen topic on the go, in just few minutes. This application brings in the latest headlines and the user can use the voice control feature to fetch categorical news, news with specific terms and news from different sources by interacting with the application.

CHAPTER-1

INTRODUCTION

1.1 Motivation

Newspapers have been a constant source of news and information for us for about 400 years now. Many technological advancements led to newer ways of delivering news and information about various aspects. Since the advent of technological developments such as Artificial Intelligence, researchers and developers have tried to make use of Artificial Intelligence in various fields. This research project is an effort to make news reading more fun and interactive using the ALAN voice assistant. The web app is completely interactive and the user is able to get news from any topic of interest just by speaking. The user can access news by category, popular news channels, by terms, etc. The web app is completely responsive and works well with any device such as a laptop, tablet, or mobile phone. The project is developed using technologies such as ReactJS, JavaScript, Visual Studio Code, and Alan AI.

1.2 Problem Definition

The existing system which consists of traditional methods of data entry fail the requirements to support all type of users. The hands-free approach provided by the system goes to a great length and makes the user interact more often as the user usually prefers to use voice commands rather than giving commands by typing.

The biggest advantage of the proposed system is that the voice recognition is not limited to just mobile phones, laptops or computers and it also provides a user-friendly experience which helps user save time as well as physical work.

1.3 Objectives of project

Traditional news gathering methods such as newspapers, radios, televisions have been and succeeded for a long time. In modern-day, we are familiar with the use of

smartphones and other types of computers for the same through the use of the internet. Although these methods work well, news gathering has never been fun and much interactive.

- Alan AI is a revolutionary speech recognition software that allows you to add voice capabilities to your applications. It allows you to control absolutely everything in the app using your voice.
- The system would support a greater number of languages supported by the system, thus adding even more comfort and ease for our user.
- It also helps physically challenged people to make use of the latest advancements in the technical fields and enables them to stay updated and informed without their health condition hampering them.

1.4 What is Voice Control Technology?

The voice control technology is reaching new levels day by day and the system will also help in tackling one other problem that the normal user faces every day. Apart from some, most people face trouble while typing in a regional language. Most keyboards do not provide enough compatibility and comfort while typing in a regional language. By using the system, the user has the free choice of using the language he prefers. This helps in faster result searching, better user experience and better user satisfaction.

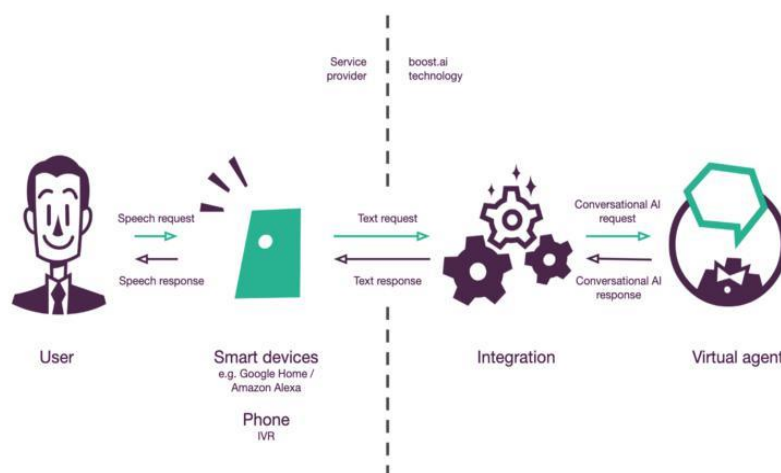


Fig 1.1: Voice Control Technology

The system also takes care of the user's privacy. The system does not get activated on its own and only gets activated when it's prompted by the user. The privacy of the user's data is one of the key concerns. The data stored in the system is entirely safe; it only records the news sources, news type etc., only to make the system feel more personal and more customized to the needs and liking of the user. After the development of the proposed idea, the user will be able to tackle the above-mentioned problems and would also be able to get the benefits from one of the fastest developing technologies in the technical industry at this moment of time.

According to various research groups and studies, 2019 saw about 111.8 million people used the voice assistant at least one time in a month in USA alone. The projected figure of the number of people using the voice assistants in USA by 2021 is around 132 million. The ever-increasing number of people using this technology just gives us the advantage and also a need for the likes of the proposed system. Web apps equipped with voice enabled systems can provide flexibility in terms of users' choice of web interaction and can also increase the usability of the app for the general users when they are unable to interact with the system in the traditional methods.

1.5 What is Natural Language Processing?

Natural language processing (NLP) refers to the branch of computer science and more specifically, the branch of artificial intelligence or AI concerned with giving computers the ability to understand text and spoken words in much the same way human beings can.



Fig 1.2: Speech To Text

NLP combines computational linguistics rule-based modeling of human language with statistical, machine learning, and deep learning models. Together, these technologies enable computers to process human language in the form of text or voice data and to ‘understand’ its full meaning, complete with the speaker or writer’s intent and sentiment.

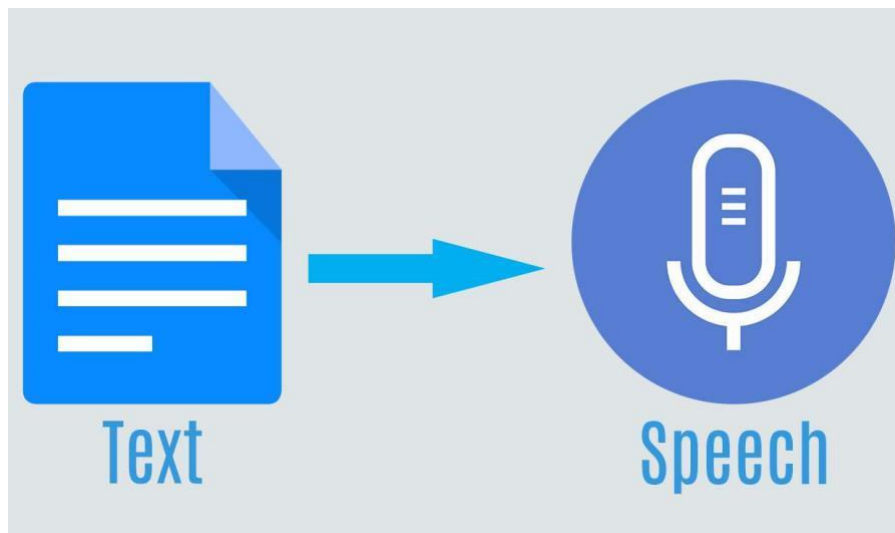


Fig 1.3: Text To Speech

NLP drives computer programs that translate text from one language to another, respond to spoken commands, and summarize large volumes of text rapidly even in real time. There’s a good chance you’ve interacted with NLP in the form of voice-operated GPS systems, digital assistants, speech-to-text dictation software, customer service chatbots, and other consumer conveniences. But NLP also plays a growing role in enterprise solutions that help streamline business operations, increase employee productivity, and simplify mission-critical business processes.

1.6 What is Spoken Language Understanding?

Spoken language understanding (SLU) is the interpretation of signs conveyed by a speech signal. SLU and natural language understanding (NLU) share the goal of obtaining a conceptual representation of natural language sentences. Specific to SLU is the fact that signs to be used for interpretation are coded into signals along with other information such as speaker identity. Furthermore, spoken sentences often do not

follow the grammar of a language; they exhibit self-corrections, hesitations, repetitions, and other irregular phenomena.

SLU systems contain an automatic speech recognition (ASR) component and must be robust to noise due to the spontaneous nature of spoken language and the errors introduced by ASR. Moreover, ASR components output a stream of words with no structure information like punctuation and sentence boundaries. Therefore, SLU systems cannot rely on such markers and must perform text segmentation and understanding at the same time.

1.7 What is Automatic Speech Recognition?

Automatic speech recognition (ASR) by machine has been a field of research for more than 60 years. The industry has developed a broad range of commercial products where ASR as user interface has become ever more useful and pervasive. Consumer-centric applications increasingly require ASR to be robust to the full range of real-world noise and other acoustic distorting conditions. However, reliably recognizing spoken words in realistic acoustic environments is still a challenge.

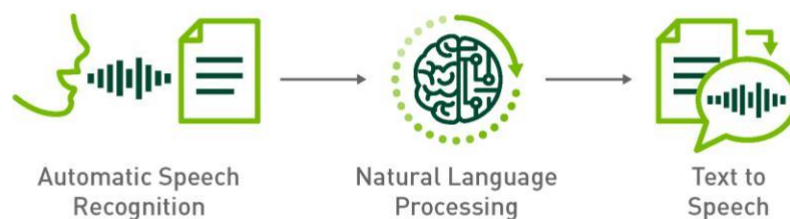


Fig 1.4: Automatic Speech Recognition

Automatic speech recognition is a high-tech that makes machine turn the speech signal to the corresponding text or command after recognizing and understanding. Automatic speech recognition (ASR) includes the extraction and determination of the

acoustic feature, the acoustic model, and the language model.

The extraction and determination of the acoustic feature is a significant part of speech recognition. The extraction and determination of the acoustic feature is a procedure of information compression, as well as a procedure of signal deconvolution.

1.8 What is Machine Learning?

Machine Learning is the field of study that gives computers the capability to learn without being explicitly programmed. ML is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that makes it more similar to humans: The ability to learn. Machine learning is actively being used today, perhaps in many more places than one would expect. Machine learning is about computers being able to perform tasks without being explicitly programmed but the computers still think and act like machines. Their ability to perform some complex tasks gathering data from an image or video, for example still falls far short of what humans are capable of.

CHAPTER-2

LITERATURE SURVEY

2.1 Introduction

To make life easier, advancements are being made in technology, and voice control is one of the leading technologies which are gradually being implemented on more and more devices. Voice control has become one of the most in-demand skills. More and more applications and services provide voice control capabilities. Voice control capabilities provide a very easy and hands-free experience for the user and enables him to use the service without having to physically use the device with his/her hands. The modern lifestyles do not allow us to take time from busy schedules to sit down and read newspapers, magazines etc. to get us informed about the latest events happening all around the world. With each successive generation, the society struggle even more to stay Informed and educated about the world. Reading and attaining the latest news was a well-practiced habit that was followed by a huge part of the society that seems to get forgotten gradually.

With the involvement and introduction of technology, it is observed that new ways of news reading are getting replacing old methods. News is manually customized to grab the attention and notice of its reader and is even available in a short, to the point format. There are various major, big news apps that give e-papers and a gist of news as notifications or updates for their readers and users. With every new story or article that is read, the reader gains knowledge about the events taking place across the globe. News reading is the quickest and most effective way to gather knowledge about state and global news. Since news agencies cover all subjects of interest like Fashion, Lifestyle, Fashion, Politics, Sports, Entertainment, and more, the reader is constantly updated about all these facts.

The traditional methods of data entry fail the requirements to support all type of users. Thus, it is necessary to develop systems and applications with enhanced usability for all users. Most of the current applications lack the accessibility features that may hinder some users for example the visually impaired users.

The hands-free approach provided by the system goes to a great length and makes the user interact more often as the user usually prefers to use voice command rather than giving commands by typing. One of the biggest advantages of the proposed system is that the voice recognition is not limited to just mobile phones, laptops or computers but voice recognition is being installed in all type of devices that users interact with like smart televisions, smart watches etc.

Voice recognition is also being installed in vehicles. Cars and other automobiles are finding the benefits of voice recognition and voice command. The system is very easy to use, very user friendly and the user has the choice of language he wants to interact with the system.

2.2 Existing System

- Reading newspaper takes up a lot of time and the reader usually spends reading about articles in which they are not interested.
- Newspapers can only give information on the basis of what is important according to them.
- User has to browse by texting for interesting headlines, which takes time and they have to wait for their article to display.



Fig 2.1: Existing System

- User has to scroll while reading and ads are displayed either on the top or bottom of the screen.

- Not easy to read for long due to eye strain.
- The existing systems like Alexa are not suitable to be carried anywhere and do not display the news to the users.

2.3 Proposed System

- To overcome the difficulty of existing system, we develop a web application which fetches global news from various sources and displays it to the user.

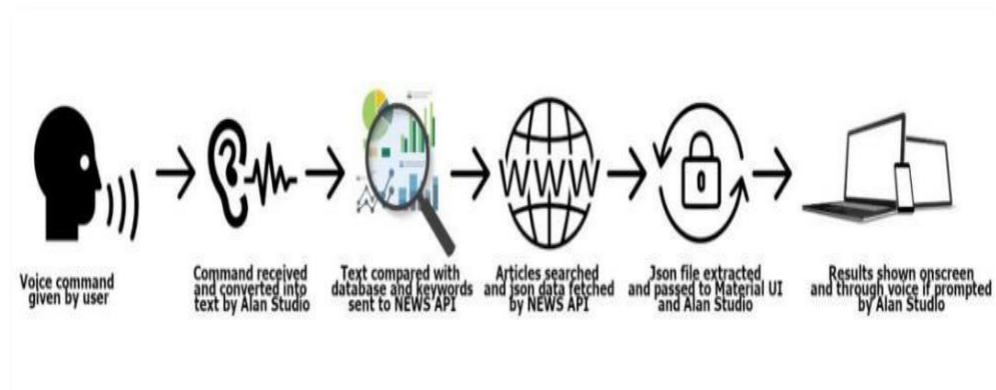


Fig 2.2: Overview of Proposed System

- In this project, we have also used Alan AI with which, information can be gathered by users with the use of voice commands.

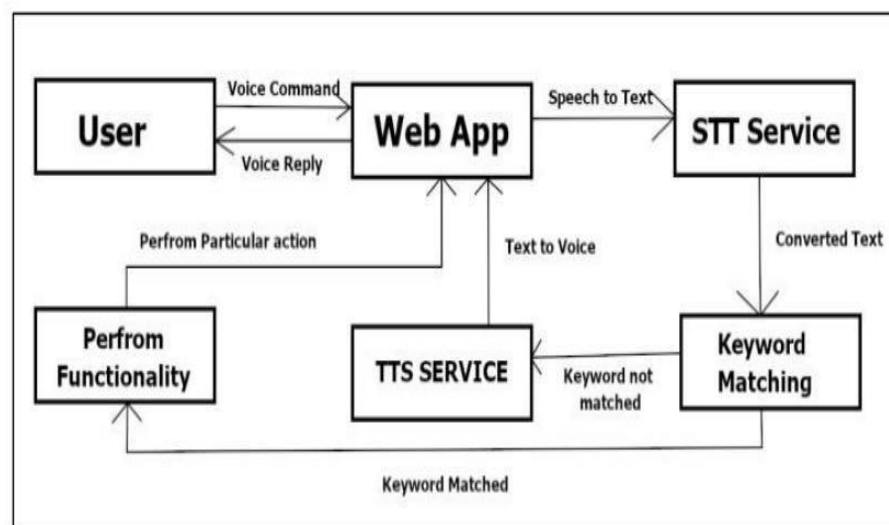


Fig 2.3: Working Architecture of Proposed System

- When a user asks Alan about a topic, the AI synthesizes their speech into commands that can then be used to gather categorical news, news with specific terms and from different sources by interacting with the application.



Fig 2.4: Proposed System

CHAPTER-3

ANALYSIS

3.1 Introduction

The meaning of Agile is swift or versatile. "**Agile process model**" refers to a software development approach based on iterative development. Agile methods break tasks into smaller iterations, or parts do not directly involve long term planning. The project scope and requirements are laid down at the beginning of the development process. Plans regarding the number of iterations, the duration and the scope of each iteration are clearly defined in advance.

Each iteration is considered as a short time "frame" in the Agile process model, which typically lasts from one to four weeks. The division of the entire project into smaller parts helps to minimize the project risk and to reduce the overall project delivery time requirements. Each iteration involves a team working through a full software development life cycle including planning, requirements analysis, design, coding, and testing before a working product is demonstrated to the client.

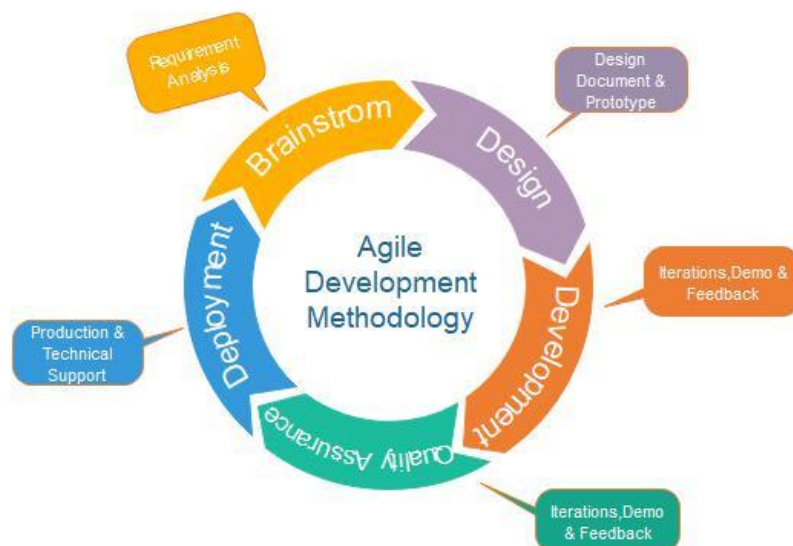


Fig 3.1: Agile Model

3.1.1 Phases of Agile Model:

Following are the phases in the Agile model are as follows:

1. Requirements gathering
2. Design the requirements
3. Construction/ iteration
4. Testing/ Quality assurance
5. Deployment
6. Feedback

Requirement Gathering

This process is also known as feasibility study. In this phase, the development team studied the site requirement. They investigate the need for possible dynamic representation of the site and increase security features. By the end of feasibility study, the team furnishes a document that holds the different specific recommendations for the candidate system. It also includes personnel assignments, costs, project schedules, target dates etc. the requirement gathering process is intensified and focused specially on software. The essential purpose of this phase is to find the need and to define the problem that needs to be solved. During this phase following facts were gathered.

- Determined the user need
- Identified the facts
- Establish the goals and objective for the proposed system
- Feasibility for the new system

Design the requirements

In this phase the software's overall structure and its nuances are defined. In terms of client server technology, the no of tiers needed for the package architecture, database design, data structure design etc., are defined in this phase. Analysis and Design are very crucial in entire development cycle. Any glitch in this phase could be expensive to solve in the later stage of software development. Hence following is the essential approach taken during website designing:

- DFD
- Database Designing
- Form Designing
- Pseudo code for methods

Construction/iteration

When the team defines the requirements, the work begins. Designers and developers start working on their project, which aims to deploy a working product. The product will undergo various stages of improvement, so it includes simple, minimal functionality.

Testing

Once the code is generated, the website testing begins. Different testing methodologies are done to unravel the bugs that were committed during the previous phases. Different testing methodologies are used:

- Acceptance testing
- White Box Testing
- Black Box Testing

Deployment

In this phase, the team issues a product for the user's work environment.

3.1.2 Advantages of Agile Method:

- Frequent Delivery
- Face-to-Face Communication with clients.
- Efficient design and fulfils the business requirement.
- Anytime changes are acceptable.
- It reduces total development time.

3.2 Requirement Specification

Software Requirement Specification (SRS) is the starting point of the software developing activity. As system yow more complex it became evident that the goal of the entire system cannot be easily comprehended. Hence the need for the requirement phase arose. The software is initiated by the client needs. The SRS is the means of translating the ideas of the minds of the clients (the input) into a formal document (the output of the requirement phase). The SRS phase consists of two basic activities: The process is order and more nebulous of two, deals with understand the problem, the goal and constraints. Here, the focus is on specifying what has been found giving analysis such as representation, specification languages and tools, and checking the specifications are addressed during this activity. The requirements phase terminates with the production of validate SRS document. Producing the SRS document is the basic goal of this phase. The software Requirements Specification (SRS) begins the translation process that converts the software requirements into the language the developers will use. The SRS draws on the use-cases from the User Requirement Document (URD) and analyses the situations, and omissions before development progresses significantly under mistaken assumptions.

3.2.1 Hardware Requirements

Hardware requirements which we need in this project are:

1. I3 Processor Based Computer or higher
2. Memory: 4GB RAM
3. Hard Drive:500GB
4. Internet band width greater than 50 kbps and latency under 150 ms

3.2.2 Software Requirements

Software requirements which we need in this project are:

- | | | |
|---------------------|---|-----------------------|
| 1. Operating System | : | Windows 10 or higher |
| 2. Tools | : | Visual Studio Code |
| 3. Languages Used | : | JavaScript |
| 4. Library | : | React Js, Material UI |
| 5. Backend | : | Node Js |

6. Package Manager : NPM
7. Voice AI platform : Alan AI

3.3 Visual Studio Code Installation

STEP 1:

Visit the official website of the Visual Studio Code using any web browser like Google Chrome, Microsoft Edge, etc.

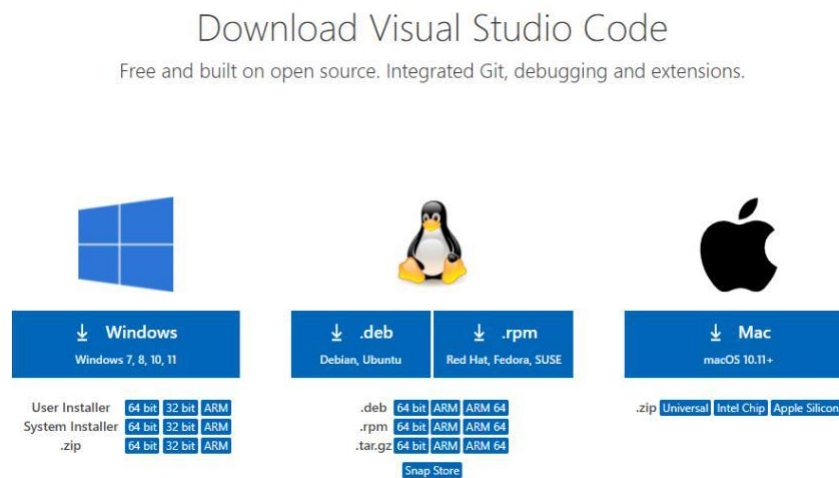


Fig 3.2: Official Website of Visual Studio Code

STEP 2:

Press the “Download for Windows” button on the website to start the download of the Visual Studio Code Application.

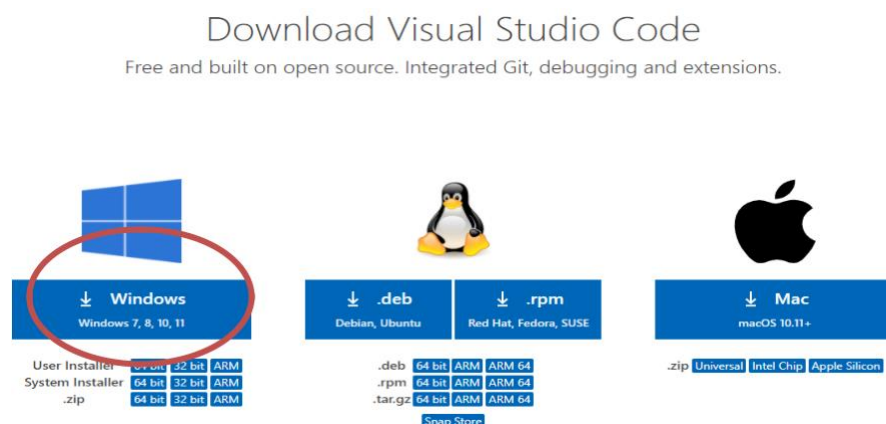


Fig 3.3: Download for Windows

STEP 3:

When the download finishes, then the Visual Studio Code icon appears in the downloads folder.



Fig 3.4: Visual Studio Code Icon

STEP 4:

Click on the installer icon to start the installation process of the Visual Studio Code. After the Installer opens, it will ask you for accepting the terms and conditions of the Visual Studio Code. Click on I accept the agreement and then click the Next button.

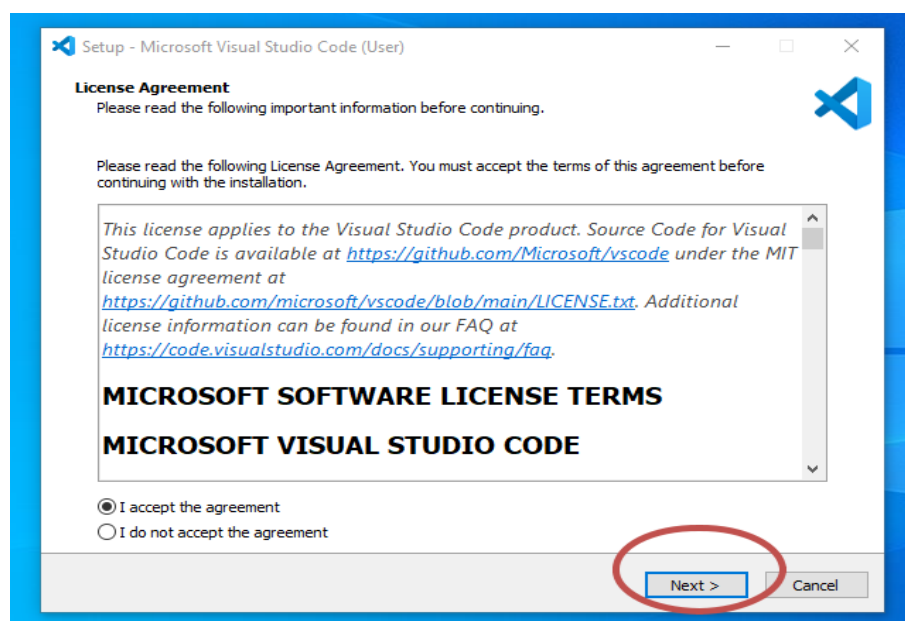


Fig 3.5: License Agreement

STEP 5:

Choose the location data for running the Visual Studio Code. It will then ask you for browsing the location. Then click on Next button.

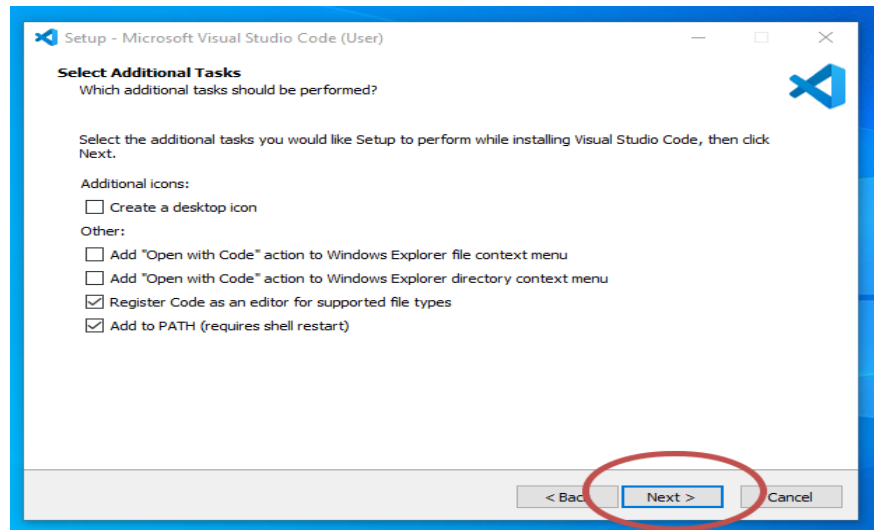


Fig 3.6: Choose the Location

STEP 6:

Then it will ask for beginning the installing setup. Click on the Install button.

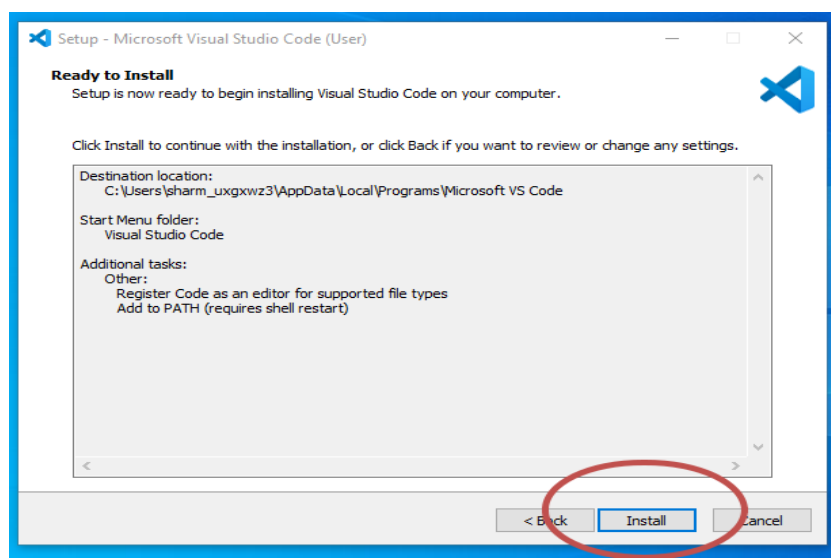


Fig 3.7: Beginning the Installing Setup

STEP 7:

After clicking on Install, it will take about 1 minute to install the Visual Studio Code on your device.

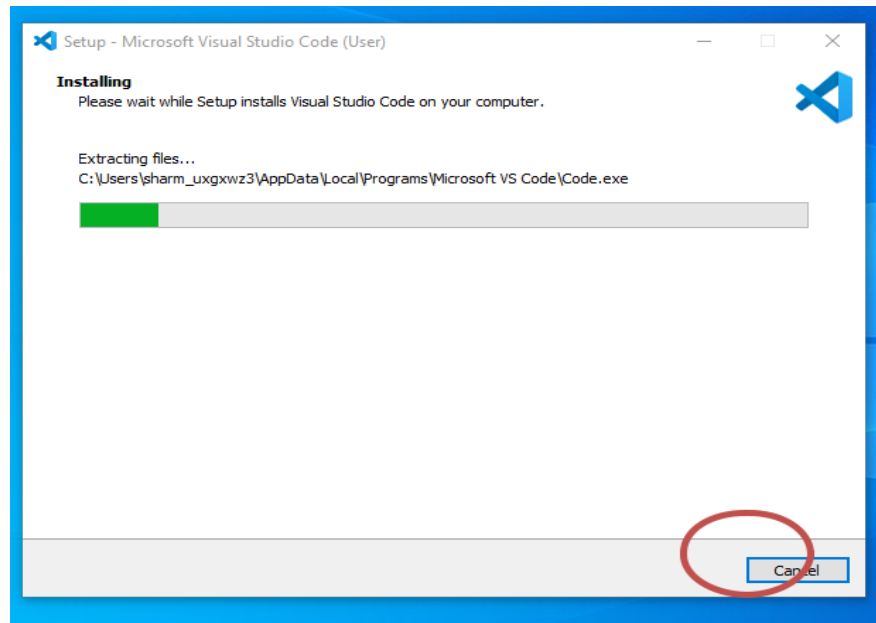


Fig 3.8: Installing

STEP 8:

- After the Installation setup for Visual Studio Code is finished, it will show a window like this below. Tick the “Launch Visual Studio Code” checkbox and then click Next.

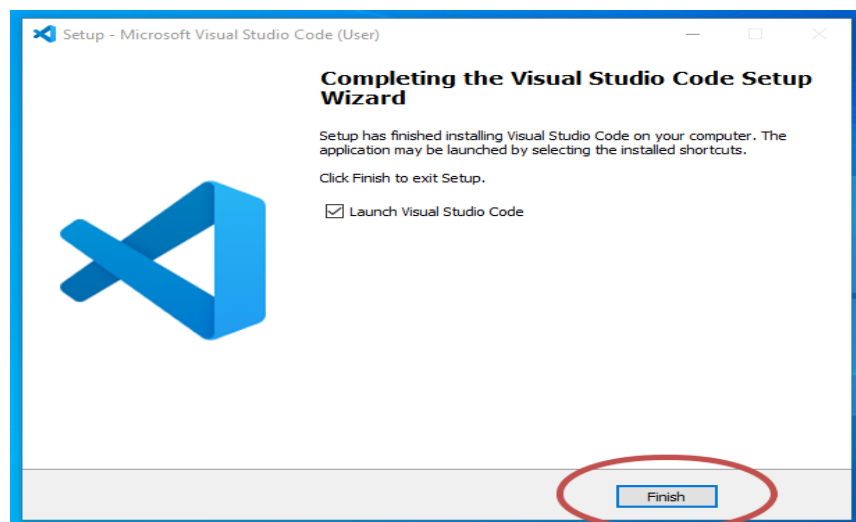


Fig 3.9: Launch Visual Studio Code

- After the previous step, the Visual Studio Code window opens successfully. Create a new file in the Visual Studio Code window and choose a language.

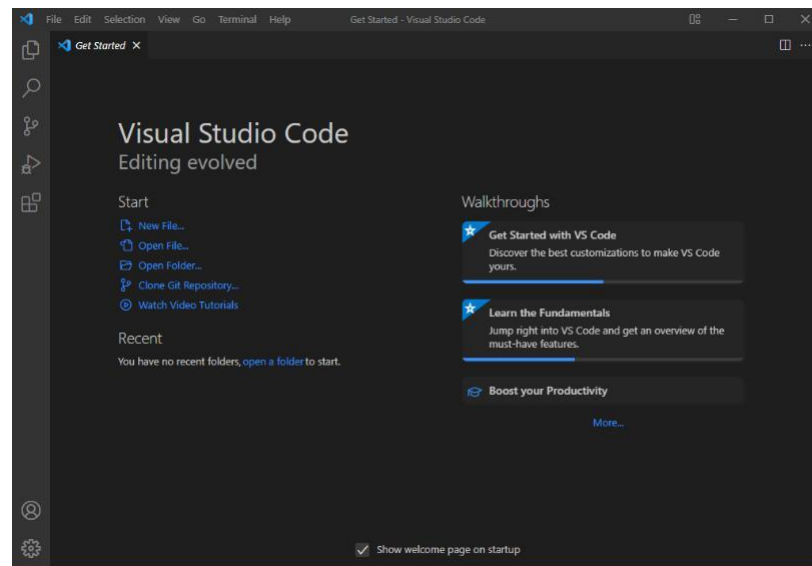


Fig 3.10: Visual Studio Code Window

- So, this is how we successfully installed Visual Studio Code on our Windows system.

3.4 Node Js Installation

STEP 1: Download Node.js package for Windows.

- First download the latest node.js package from node.js official site and click on Windows installer, it will download .msi file.
- Click on 32 bit or 64-bit version of node.js for windows.

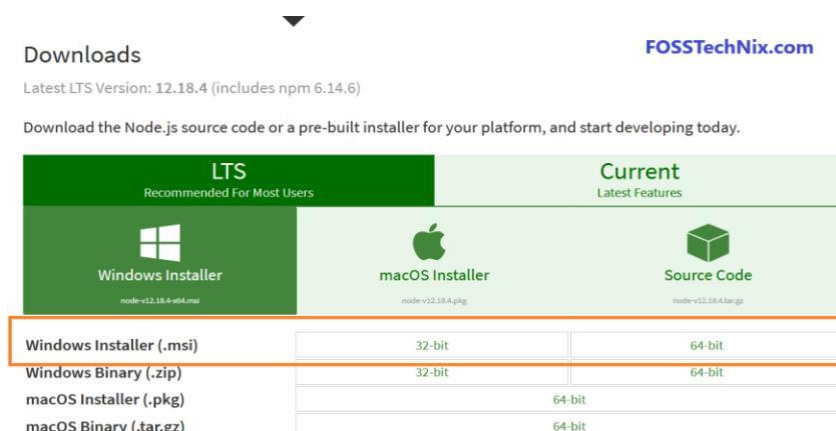


Fig 3.11: Node.js official Site

- once you clicked, it will ask for to save downloaded node.js msi setup, click on Save File.

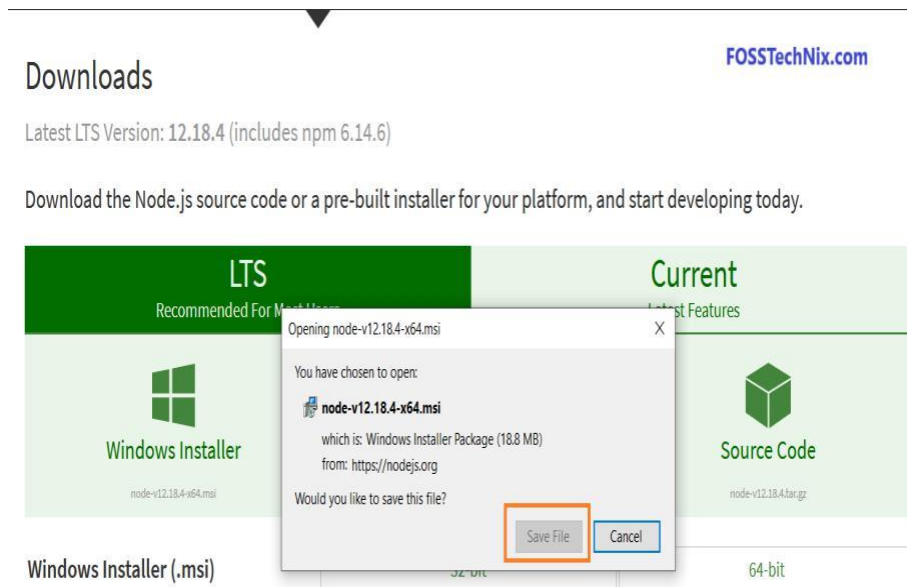


Fig 3.12: Saving .msi File

- Once downloaded, double click on node.js Windows Installed .msi file.
- You will see Node.js Setup Wizard, click on Next as shown below.

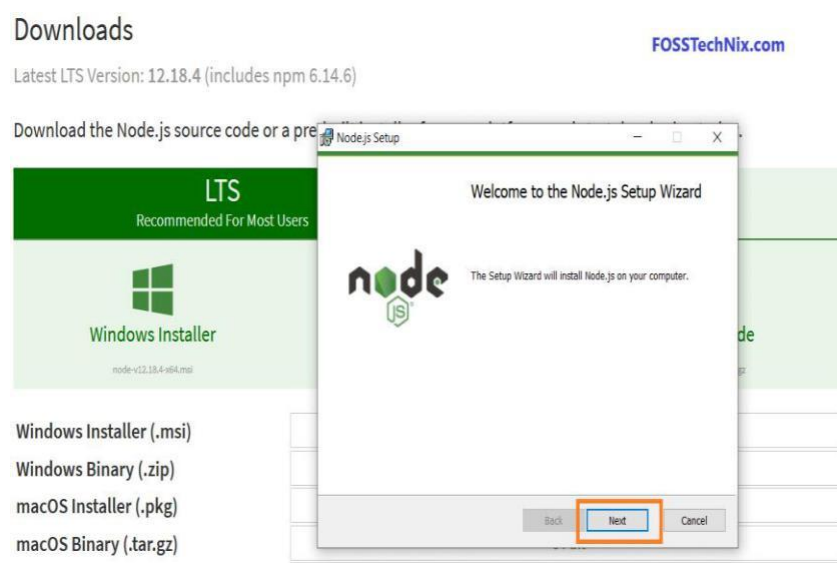


Fig 3.13: Node.js Setup Wizard

- Click on Node.js License agreement and click on Next.

Downloads

Latest LTS Version: 12.18.4 (includes npm 6.14.6)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

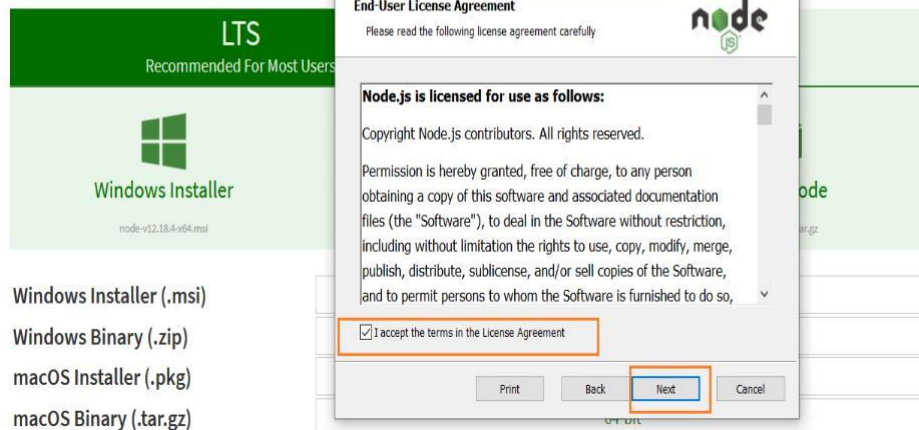


Fig 3.14: License Agreement

- Select Destination folder where you want to Install Node.js and click on Next.

Downloads

Latest LTS Version: 12.18.4 (includes npm 6.14.6)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

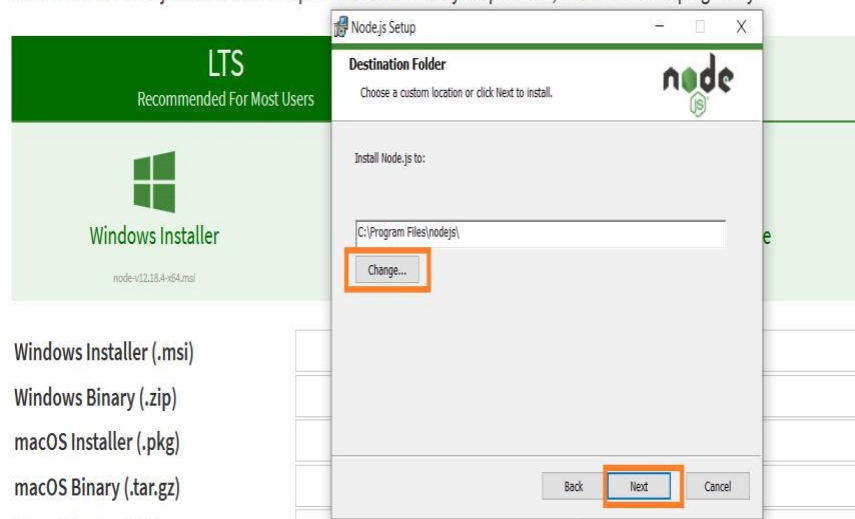


Fig 3.15: Destination Folder

- Select on to install npm modules like python and Visual Studio Build Tools if not installed and click on Next.

Downloads

Latest LTS Version: 12.18.4 (includes npm 6.14.6)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

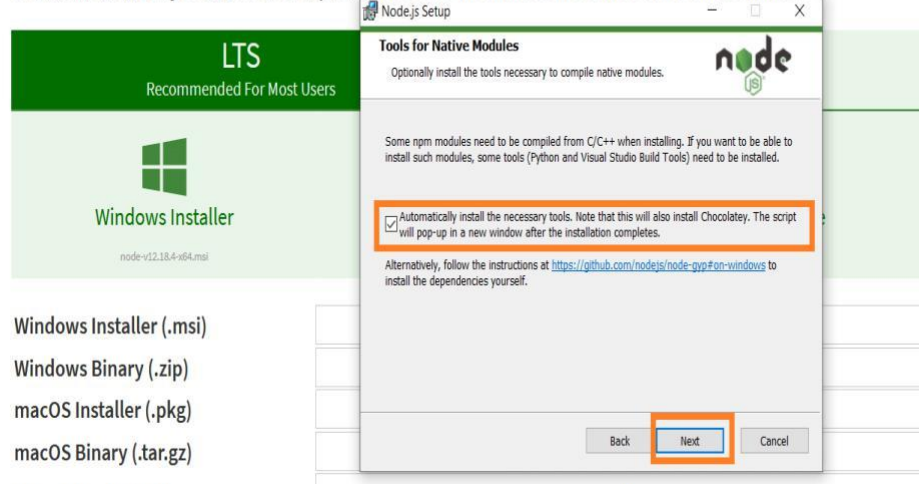


Fig 3.16: Tools for Native Modules

- Custom setup for Node.js and click on Next.

Downloads

Latest LTS Version: 12.18.4 (includes npm 6.14.6)

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

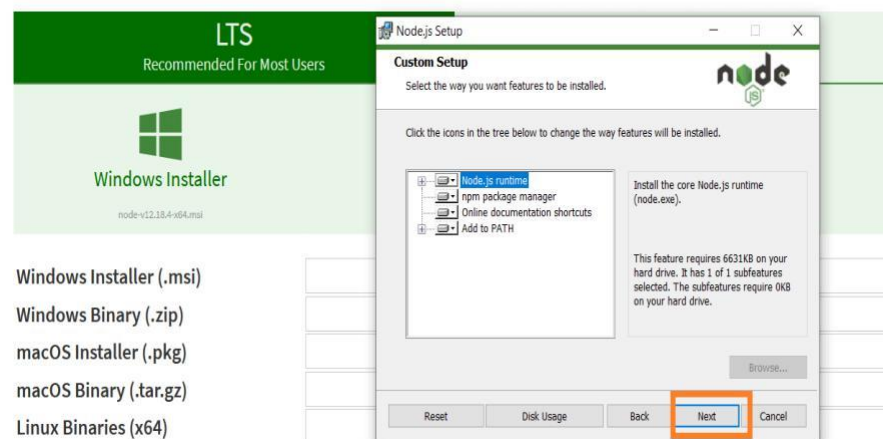


Fig 3.17: Custom Setup

Step 2: Install Node.js on Windows

- Now install Node.js Windows 10, click on Install.

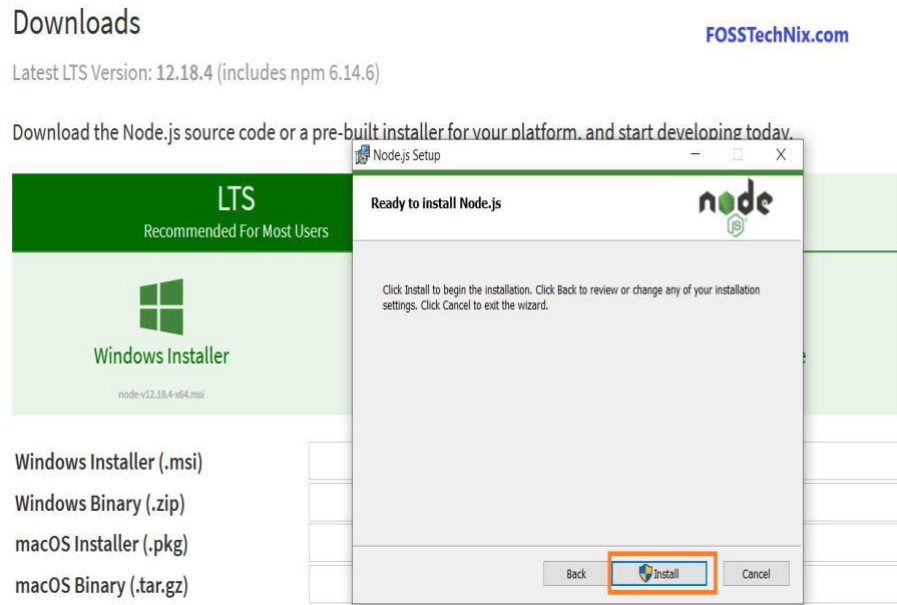


Fig 3.18: Ready to Install Node.js

- Wait to finish to Install Node.js on Windows.

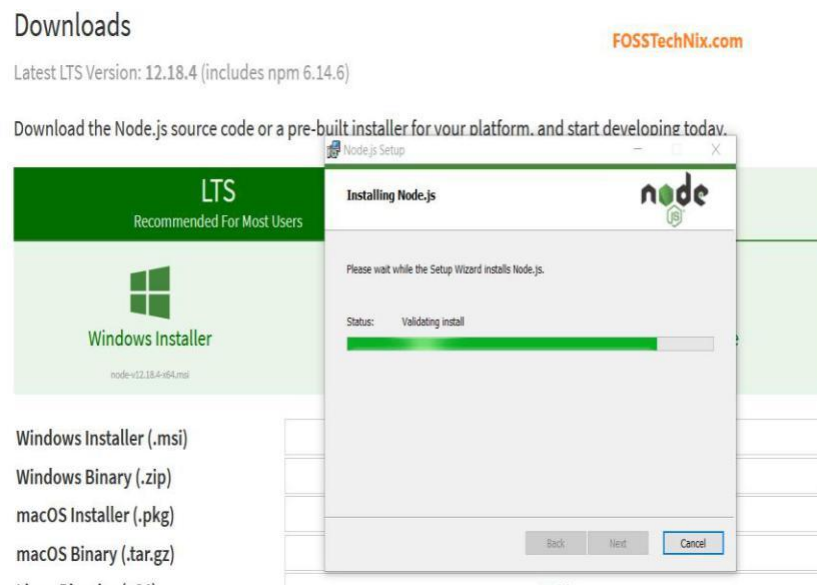


Fig 3.19: Installing Node.js

- Once installing of Node.js finished, click on Finish.

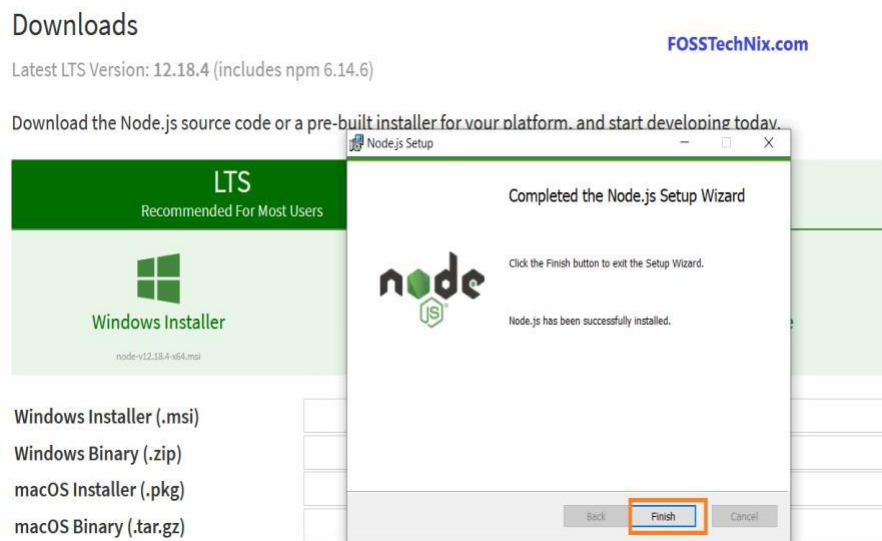


Fig 3.20: Completed the Node.js Setup Wizard

- It will open commands prompt to Install Addition Tools for Node.js for Windows, click Enter.

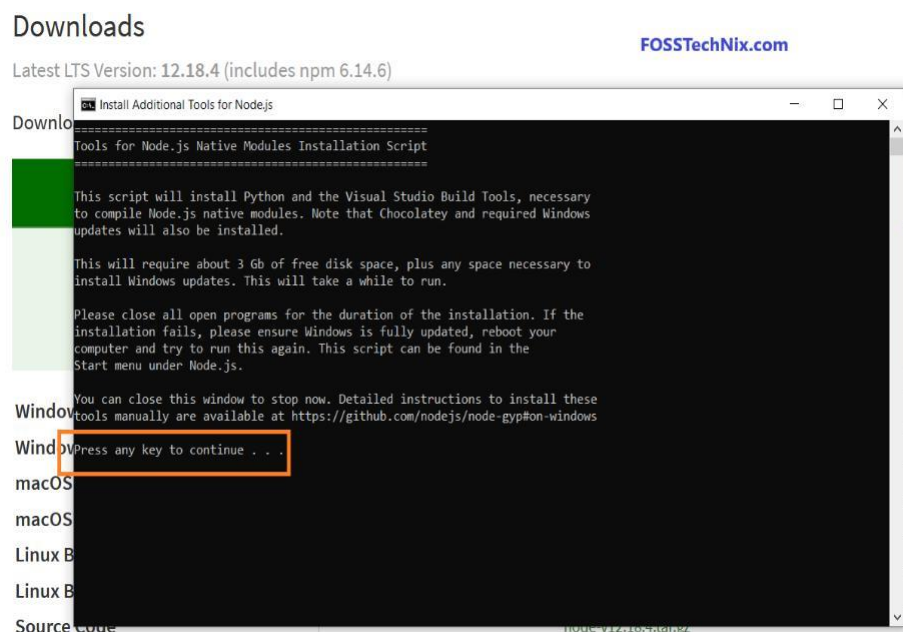
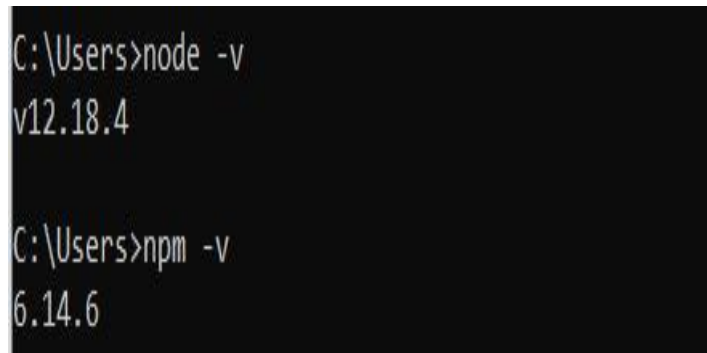


Fig 3.21: Install Additional Tools

- once you entered, it will open Windows Powershell and wait till to Install additional Tools for Node.js.
- once all finished, open a commands prompt.
- Check Node.js and npm version on Windows.



```
C:\Users>node -v
v12.18.4

C:\Users>npm -v
6.14.6
```

Fig 3.22: Node.js and npm version

NOTE: When you install node.js using msi installed, you don't need to setup system variables for node.js.

STEP 3: How to Update Node.js and NPM on Windows.

- To update node.js and npm on windows, you can download the node.js version from the node.js official site , install and replace it with existing version.

OR

- open a commands prompt and run below commands to update the node.js and npm on windows.

npm install npm --global

Output:

```
C:\Users\fosstechnix\AppData\Roaming\npm\npm->
C:\Users\fosstechnix\AppData\Roaming\npm\node_modules\npm\bin\npm-cli.js
C:\Users\fosstechnix\AppData\Roaming\npm\npx->
C:\Users\fosstechnix\AppData\Roaming\npm\node_modules\npm\bin\npx-cli.js
+ npm@6.14.8
added 434 packages from 885 contributors in 8.878s
```

- So, this is how we successfully installed Node.js on our Windows system.

3.5 Create A React Apps

STEP 1: To Install Create React App.

- To use Create React App, we first need to open our terminal or command line on our computer.
- To create a new, react project, we can use the tool npx, provided you have an npm version of at least 5.2.
- Npx gives us the ability to use the create-react-app package without having to first install it on our computer, which is very convenient.
- Using npx also ensures that we are using latest version of Create React App to create our project:

npx create-react-app my-react-app

- Once we run this command, a folder named "my-react-app" will be created where we specified on our computer and all of the packages it requires will be automatically installed.
- To create a React app that uses TypeScript, we can use the Create React App TypeScript template:

npx create-react-app my-react-app --template typescript

STEP 2: Reviewing the Project Structure

- Once our project files have been created and our dependencies have been installed, our project structure should look like this:

```
my-react-app
├── README.md
├── node_modules
├── package.json
├── .gitignore
├── public
└── src
```

What are each of these files and folders for?

- **README.md** is a markdown file that includes a lot of helpful tips and links that can help you while learning to use Create React App.
- **node_modules** is a folder that includes all of the dependency-related code that Create React App has installed. You will never need to go into this folder.
- **package.json** that manages our app dependencies and what is included in our node_modules folder for our project, plus the scripts we need to run our app.
- **.gitignore** is a file that is used to exclude files and folders from being tracked by Git. We don't want to include large folders such as the node_modules folder
- **public** is a folder that we can use to store our static assets, such as images, svgs, and fonts for our React app.
- **src** is a folder that contains our source code. It is where all of our React-related code will live and is what we will primarily work in to build our app.

STEP 3: To Run your React Project.

- Once you have dragged your project into your code editor, you can open up your terminal (in VS Code, go to View > Terminal).
- To start your React project, you can simply run:

npm start

- When we run our project, a new browser tab will automatically open on our computer's default browser to view our app.



Fig 3.23: React App

- The development server will start up on localhost:3000 and, right away, we can see the starting home page for our app.

Where is our app content coming from?

- It's coming from the App.js file within the src folder. If we head over to that file, we can start making changes to our app code.

```
// src/App.js

import logo from './logo.svg';
import './App.css';

function App() {
  return (
    <div className="App">
      <header className="App-header">
        <img src={logo} className="App-logo" alt="logo" />
        <p>
          Edit <code>src/App.js</code> and save to reload.
        </p>
        <a
          className="App-link"
          href="https://reactjs.org"
          target="_blank"
          rel="noopener noreferrer"
        >
          Learn React
        </a>
      </header>
    </div>
  );
}

export default App;
```

Fig 3.24: App.js File

- When you save by using Command/Ctrl + S, you will see our page immediately update to look like this:



Fig 3.25: Page Update

CHAPTER 4

DESIGN

4.1 Introduction

The unified modeling language allows the software engineer to express an analysis model using the modeling notation that is governed by a set of syntactic semantic and pragmatic rules. A UML system is represented using five different views that describe the system from distinctly different perspective. UML is specifically constructed through two different domains they are:

- UML Analysis modeling, this focuses on the user model and structural model views of the system.
- UML design modeling, which focuses on the behavioral modeling, implementation modeling and environmental model views.

4.2 Why Use UML in Projects?

As the strategic value of software increases for many companies, the industry looks for techniques to automate the production of software and to improve quality and reduce cost and time-to-market. These techniques include component technology, visual programming, patterns and frameworks. Businesses also seek techniques to manage the complexity of systems as they increase in scope and scale. In particular, they recognize the need to solve recurring architectural problems, such as physical distribution, concurrency, replication, security, load balancing and fault tolerance. Additionally, the development for the World Wide Web, while making some things simpler, has exacerbated these architectural problems. The Unified Modeling Language (UML) was designed to respond to these needs. Simply, Systems design refers to the process of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements which can be done easily through UML diagrams. In this project four basic UML diagrams have been explained

1. Use Case Diagrams
2. Deployment Diagrams
3. Activity Diagram

4.3 Use case Diagram

In software engineering, a use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted. Use cases are used during requirements elicitation and analysis to represent the functionality of the system. Use cases focus on the behavior of the system from the external point of view. The actors are outside the boundary of the system, whereas the use cases are inside the boundary of the system.

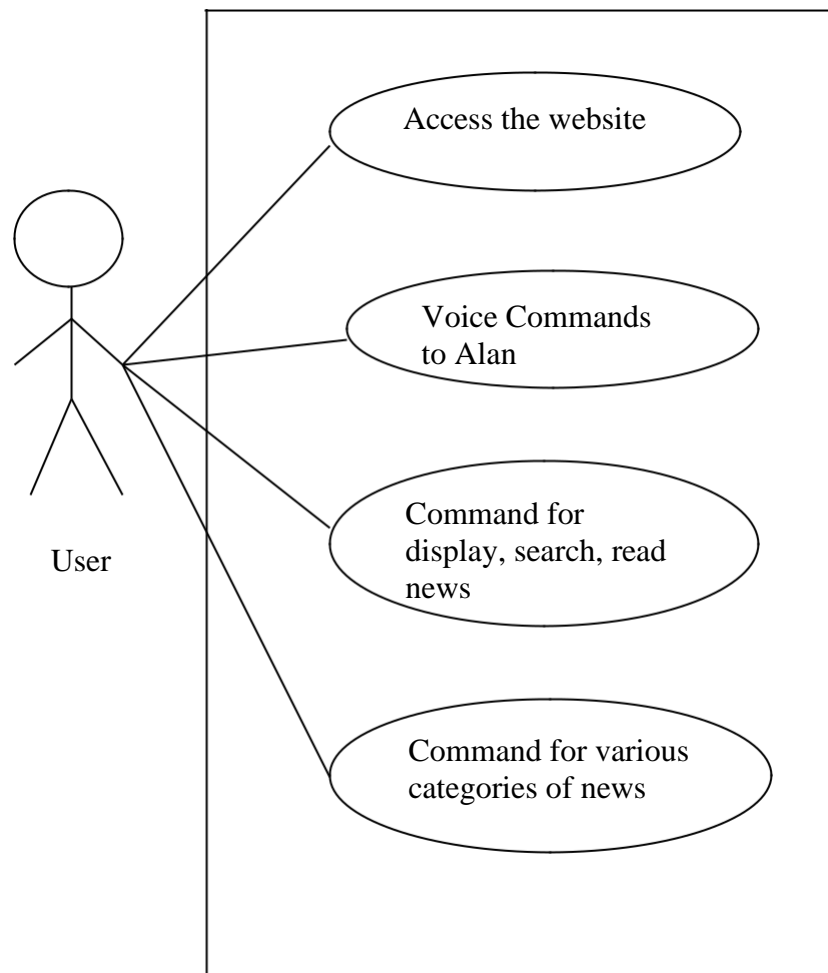


Fig 4.1: User Use case Diagram

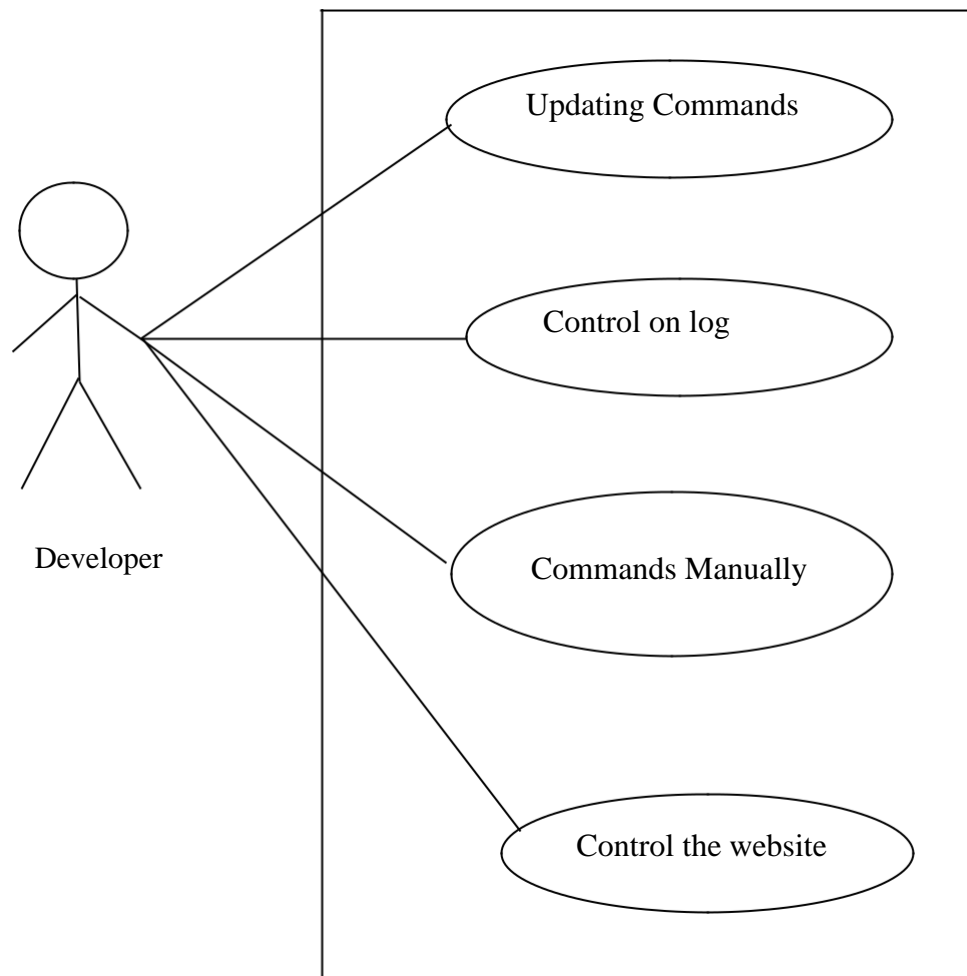


Fig 4.2: Developer Use case Diagram

4.4 Activity Diagram

Activity diagrams are a loosely defined diagram technique for showing workflows of stepwise activities and actions, with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-by-step workflows of components in a system. An activity diagram shows the overall flow of control.

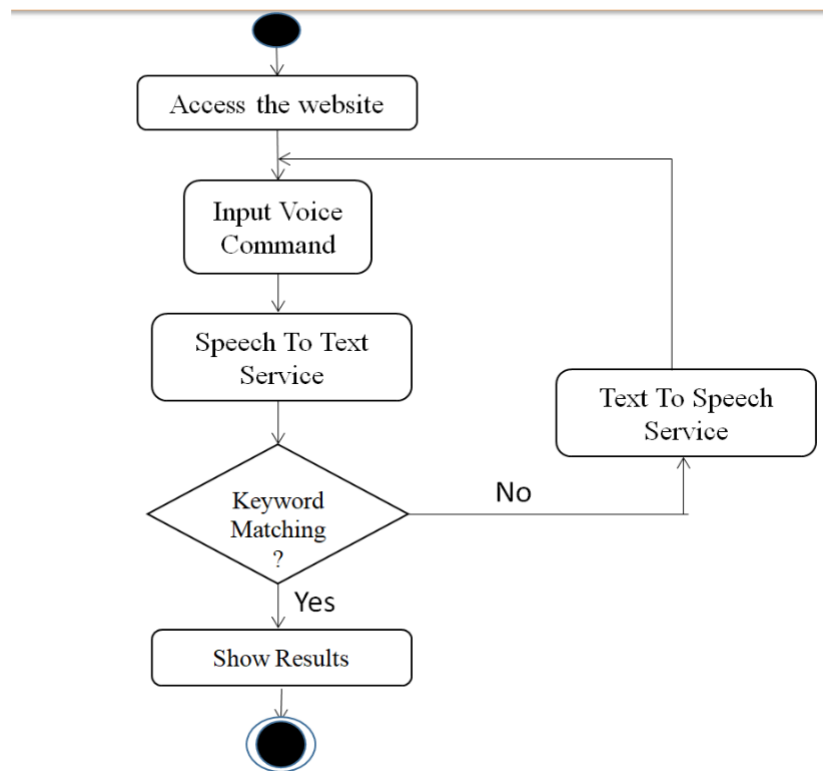


Fig 4.3: Activity Diagram

4.5 Deployment Diagram?

A deployment diagram in the Unified Modeling Language models the physical deployment of artifacts on nodes. To describe a web site, for example, a deployment diagram would show what hardware components ("nodes") exist (e.g., a web server, an application server, and a database server), what software components ("artifacts") run on each node (e.g., web application, database), and how the different pieces are connected (e.g., JDBC, REST, RMI).

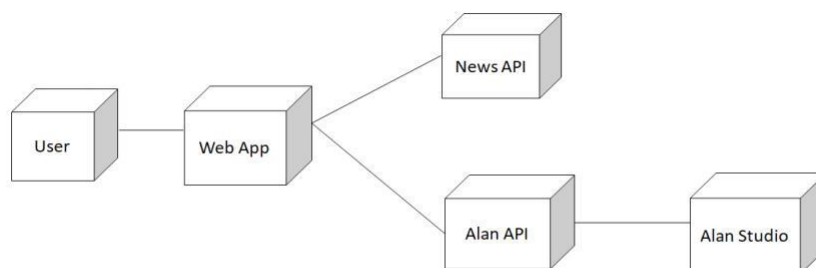


Fig 4.4: Deployment Diagram

CHAPTER-5

IMPLEMENTATION AND RESULTS

5.1 Introduction

- Alan studio offers the voice recognition and delivery capabilities and analyses the vocal instructions provided by the user and identifies the keywords and the task that the user has asked.
- The selected keywords are passed through to the NEWS API that searches for the news articles about the selected keyword and returns the json file containing all the textual data that the articles contain.
- The Material UI helps to extract the data from the json file and it passes the extracted data to the Alan studio which once again reads and analyses the data and converts into voice and reads the articles to the user.

5.2 Input and Output Screen Design

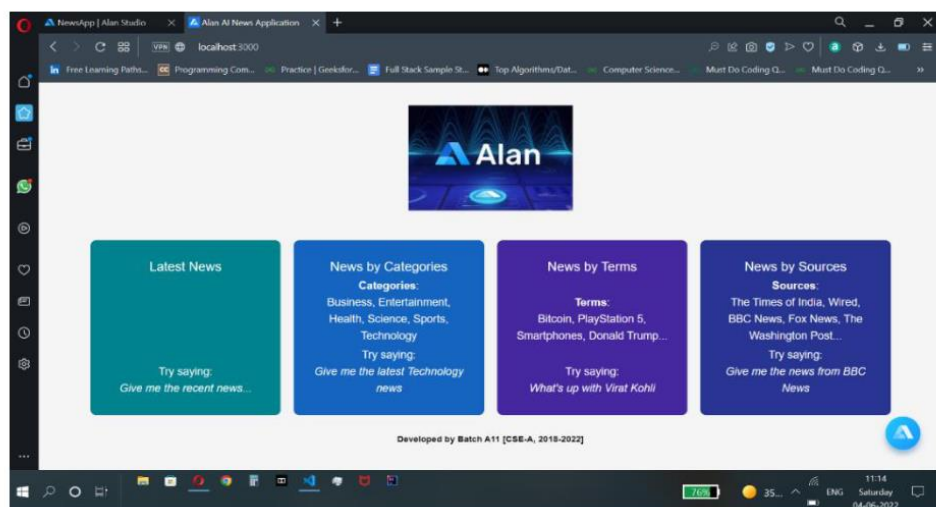


Fig 5.1: Home Page

- Giving initial command to the voice assistant and asking what it can do?

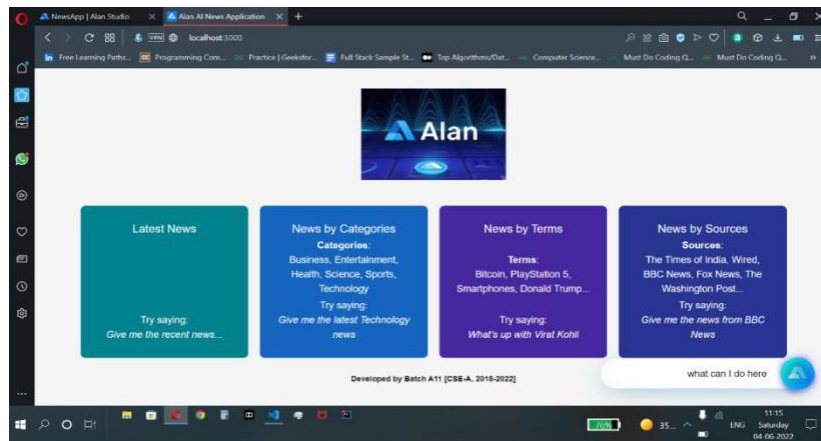


Fig 5.2: Giving initial command to the voice assistant

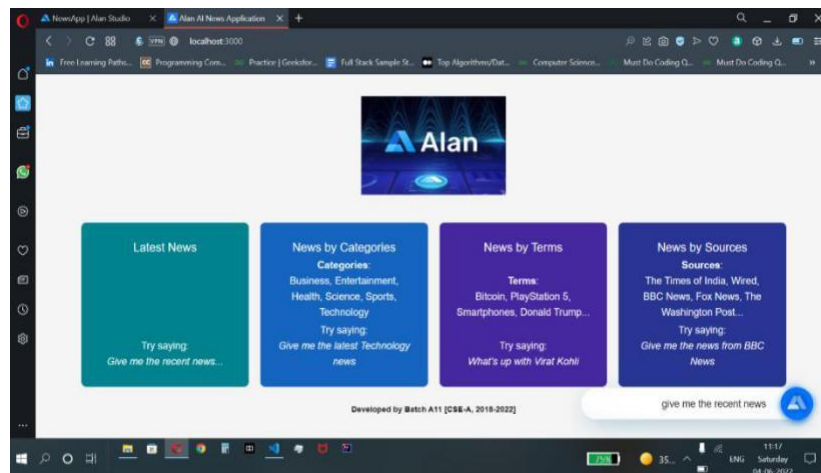


Fig 5.3: First command for fetching recent headlines

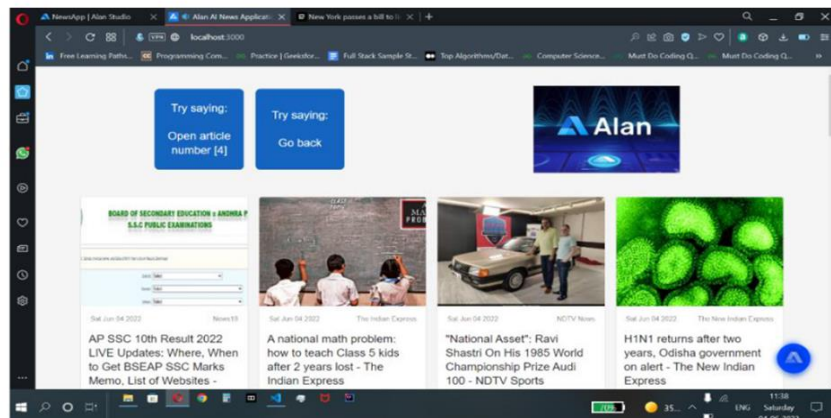


Fig 5.4: Output

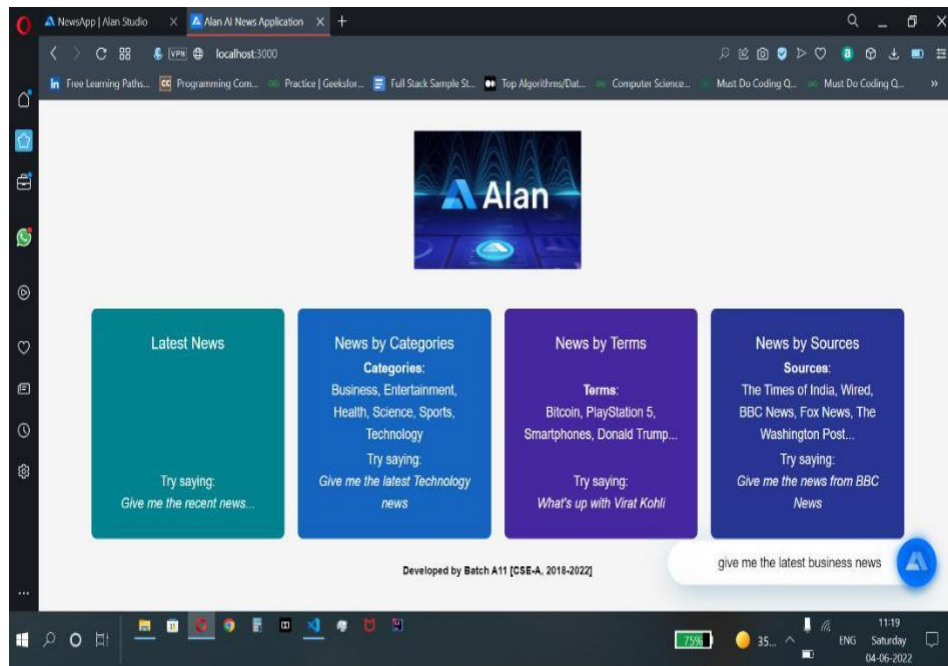


Fig 5.5: Command for fetching latest category news

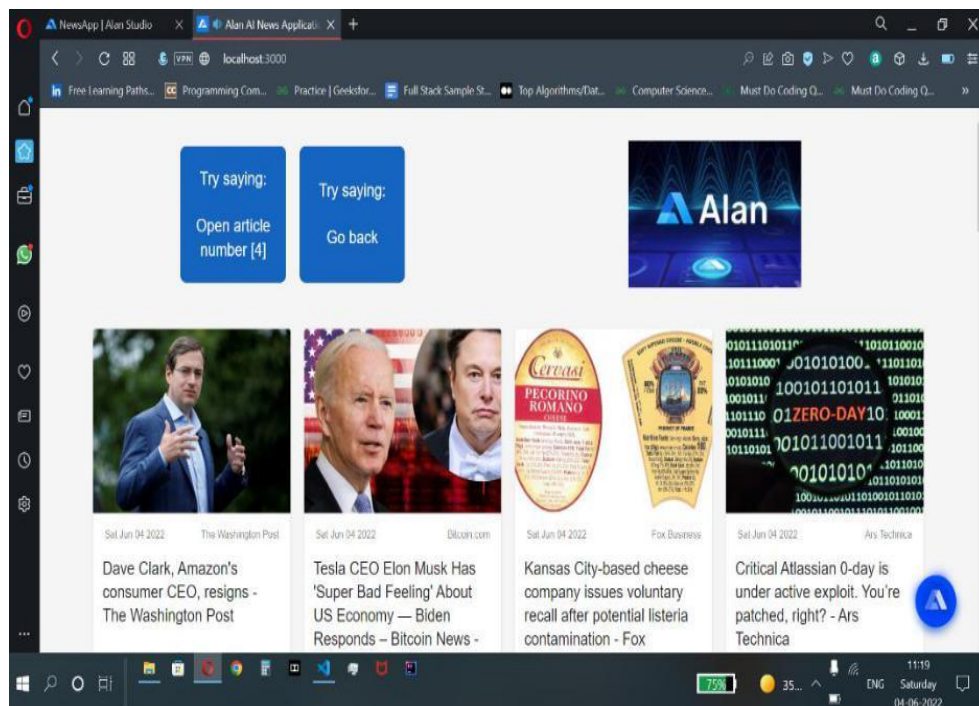


Fig 5.6: Outcome

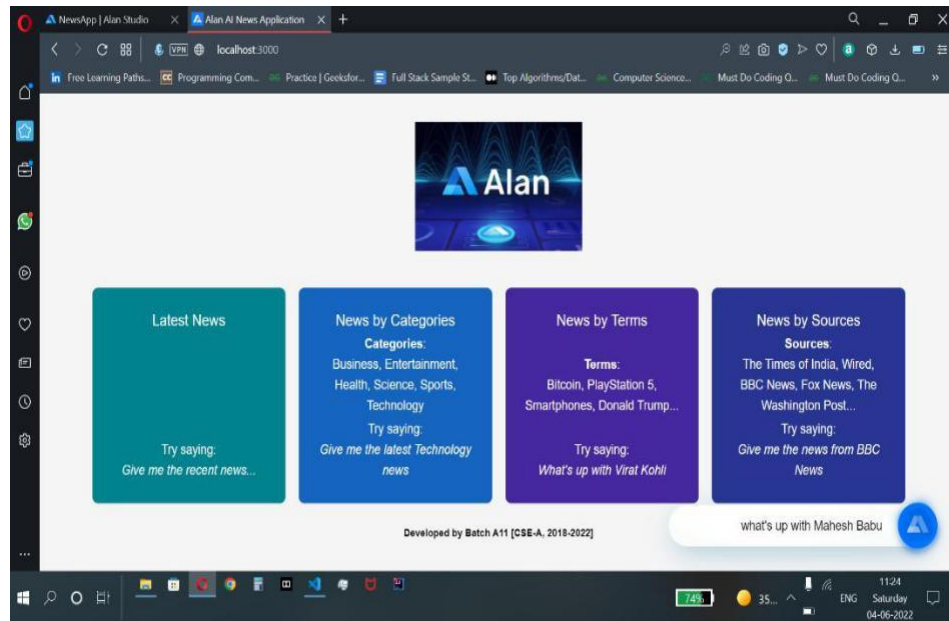


Fig 5.7: Command for fetching news by terms

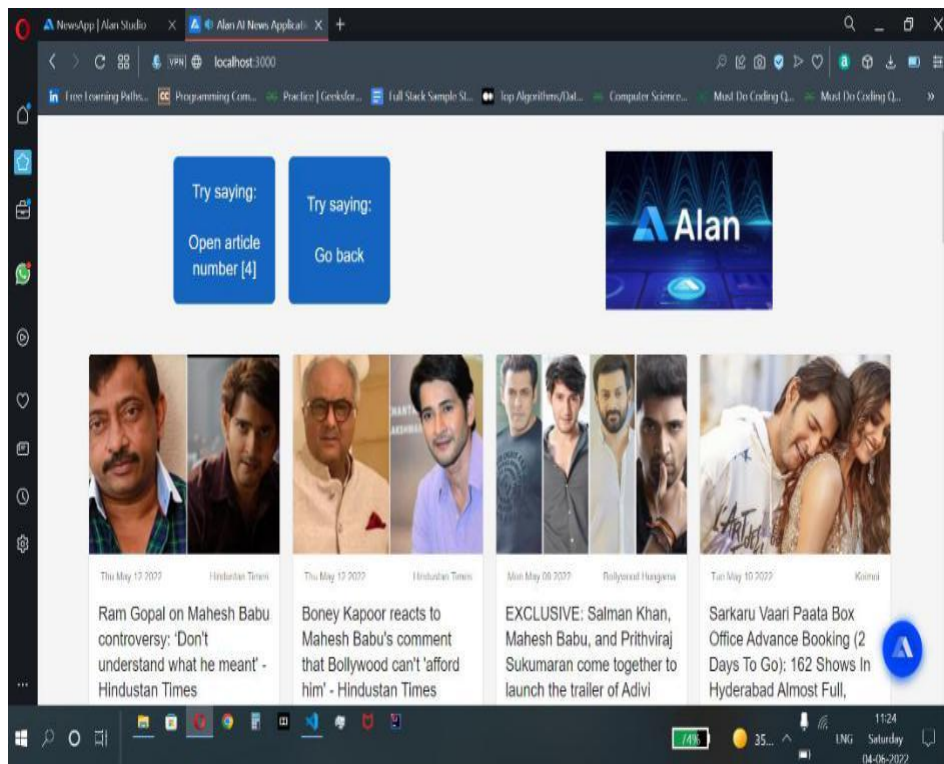


Fig 5.8: Outcome

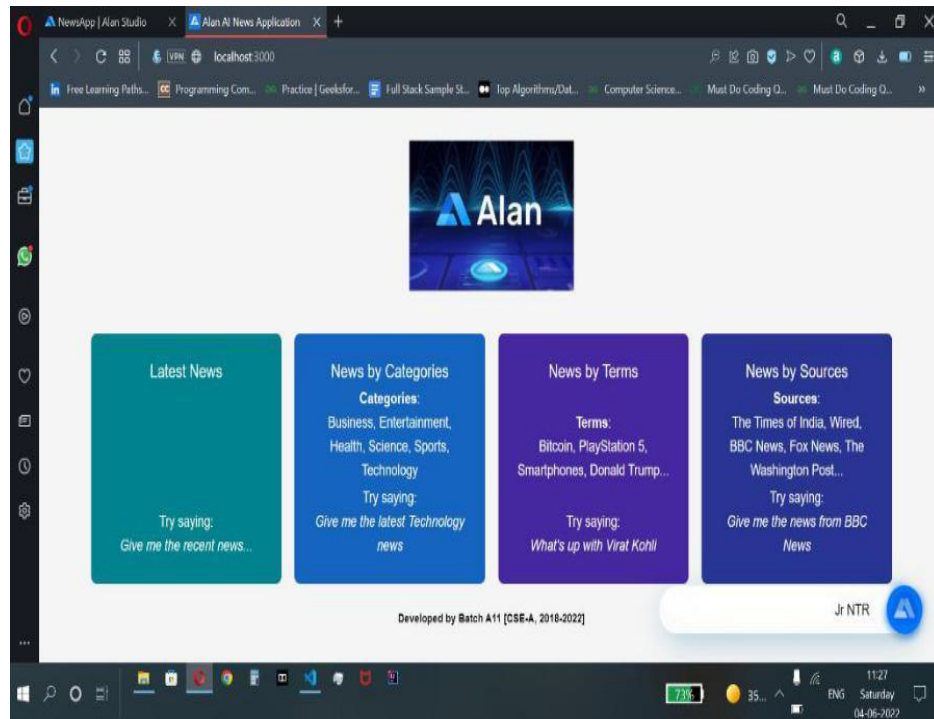


Fig 5.9: Command by saying only term

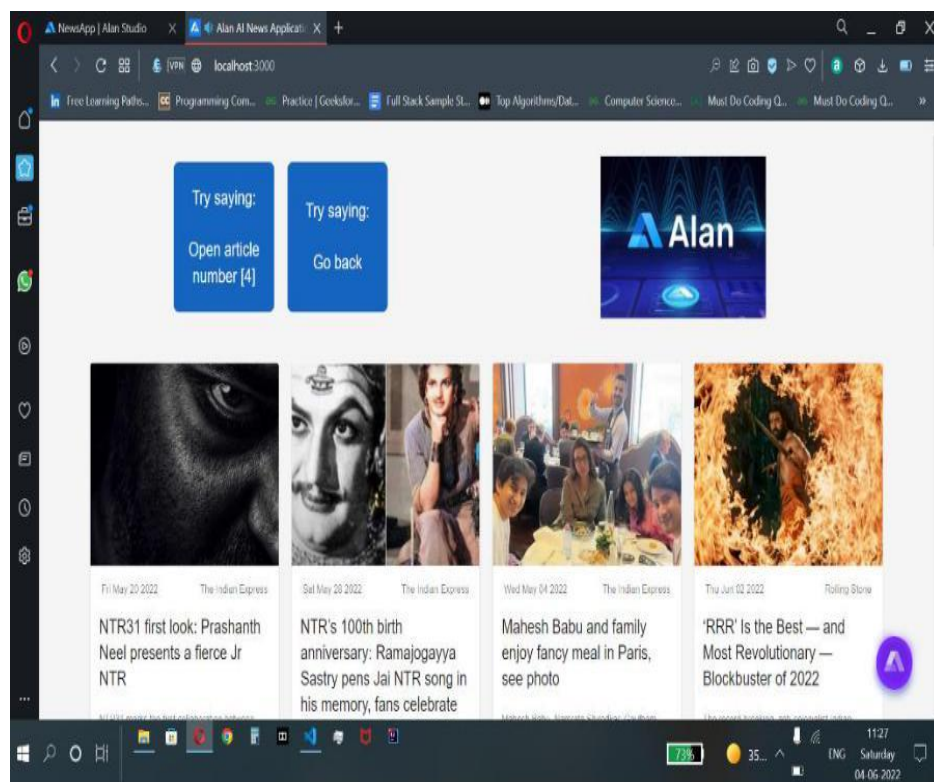


Fig 5.10: Output

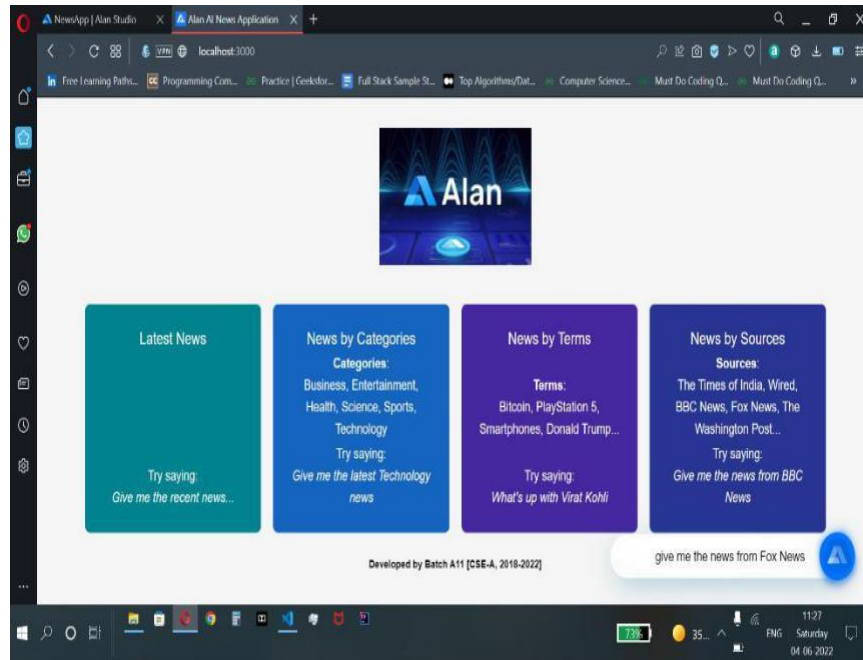


Fig 5.11: Command for fetching news from source

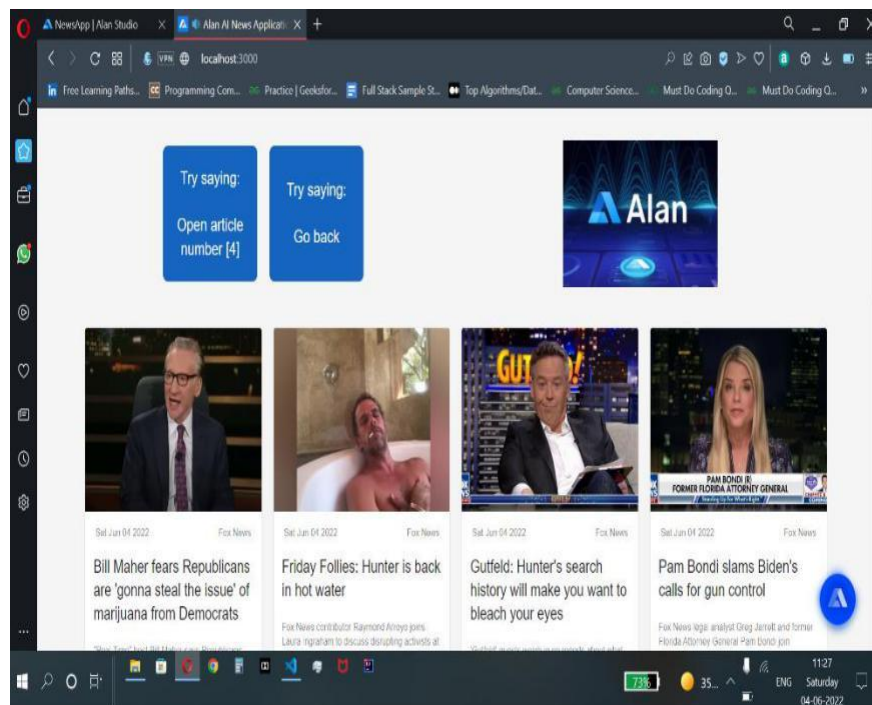


Fig 5.12: Output

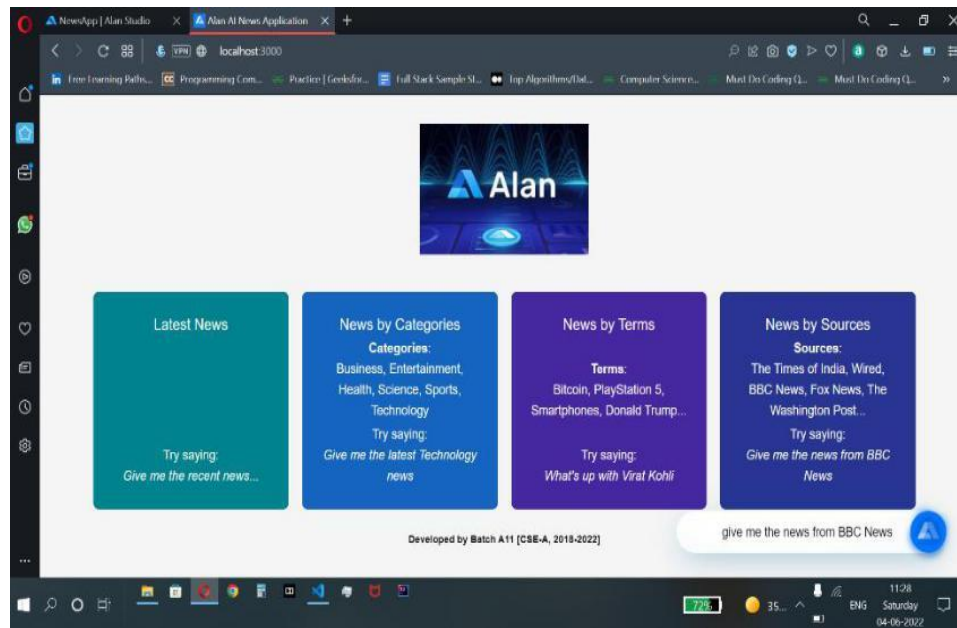


Fig 5.13: Command for fetching news from BBC News

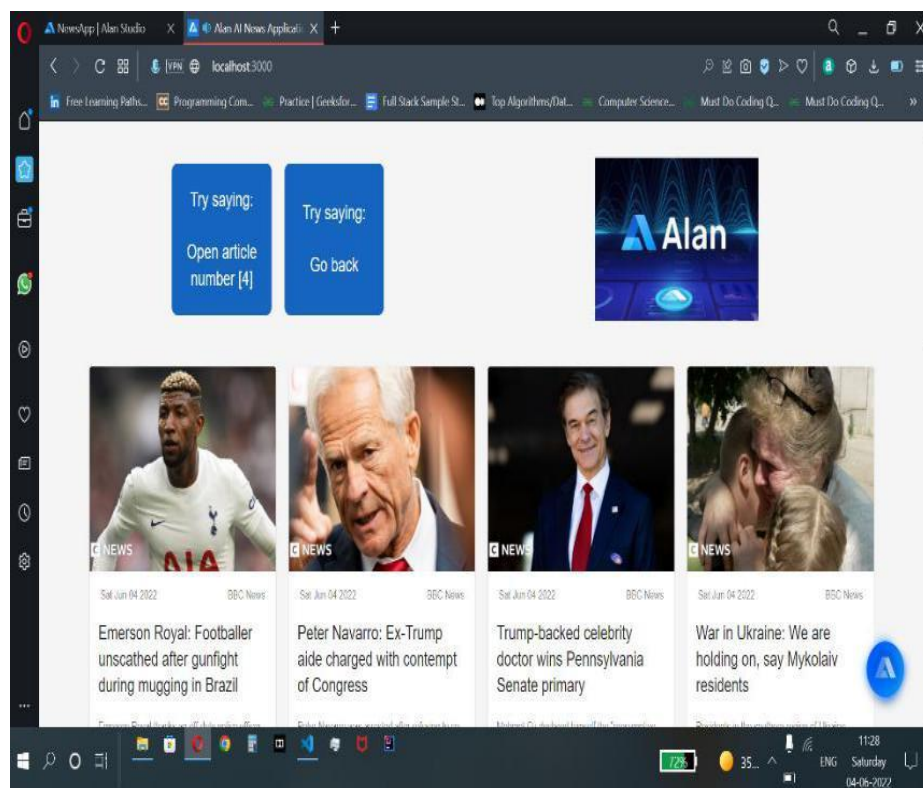


Fig 5.14: Output

- Blue color bar highlight the article when voice assistant reads it

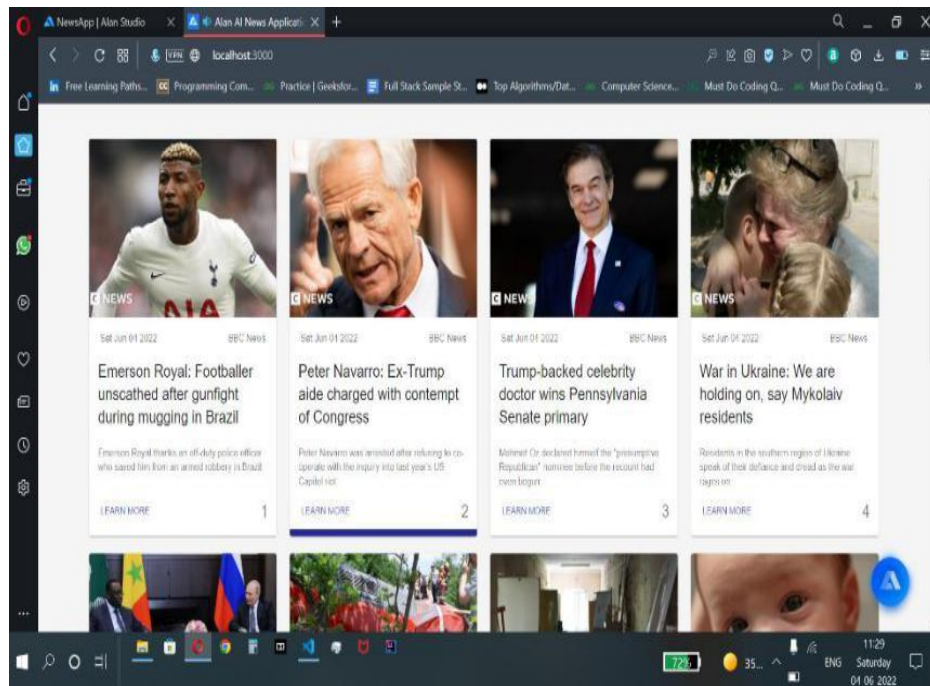


Fig 5.15: Blue color bar highlight the article

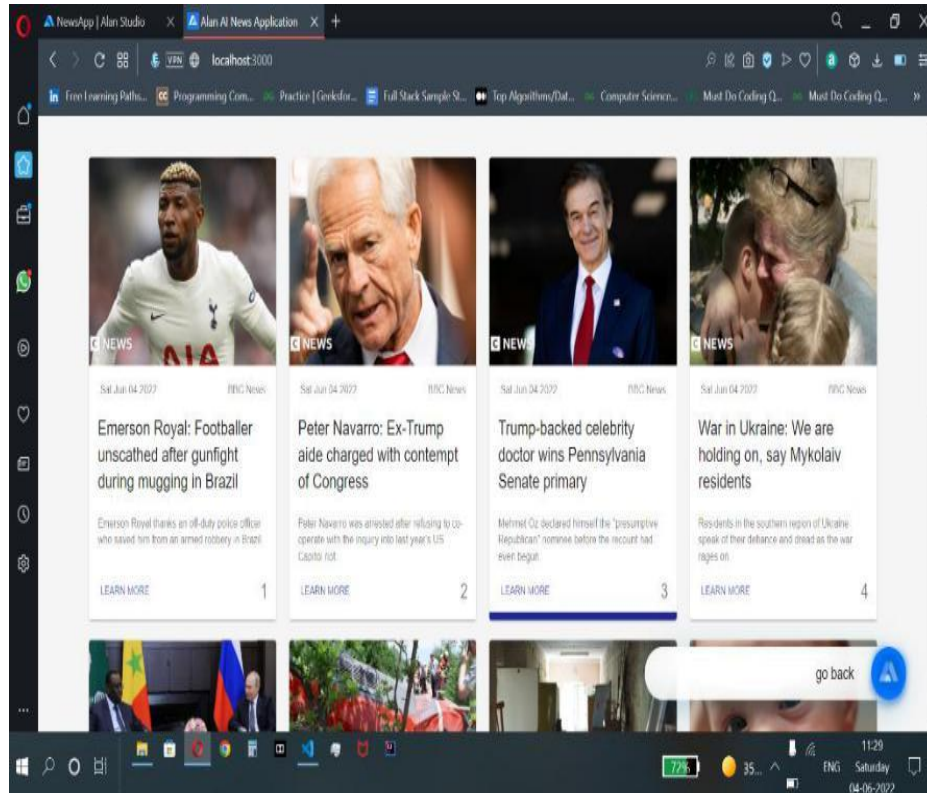


Fig 5.16: Command for going back

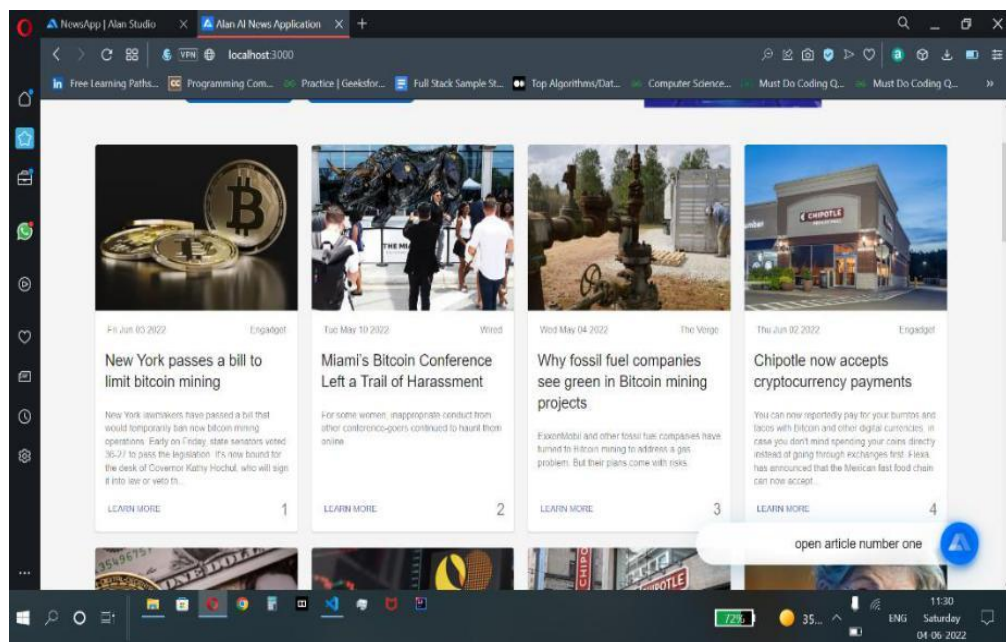


Fig 5.17: Command for opening an article using article number



Fig 5.18: Output

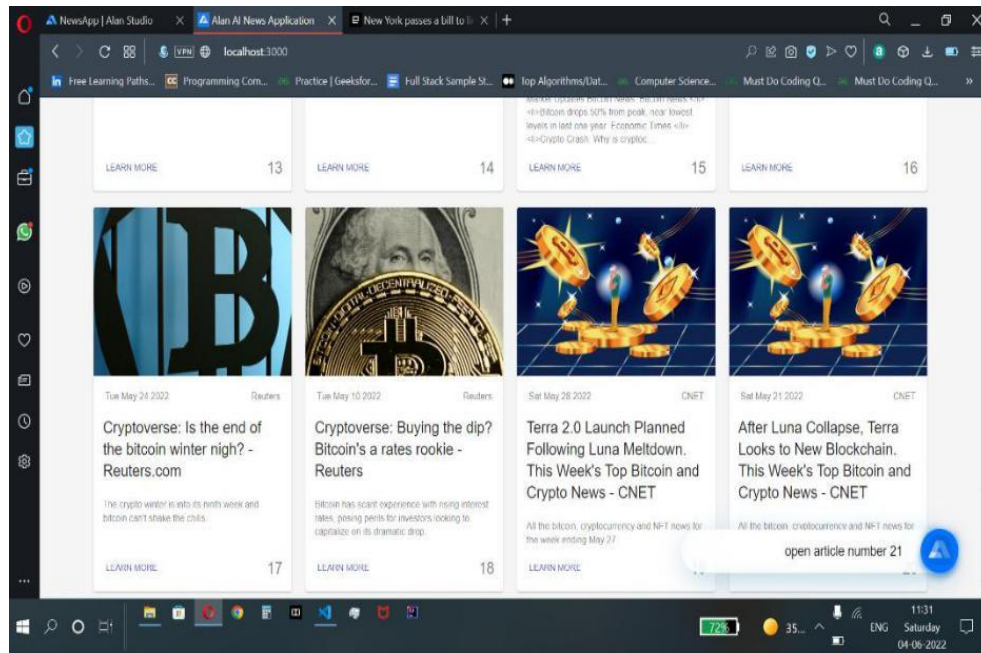
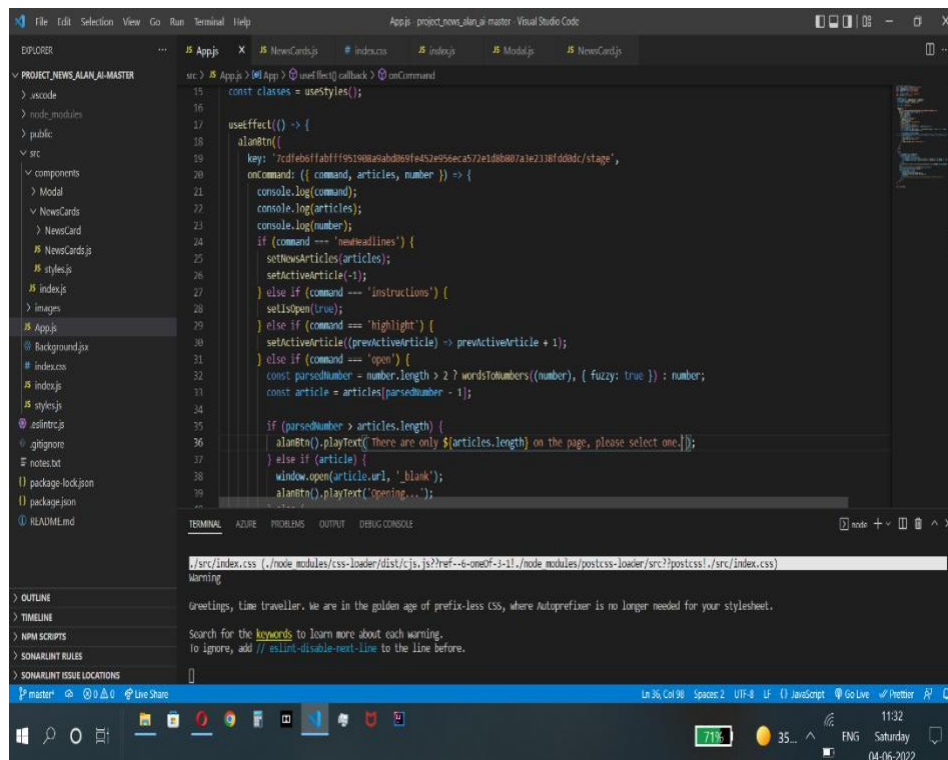


Fig 5.19: Opening article



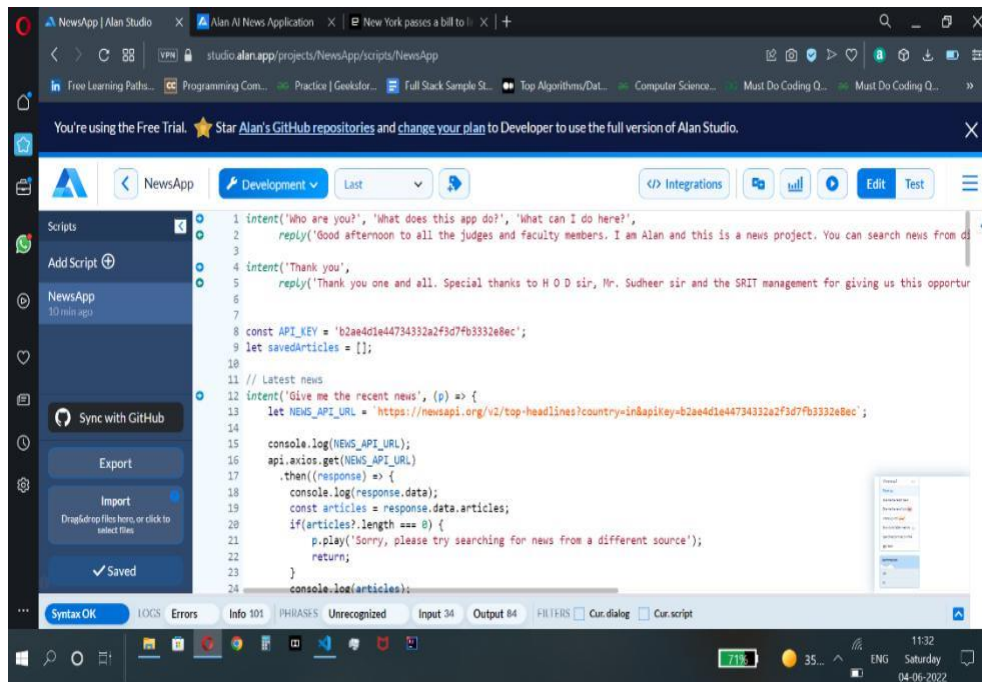


Fig 5.21: Alan Studio Code

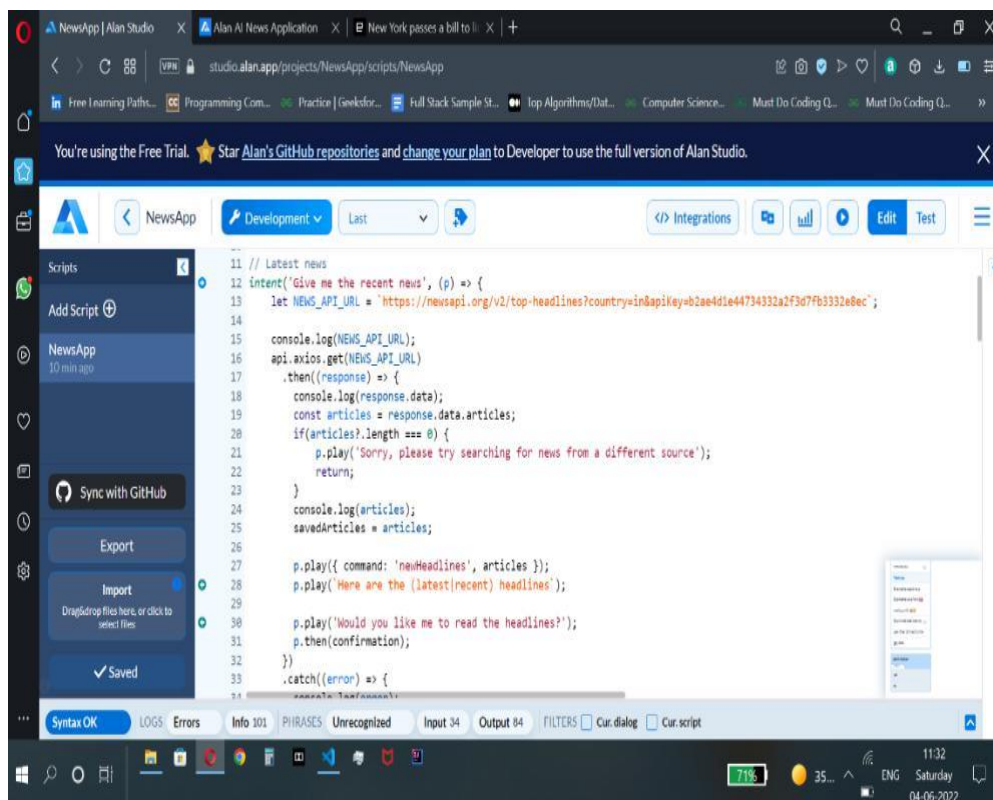


Fig 5.22: Code for recent headlines

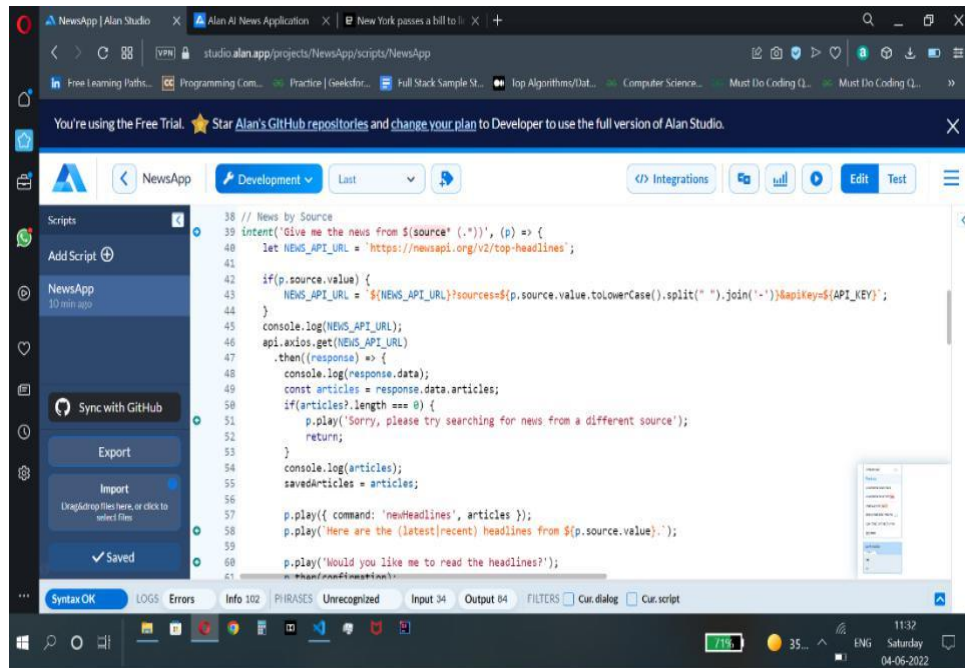


Fig 5.23: Code for news by source

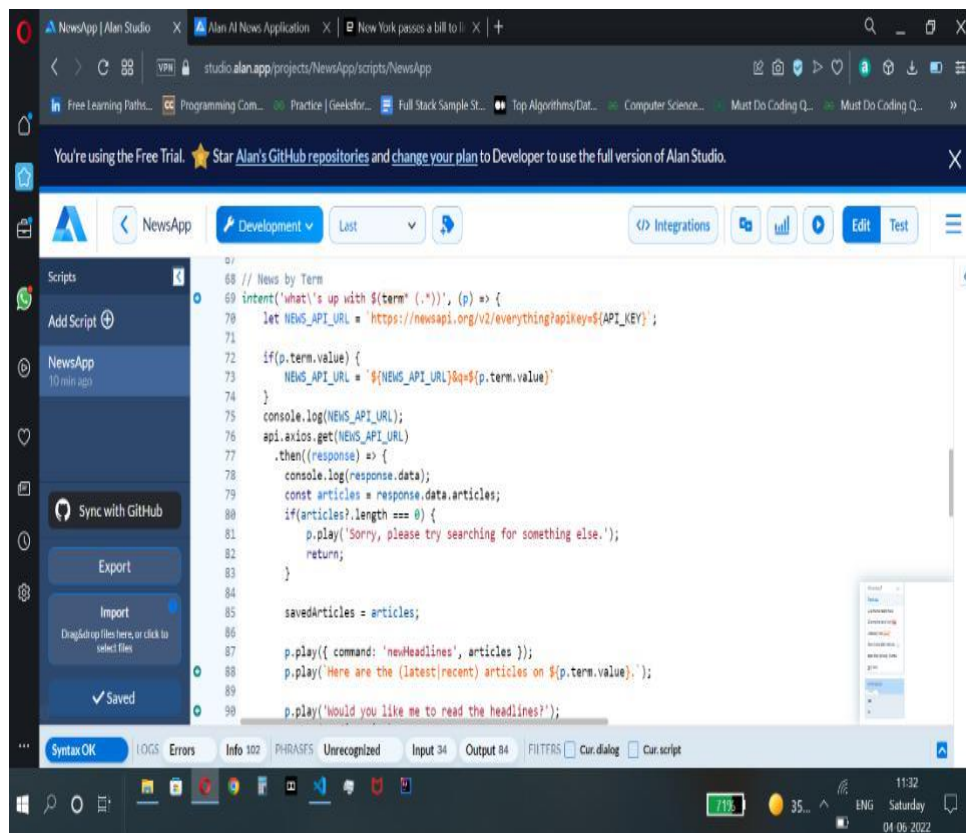


Fig 5.24: Code for news by term

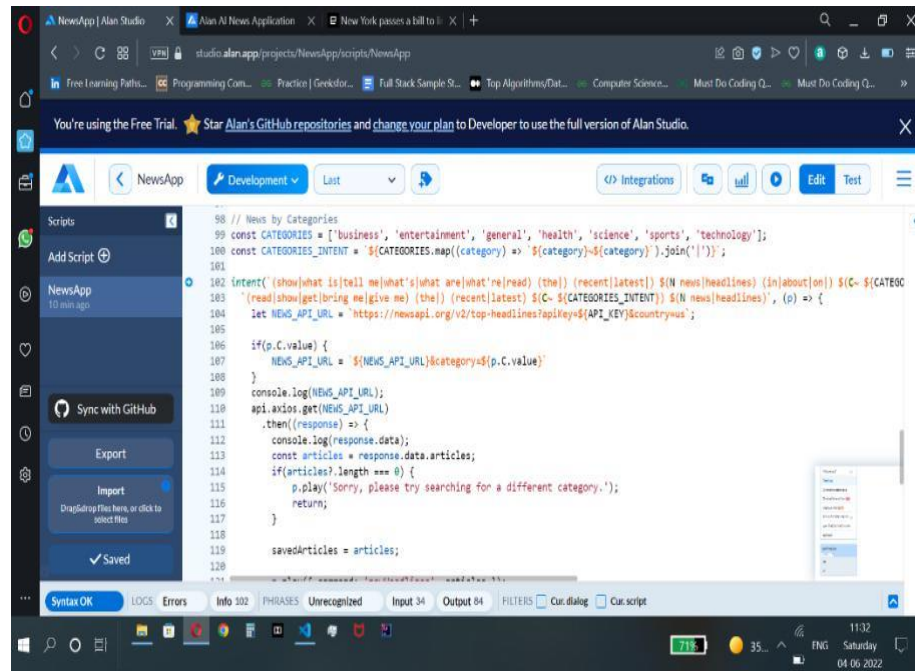


Fig 5.25: Code for news by category

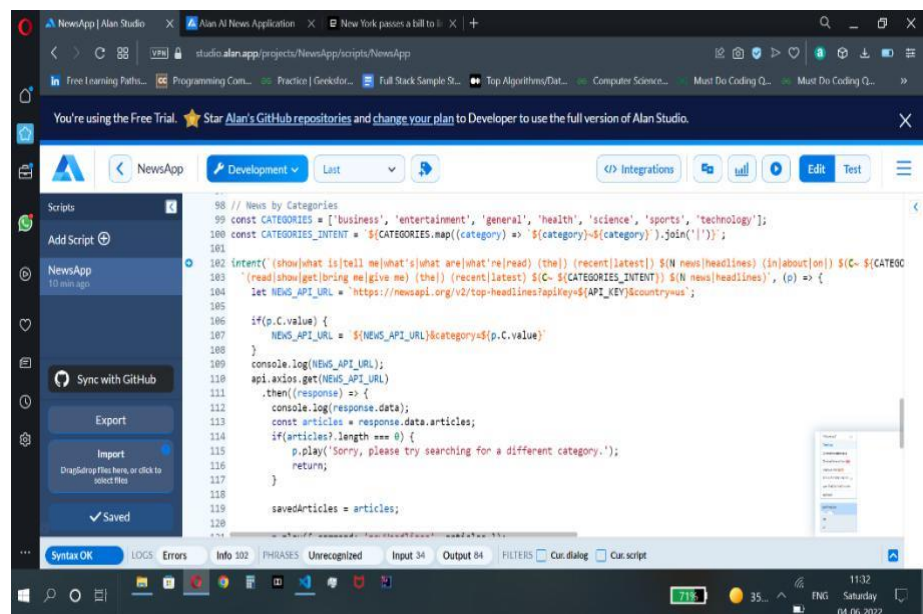


Fig 5.26: Confirmation Method

5.4 Summary

The above Web Application is developed by using React Js and Alan Studio Platform.

CHAPTER-6

TESTING

6.1 Introduction

Testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing also provides an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs.

6.2 Methodology used for Testing

The completion of a system will be achieved only after it has been thoroughly tested. Though this gives a feel the project is completed, there cannot be any project without going through this stage. Hence in this stage it is decided whether the project can undergo the real time environment execution without any break downs, therefore a package can be rejected even at this stage.

- Testing methods Software testing methods are traditionally divided into black box testing and white box testing. These two approaches are used to describe the point of view that a test engineer takes when designing test cases.
- Black box testing - Black box testing treats the software as a "black box," without any knowledge of internal implementation. Black box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, fuzz testing, model-based testing, traceability matrix, exploratory testing and specification-based testing.
- White box testing - White box testing, by contrast to black box testing, is when the tester has access to the internal data structures and algorithms.

White box testing methods can also be used to evaluate the completeness of a test suite that was created with black box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.

- **Grey Box Testing** - Grey box testing involves having access to internal data structures and algorithms for purposes of designing the test cases, but testing at the user, or black-box level. Manipulating input data and formatting output do not qualify as "grey box," because the input and output are clearly outside of the "black-box" that we are calling the system under test. This distinction is particularly important when conducting integration testing between two modules of code written by two different developers, where only the interfaces are exposed for test. Grey box testing may also include reverse engineering to determine, for instance, boundary values or error messages.
- **Acceptance testing** - Acceptance testing can mean one of two things:
 - o A smoke test is used as an acceptance test prior to introducing a build to the main testing process.
 - o Acceptance testing performed by the customer is known as user acceptance testing (UAT)
- **Regression Testing** - Regression testing is any type of software testing that seeks to uncover software regressions. Such regression occurs whenever software functionality that was previously working correctly stops working as intended. Typically, regressions occur as an unintended consequence of program changes. Common methods of regression testing include re-running previously run tests and checking whether previously fixed faults have reemerged.
- **Non-Functional Software Testing** – Performance testing checks to see if the software can handle large quantities of data or users. This is generally referred to as software scalability. This activity of Non-Functional Software Testing is often times referred to as Load Testing. Stability testing checks to see if the software can continuously function well in or above an acceptable period. This

activity of Non-Functional Software Testing is often times referred to as indurations test. Usability testing is needed to check if the user interface is easy to use and understand. Security testing is essential for software which processes confidential data and to prevent system intrusion by hackers.

6.3 Software Testing Strategies

A software testing strategy provides a road map for the software developer. Testing is a set of activities that can be planned in advance and conducted systematically. For this reason, a template for software testing a set of steps into which we can place specific test case design methods should be defined for software engineering process. Any software testing strategy should have the following characteristics:

- Testing begins at the module level and works “outward” toward the integration of the entire computer-based system.
- Different testing techniques are appropriate at different points in time.
- The developer of the software and an independent test group conducts testing.

6.4 Unit Testing

Unit testing focuses verification efforts in smallest unit of software design (module).

- Unit test considerations
- Unit test procedures

6.5 Integration Testing

Integration testing is a systematic technique for constructing the program structure while conducting tests to uncover errors associated with interfacing. There are two types of integration testing:

- **Top-Down Integration:** Top-down integration is an incremental approach to construction of program structures. Modules are integrated by moving downwards throw the control hierarchy beginning with the main control module.
- **Bottom-Up Integration:** Bottom-up integration as its name implies, begins

construction and testing with automatic modules.

- Regression Testing: In this context of an integration test strategy, regression testing is the re execution of some subset of test that have already been conducted to ensure that changes have not propagate unintended side effects.

6.5 Summary

This software has been computed successfully and was also tested successfully by taking “test cases”. It is user friendly, and has required options, which can be utilized by the user to perform the desired operations. Application software meets the information requirements specified to a great extent. The system has been designed keeping in view the present and future requirements in mind and made very flexible. The goals that are achieved by the software are instant access, improved productivity, Optimum utilization of resources, and efficient management.

CONCLUSION

The Proposed system enables a wide range of users to stay informed and updates while using as less time as possible. It makes getting informed and knowledgeable easy and very interesting. People with limited time now can easily get up to date just with the help of a few vocal commands. It also helps physically challenged people to make use of the latest advancements in the technical fields and enables them to stay updated and informed without their health condition hampering them. The system also enables user to listen to the articles that grab our interests and those that it thinks that are important for the user to know. The proposed system is a fine example of how one of the most sought-after features of the modern device can make our lives much easier and help us save both time and the physical work to stay informed.

The system will continue to develop and more and more functionalities can be added to it. The number of efforts going into the development of voice recognition and voice command adding with the continuously increasing demand of the users, the system will never get outdated. The system is flexible, user interactive and compatible to almost every device that has the ability of voice command.

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