Project Report

on

How Different Factors Affect the GDP of a Nation and Each Other

In partial fulfillment of requirements for the degree

of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE & ENGINEERING

Submitted by:

Shivansh Pandey [18100BTBDAI04510]

Yash Sharma [18100BTBDAI02932]

Kartik Moyade [18100BTBDAI02918]

Saharsh Silhare [18100BTBDAI02890]

Under the guidance of

Mr. Chetan Chouhan

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE
SHRI VAISHNAV INSTITUTE OF INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

JANUARY-JUNE 2021

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE
SHRI VAISHNAV INSTITUTE OF INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

<u>DECLARATION</u>

We here declare that work which is being presented in the project entitled "**How Different Factors Affect the GDP of our Nation and Each Other**" in partial fulfillment of degree of **Bachelor of Technology in Computer Science & Engineering** is an authentic record of our work carried out under the supervision and guidance of **Mr. Chetan Chouhan** Asst. Professor of Computer Science & Engineering. The matter embodied in this project has not been submitted for the award of any other degree.

1. Shivansh Pandey

2. Yash Sharma

3. Kartik Moyade

4. Saharsh Silhare

Date:

SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE

SHRI VAISHNAV INSTITUTE OF INFORMATION TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PROJECT APPROVAL SHEEET

Following team has done the appropriate work related to the "**How Different Factors Affect the GDP of our Nation and Each Other**" in partial fulfillment for the award of **Bachelor of Technology in Computer Science & Engineering** of "SHRI VAISHNAV INSTITUTE OF INFORMATION TECHNOLOGY" and is being submitted to SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE.

Team:
1. **Shivansh Pandey**
2. **Yash Sharma**
3. **Kartik Moyade**
4. **Saharsh Silhare**

Internal Examiner   **External Examiner**
Date

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that **Mr. Shivnash Pandey**, **Mr. Yash Sharma**, **Mr. Kartik Moyade and Mr. Saharsh Silhare** working in a team have satisfactorily completed the project entitled "**How Different Factors Affect the GDP of our Nation and Each Other**" under the guidance of Mr. Chetan Chouhan in the partial fulfillment of the degree of **Bachelor of Technology in Computer Science & Engineering** awarded by SHRI VAISHNAV INSTITUTE OF INFORMATION TECHNOLOGY affiliated to SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE during the academic year **January 2021- June 2021**.

Prof. Chetan Chauhan
Project Coordinator and Project Guide

Dr. Anand Rajavat
Director & Head,
Department of Computer Science & Engineering

ACKNOWLEDGEMENT

We are grateful to a number of persons for their advice and support during the time of completion of our project work. First and foremost, our thanks go to **Dr. Anand Rajavat** Head of the Department of Computer Science & Engineering and **Mr. Chetan Chauhan** the mentor of our project for providing us valuable support and necessary help whenever required and also helping us explore new technologies by the help of their technical expertise. His direction, supervision and constructive criticism were indeed the source of inspiration for us.

We would also like to express our sincere gratitude towards our Director **Dr. Anand Rajavat** for providing us valuable support.

We are really indebted to **Prof. Chetan Chauhan,** project coordinator for helping us in each aspect of our academic's activities. We also owe our sincere thanks to all the **faculty members** of Computer Science & Engineering Department who have always been helpful.

We forward our sincere thanks to all **teaching and non-teaching staff** of Computer Science & Engineering department, SVVV Indore for providing necessary information and their kind co-operation.

We would like to thanks our parents and family members, our classmates and our friends for their motivation and their valuable suggestion during the project. Last, but not the least, we thank all those people, who have helped us directly or indirectly in accomplishing this work. It has been a privilege to study at SHRI VAISHNAV VIDYAPEETH VISHWAVIDYALAYA, INDORE.

ABSTRACT

In today's world a country's economic development is the thing from which its power and influence is judged. This economic development is measured by its Gross Development Product.

GDP is important because it gives information about the size of the economy and how an economy is performing. The growth rate of real GDP is often used as an indicator of the general health of the economy. In broad terms, an increase in real GDP is interpreted as a sign that the economy is doing well.

GDP plays an integral part in any nation as directly or indirectly a country's whole economy is connected to it. So, it is very important to understand how it plays this role and how it affects and is affected by our daily lives.

Our project aims to analyze and understand how different factors from our lives affect the GDP and GDP per capita of our nation and in turn how these factors affect each other. Our project will also analyze and categories the current state of our states.

LIST OF FIGURES

TABLE OF CONTENTS

Chapter 1
Introductions

1.INTRODUCTION

1.1 INTRODUCTION

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given country's economic health.

The calculation of a country's GDP encompasses all private and public consumption, government outlays, investments, additions to private inventories, paid-in construction costs, and the foreign balance of trade. (Exports are added to the value and imports are subtracted).

Of all the components that make up a country's GDP, the foreign balance of trade is especially important. The GDP of a country tends to increase when the total value of goods and services that domestic producers sell to foreign countries exceeds the total value of foreign goods and services that domestic consumers buy. When this situation occurs, a country is said to have a trade surplus. If the opposite situation occurs—if the amount that domestic consumers spend on foreign products is greater than the total sum of what domestic producers are able to sell to foreign consumers—it is called a trade deficit. In this situation, the GDP of a country tends to decrease.

Though GDP is typically calculated on an annual basis, it is sometimes calculated on a quarterly basis as well.

- GDP can be broadly divided into goods and services produced by three sectors: the primary sector (agriculture), the secondary sector (industry), and the tertiary sector (services).
- India ranks 11th in the world in terms of total GDP though it lies at the 139th position in terms of per capita GDP.

1.2 PROBLEM STATMENT

This project is to help the states focus on areas which will improve its economic development. For that we will analyze and compare the GDP of all the states over the recent years and see what areas affected the GDP the most. We will also try to analyze and understand how different factors like population, region, literacy etc. affect a country's GDP and GDP per capita.

The overall goal of this project is to help the public understand how our daily lives affect our economy and in turn how much is our life affect by it. Since the most common measure of economic development is the GDP, we will analyze the GDP of the various states of India.

1.3 NEED FOR PROPER SYSTEM

- ❖ GDP provides an economic snapshot of a country, used to estimate the size of an economy and growth rate.
- ❖ GDP can be calculated in three ways, using expenditures, production, or incomes. It can be adjusted for inflation and population to provide deeper insights.
- ❖ GDP is an accurate indicator of the size of an economy and the GDP growth rate is probably the single best indicator of economic growth, while GDP per capita has a close correlation with the trend in living standards over time.
- ❖ GDP enables policymakers and central banks to judge whether the economy is contracting or expanding and promptly take necessary action.
- ❖ It also allows policymakers, economists, and businesses to analyze the impact of variables such as monetary and fiscal policy, economic shocks, and tax and spending plans.
- ❖ GDP helps the investors to manage their portfolios by providing them with guidance about the state of the economy
- ❖ Though it has limitations, GDP is a key tool to guide policy-makers, investors, and businesses in strategic decision-making.
- ❖ So, there is need for proper system of GDP analysis that gives insights to policy maker to increase country's GDP and fastens economic growth.
- ❖ A proper analysis of GDP will help most governments and economic decision-makers for planning and policy formulation.

❖ All this will lead to country having good economic health.

1.4 OBJECTIVE

The goal of this project is to help the states focus on areas which will improve its economic development. For that we will analyze and compare the GDP of all the states over the recent years and see what areas affected the GDP the most. We will also try to analyze and understand how different factors like population, region, literacy etc. affect a country's GDP and GDP per capita.

- The overall goal of this project is to help the CMs focus on areas which will foster economic development for their respective states. Since the most common measure of economic development is the GDP, we will analyze the GDP of the various states of India.

- After summarizing the data in the form of plots, tables etc., we'll try to observe non-obvious insights from it. Think about questions such as:

- How does the GDP distribution of the top states differ from the others?

- Which sub-sectors seem to be correlated with high GDP?

- Which sub-sectors do the various categories need to focus on? Etc.

- Which states have been growing consistently fast, and which ones have been struggling?

We will investigate whether there is any relationship between per capita GDP with factors like climate, birthrate etc.

1.5 MODULES OF SYSYTEM

Our system has single module- User module which will be intended user who visits site

User Module has following Sections-

1.) **Home –**

This is entry point of our website where a layman who does not know about GDP and related terminologies can read about GDP and related terminologies.

2.) **States –**

In This Page user will select state whose analysis he wants to see.

3.) **Individual States-**

In This Page user will analysis of Individual states.

4.) **Analysis Page –**

In This Page user overall analysis of GDP base on Several factors

1.6 SCOPE

- Our First Aim for future development in this project is to go global and measure and analyse world economy and GDPs of various other countries, continents and sections.
- Our Second Aim for future development is to measure, calculate and analyse impact of covid-19 on Indian and world economy and years that will be required to fully neutralize effect of covid on Indian and world economy.
- Our third aim is to increase number of factors used to analyse GDP of India and include some additional factors which are believed to effect GDP of country and need to be looked upon. Ex-NPAS, Tax system etc
- Our Fourth Aim for this project is to analyse world economy using these factors which we have used to analyse GDP of India.
- Our Fifth aim is taking into consideration the inflation to provide deeper insights.
- Our Sixth Aim is to Generate social media pages of our website on Instagram, Facebook, twitter, LinkedIn and put all information and analysed data on these pages
- Our seventh Aim is to do forecasting for future using data science

Chapter 2
Literature Survey

2.LITERATURE SURVEY

2.1 EXISTING SYSTEM

❖ In Existing system of GDP analysis in some projects GDP is analysed for selected factors and does not include all factors.

❖ In Existing system of GDP analysis, a project is focussed on generally one or two factors and does not include all factors which effects GDP, their projects focus on one or two factors.

❖ In Existing system of GDP analysis, where project is focussed on generally one or two factors the visualization is not there such as Bar graph, Pie Charts, Line Charts, Heat Maps And various other statistical techniques to show analysed data.

❖ In Existing system of GDP analysis, Projects are focussed on entire unit as a hole that is they don't do analysis of individual states and are focussed on economy and GDP of entire country and analyse overall factors which effect GDP of entire country and does take account of factors which affect GDO of some individual states

❖ In Existing system of GDP analysis, Projects which do analysis on individual states several projects do not include various forms of visualization for showing analysed.

For example-

- Overall Ranking
- Year Wise comparison
- GDP per capita Ranking
- Top 5 and Bottom 5 Factors effecting GDP etc.

These forms of visualizing make analysis easy for someone who is not specialized in this subject to study how several factor effect GDP of particular states what are bottom 5 and top 5 factors and their year wise comparison and GDP per capita during this period all this leads proper analysis of GDP and course correction is easy.

Example of Project –

Since in the great internet market there are so many contents or information stored in various websites about some specific topic or let's take 'GDP of India'. We have done research on these various websites and found that each website doesn't tells the whole thing about India's GDP, why the GDP of India is rising up or lowering down and which factors affect the most in rising GDP or falling down GDP. We have noticed that very few websites may show some factors affecting GDP of India but they don't show them State wise.

In the research we have found such a website in which it only shows the following Factors Affecting GDP of India –

Unemployment Rate, Infant Rate and 4-5 factors only

But they didn't show these with the Interactive Graphs or Maps or in the analytical form, which makes difficult for the users who is accessing the Website.

Some Websites –

Name Of Web-Site	Web-Site Link	Field
OECD	https://data.oecd.org/gdp/gross-domestic-product-gdp.htm	Current GDP data and forecasting
IASbaba	https://iasbaba.com/2021/06/indias-gdp-fall/	GDP Analysis
Trading economics	https://tradingeconomics.com/india/gdp	GDP data by sectors and forecasting

Some Research Papers –

1. GDP Today by Aman Kharwal
2. The world bank GDP analysis by Krzysztof Sopyła
3. Data Analysis of State-Wise GDP of India by Vidhu Jain

2.2 COMPARISION TABLE

Features	World Bank GDP Analysis	State-Wise GDP of India	World Economies Analysis	Impact of Covid on World GDP	StudyGDP
Area Focused on	Eastern Europe	States of India	Whole World	Whole World	States of India
Graphical Representation	Yes	Yes	Yes	Yes	Yes
Overall Ranking	No	Yes	Yes	No	Yes
Top 10 Ranking	Yes	No	No	Yes	Yes
State Wise Analysis	No	Yes	No	Yes	Yes
Year-Wise Comparison	No	No	Yes	No	Yes
Up to Date	Yes	No	No	Yes	Yes
Impact of Current affairs	No	No	No	Yes	No
GSVA included	No	No	No	No	Yes
Economic Sectors as factor	No	Yes	Yes	No	Yes
Agriculture related factors	No	No	No	No	Yes
GDP per capita taken into account	Yes	Yes	Yes	No	Yes
Population as factor	Yes	Yes	No	Yes	Yes

Area as factor	Yes	Yes	No	No	Yes
Literacy Rate as factor	No	No	No	No	Yes
Birthrate as factor	No	No	No	No	Yes
Death rate as factor	No	No	No	Yes	Yes
Infant Mortality Rate as factor	No	Yes	No	No	Yes
Length of coastline as factor	No	No	No	No	Yes
Pop. Density as factor	No	No	No	No	Yes

2.3 PROPOSED SYSTEM

In order to achieve the objective of this project we have proposed such a system that can help intended users to analyses GDP. While there is no external hardware used in this project. We surely have used various libraries to complete the proposed system. The algorithm for the proposed system is as follows:

Step 1: User enters Home Page where brief introduction GDP and its related terminologies is Given

Step 2: Here User can find three buttons on Navbar State, Analysis.

Step 3: On clicking on states button sites takes user to states page

Step 4: Here User can choose state for which he wants to see analysis

Step 5: User can select analysis button

Step 6: In Analysis page user can see complete comprehensive research and analysis through various factors

This being the website for our implementation the proposed way our analysis will flow is as follows:

Step 1: Find out where each State stands in terms of Total GSDP and GSDP per Capita.

Step 2: Find out the growth rate over 4 years of the States.

Step 3: Find out how the different factors affect these states.

Step 4: Detailed study of factors which have major impact on GSDP and GSDP per capita.

Step 5: Find out how the agriculture factors affect these states.

Step 6: Find out how much does the economic sectors contribute to our GDP.

Step 7: Find out the contribution ratio difference between major States.

Step 8: Find out how different factors affect each other.

Step 9: Understanding how these factors and GDP affect our Happiness

2.4 FEASIBILITY STUDY

Feasibility is defined as practical extent to which a project can be performed successfully. To evaluate feasibility, a feasibility study is performed, which determines whether the solution considered to accomplish the requirements is practical and workable in the fire detection system.

TECHNICAL FEASIBILITY

The technical feasibility study addresses the physical and logistical mechanics of our project. A technical feasibility study assesses the details of how you intend to deliver a product or service tocustomers. A technical feasibility study is an excellent tool for both troubleshooting and long- term planning. It describes how your products and services evolve and move through your business to physically reach your market.

As our project is implemented as a website, the only thing that is required to run it is an up-to-date web browser and high-speed internet for smooth experience.

ECONOMICAL FEASIBILTY

The economic feasibility study is the accuracy of the demand forecast. The economic feasibility analysis often includes a comprehensive analysis of competitive firms and competitive threats. In economic feasibility, the most

important is cost-beneficial analysis. As the name suggests, it is an analysis of the costs to be incurred in the system and benefits derivable out of the system.

Developer-Side

All Software and Packages used are open source and does not require any investment. The only expenditures our team will be facing are as follows: Electricity charges, ISP fee, computing power & consistent time towards project development.

Client-side

The Site is Free of Cost. All compatible web browsers to run site are free of cost.

OPERATIONAL FEASIBILTY

Operational feasibility is a measure of how well our system solves the problems, and takes advantage of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. Operational feasibility reviews the willingness of the organization to support the proposed system. This is probably the most difficult of the feasibilities to gauge. In order to determine this feasibility, it is important to understand the management commitment to the proposed project.

Our website provides the public up-to-date information regarding the current trends in the economic activity of our nation as well as the current position of each state on the basis of various factors. The website provides cost-effective information services to the public, the businesses and the government authorities in a detailed and accurate format with the help of visualization. Also our system makes maximum use of available resources and provides reliable services and our services are flexible as well as expandable.

Chapter 3
Requirement Analysis

3.REQUIREMENT ANALYSIS

3.1 METHODS USED FOR REQUIREMENT ANALYSIS

The method we've used for Requirement Analysis is GAP Analysis.

Gap Analysis is the technique used to determine the difference between the proposed state and current state for any business and its functionalities. It answers questions like what is the current state of the project? Where do we want to be? Etc. various stages of Gap Analysis include

- ❖ Review System
- ❖ Development Requirements
- ❖ Comparison
- ❖ Implications
- ❖ Recommendations

3.2 DATA REQUIREMENT

The data required for the analysis is follows:
- ❖ Year wise Total GSDP of all states and union territories.
- ❖ Year wise GSDP per Capita of all states and union territories.
- ❖ GSVA of all states and union territories.
- ❖ Year wise Population of all states and union territories.
- ❖ Year wise Literacy Rate of all states and union territories.
- ❖ Year wise Death Rate of all states and union territories.
- ❖ Year wise Birth Rate of all states and union territories.
- ❖ Year wise Infant Mortality Rate of all states and union territories.
- ❖ Area of all states and union territories.
- ❖ Population Density of all states and union territories.
- ❖ Length of Coastline of all states and union territories.
- ❖ Human Development Index of all states and union territories.
- ❖ Happiness Index of all states and union territories.
- ❖ Length of Coastline of all states and union territories.
- ❖ Total Area Irrigated of all states and union territories.

❖ Total Area Unirrigated of all states and union territories.

❖ Total Agricultural Land of all states and union territories.

❖ Total Non-Agricultural Land of all states and union territories.

❖ Total Area Sown of all states and union territories.

All of this data is required in the form of CSV file dataset.

3.3 FUNCTIONAL REQUIREMENTS

Functional software requirements help you to capture the intended behavior of the system. This behavior may be expressed as functions, services or tasks or which system is required to perform.

Following are the non-functional requirements of our project:

❖ Data Gathering – The raw data gathered is combined to create appropriate data sets.

❖ Analyze Data Set – The data sets are analyzed to find out missing and incorrect values.

❖ Data Cleaning – The data set is cleaned to make it appropriate for transformations.

❖ Data Transformation – Necessary transformations are made to make it plot able.

❖ Data Visualization – The data is plotted to make easy to understand visualizations.

3.4 NON-FUNCTIONAL REQUIREMENTS

A non-functional requirement is essential to ensure the usability and effectiveness of the entire software system. Failing to meet non-functional requirements can result in systems that fail to satisfy user needs.

Following are the non-functional requirements of our project:

❖ **Performance** – The website offers smooth experience regards of system specifications of user.

❖ **Scalability** – User experience is not affected by the traffic on website.

❖ **Compatibility** – The website is compatible with all p environments

- ❖ **Reliability** – Our System does not have any feature that can experience any failure during its runtime.
- ❖ **Portability** – The website can be used on any device with a web browser.
- ❖ **Usability** – The interface of site is easy to use and understand.
- ❖ **Availability** – All the features on website are static features as such that there is no possibility of failure in accessing them.
- ❖ **Maintainability** – The data available in site becomes outdated in year so analysis can be updated after a year.

3.5 SYSTEM SPECIFICATION

HARDWARE SPECIFICATION

It should run on every standard pc currently in use with minimum system specifications as follows:

- ❖ **Processor**: Pentium IV or higher
- ❖ **Browser**: Google Chrome/Internet Explorer/Mozilla Firefox
- ❖ **RAM**: 512 MB
- ❖ **Hard Disk**: 2GB
- ❖ Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)

SOFTWARE SPECIFICATION

The minimum Software specification for this web application is:

- ❖ **Operating system** – All Windows Versions/All Linux versions/ All Mac Version
- ❖ Python version 3.1 or above
- ❖ Django version 3.1 or above
- ❖ Bootstrap version 5
- ❖ Visual Studio Code

Chapter 4
Design

\

4.DESIGN

Software design is a process to transform user requirements into some suitable form, which helps the programmer in software coding and implementation. Software design is the first step in SDLC (Software Design Life Cycle), which moves the concentration from problem domain to solution domain. It tries to specify how to fulfill the requirements mentioned in SRS.

The main aim of design engineering is to generate a model which shows firmness, delight and commodity. Software design is an iterative process through which requirements are translated into the blueprint for building the software.

The attributes of design name as 'FURPS' are as follows:

* **Functionality**: It evaluates the feature set and capabilities of the program.

* **Usability:** It is accessed by considering the factors such as human factor, overall aesthetics, consistency, and documentation.

* **Reliability:** It is evaluated by measuring parameters like frequency and security of failure, output result accuracy, the mean-time-to-failure (MTTF), recovery from failure and the program predictability.

* **Performance:** It is measured by considering processing speed, response time, resource consumption, throughput and efficiency.

* **Supportability:** It combines the ability to extend the program, adaptability, serviceability. These three terms define the maintainability.

* **Testability:** Compatibility and configurability are the terms using which a system can be easily installed and found the problem easily.

* **Supportability:** Also consists of more attributes such as compatibility, extensibility, fault tolerance, modularity, reusability, robustness, security, portability, scalability.

4.1 SOFTWARE REQUIREMENT SPECIFICATION

Software Requirement Specification (SRS) is a technical specification of requirements for the software product. SRS represents an overview of products, features and

summaries the processing environments for development operation and maintenance of the product. The goal of the requirement specification phase is to produce the software specification document also called requirement document.

REQUIREMENT SPECIFICATION

This requirement specification must have the system properties. Conceptually, every SRS should have the components:

- ❖ Functionality

- ❖ Performance

- ❖ Design constraints imposed on an implementation.

- ❖ External interfaces

SUPPLEMENTARY SPECIFICATION

The purpose of this Specification is to define requirements of the system. This Supplementary Specification lists the requirements that are not readily captured in the use cases of the use-case model. The Supplementary Specifications and the use-case model together capture a complete set of requirements on the system. This specification defines the non-functional requirements of the system, such as reliability, usability, performance, and supportability as well as functional requirements that are common across several use cases. The non-functional requirements of the software are:

- ❖ **ACCESS SECURITY**: It is evaluated by measuring parameters like frequency and security of failure, output result accuracy, the mean-time-to-failure (MTTF), recovery from failure and the program predictability.

- ❖ **AVAILABILITY**: It is accessed by considering the factors such as human factor, overall aesthetics, consistency, and documentation. Unless the system is non-operational, the system shall present a user with notification informing them that the system is unavailable.

❖ **EFFICIENCY**: The system restart cycle must execute completely in less than 60 seconds. Routine maintenance that is executed while users are active shall not cause a perceptible increase in response time for any function of more than 5% over the response time when no maintenance process is executing.

❖ **USABILITY**: The new product shall be easy to use by any age group. The product shall be self-explanatory and intuitive.

USE CASE MODEL

A use-case model is a model of how different types of users interact with the system to solve a problem. As such, it describes the goals of the users, the interactions between the users and the system, and the required behavior of the system in satisfying these goals.

In software and system engineering, a use case is a list of actions or event steps, typically defining the interactions between a role (known in the Unified Modeling Language as an actor) and a system, to achieve a goal. The actor can be a human or other external system.
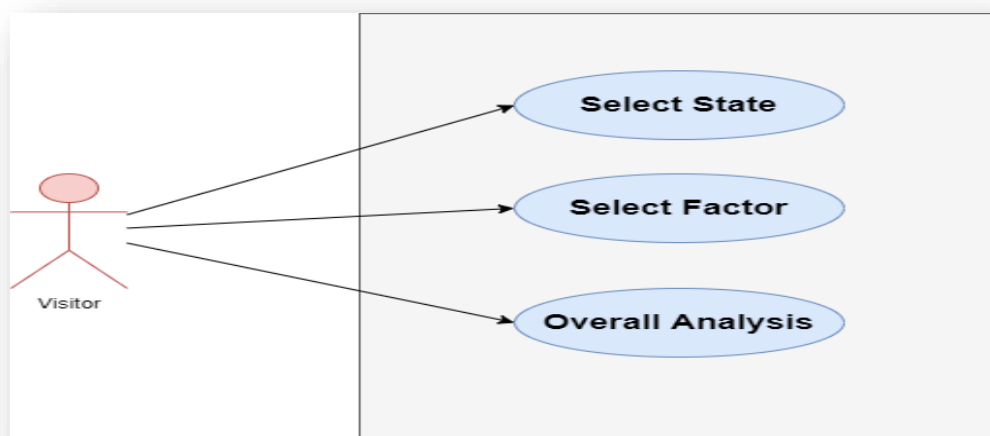
Fig 4.1 Use Case Diagram

So, in brief, the purposes of use case diagrams can be as follows:

❖ Used to gather requirements of a system.

❖ Used to get an outside view of a system.

❖ Identify external and internal factors influencing the system.

❖ Show the interacting among the requirements are actors.

4.2 CLASS DIAGRAM

Class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing, and documenting different aspects of a system but also for constructing executable code of the software application. Class diagram describes the attributes and operations of a class and the constraints imposed on the system. Class diagram shows a collection of classes, interfaces, associations, orations, and constraints. It is also known as a structural diagram.

The purpose of class diagram is to model the static view of an application. Class diagrams are the only diagrams which can be directly mapped with object-oriented languages and thus widely used at the time of construction. UML diagrams like activity diagram, sequence diagram can only give the sequence flow of the application; however, class diagram is a bit different. It is the most popular UML diagram in the coder community.

The purpose of the class diagram can be summarized as −

❖ Analysis and design of the static view of an application.

❖ Describe responsibilities of a system.

❖ Base for component and deployment diagrams.

❖ Forward and reverse engineering
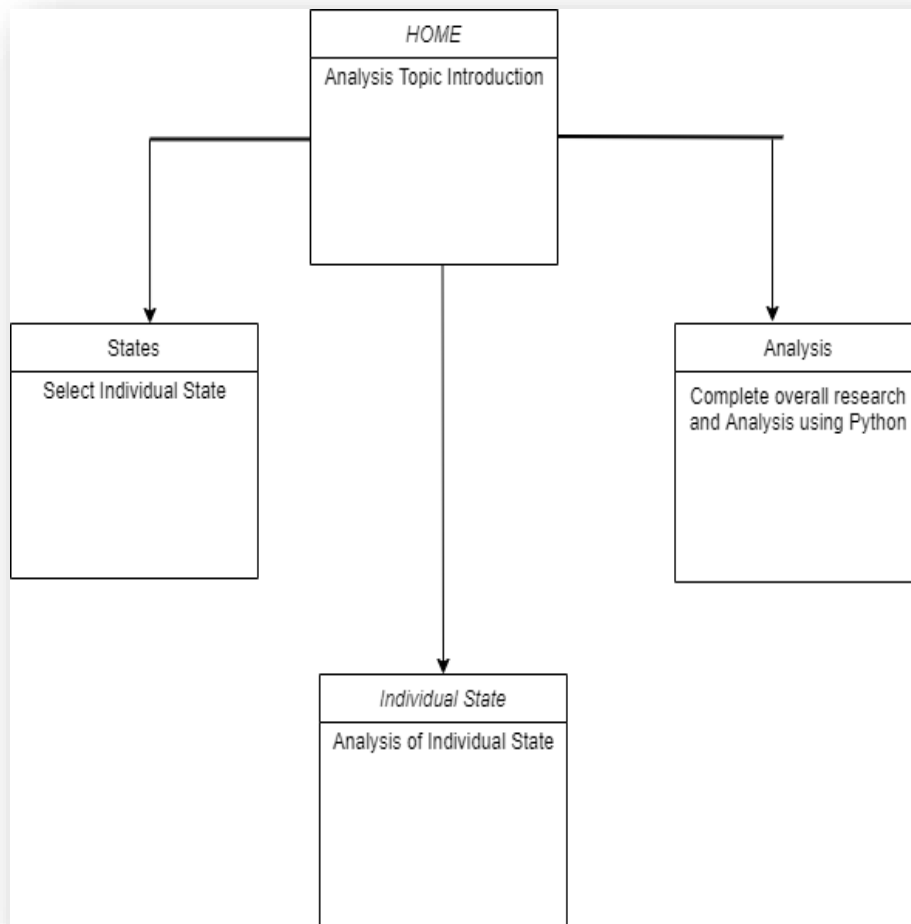
Fig 4.2 Class Diagram

4.3 DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. It shows how data centers and leaves the system, what changes the information, and where data is stored.

DFD may be used to perform a system or software at any level of abstraction. In fact, DFDs may be partitioned into levels that represent increasing information flow and functional detail. Levels in DFD are numbered 0, 1, 2 or beyond. There are primarily three levels in the data flow diagram, which are: 0-level DFD, 1-level DFD, and 2-level DFD.
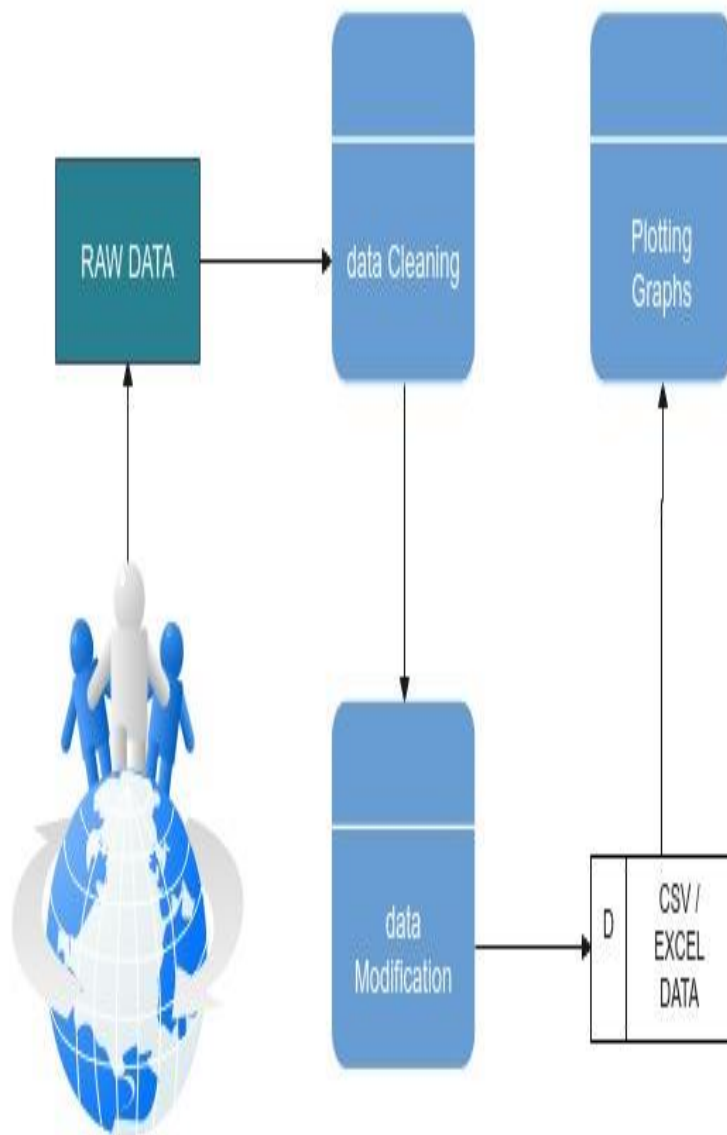
Fig 4.3 Data Flow Diagram

Chapter 5
System Modeling

5.SYSTEM MODELING

5.1. SEQUENCE DIAGRAM

A Sequence diagram is an interaction diagram that show processes operate with one another and in what order. It is a construct of a Message Sequence Chart. A sequence diagram shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagram are sometimes called event diagrams or event scenarios. The purpose of a sequence diagram in UML is to visualize the sequence of a message flow in the system.

The sequence diagram shows the interaction between two lifelines as a time-ordered sequence of events. A sequence diagram shows, as parallel vertical lines (lifelines), different processes or objects that live simultaneously, and as horizontal arrows, the messages exchanged between them, in the order in which they occur. This allows the specification of simple runtime scenarios in a graphical manner.
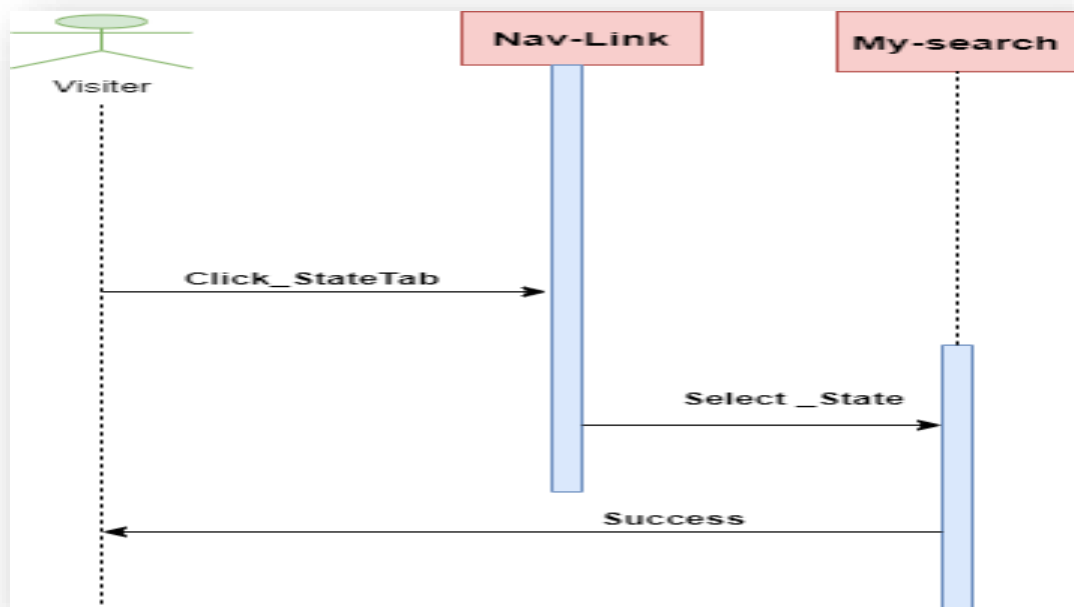
Fig 5.1 Sequence Diagram for select state
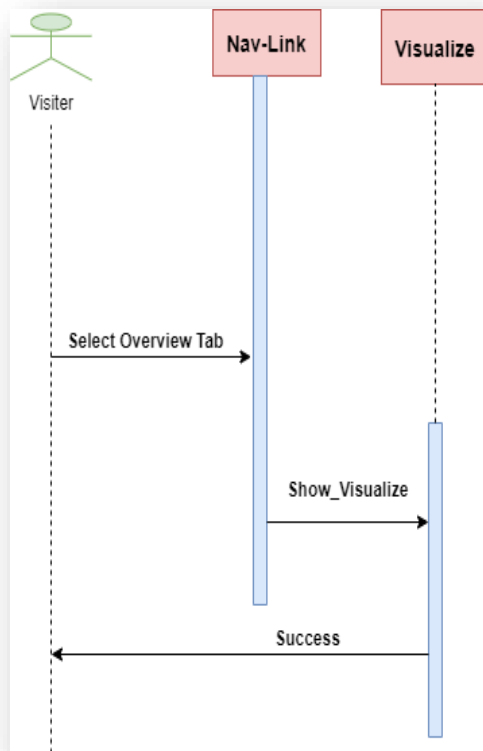
Fig 5.1 Sequence Diagram for select factor

Fig 5.1 Sequence Diagram for select Overall Analysis
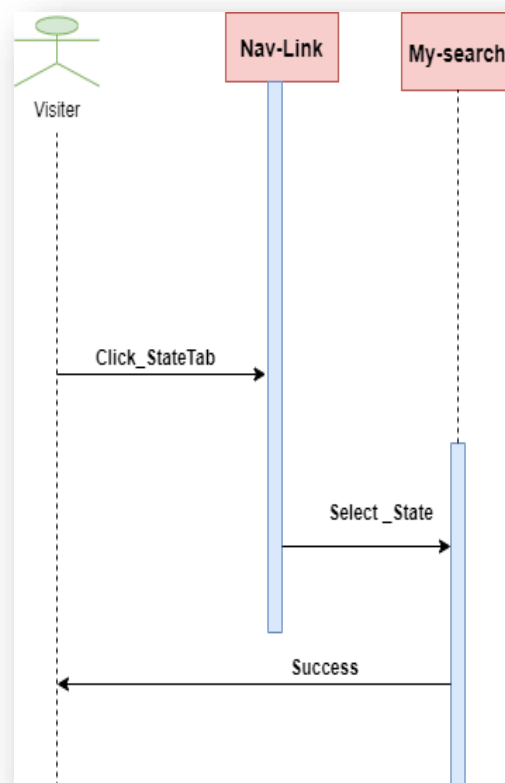
5.2. ACTIVITY DIAGRAM

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another. The basic purposes of activity diagrams are similar to other four diagrams. It captures the dynamic behavior of the system. Other four diagrams are used to show the message flow from one object to another, but activity diagram is used to show message flow from one activity to another.

An activity diagram is a behavioral diagram i.e., it depicts the behavior of a system. An activity diagram portrays the control flow from a start point to a finish point showing the various decision paths that exist while the activity is being executed.
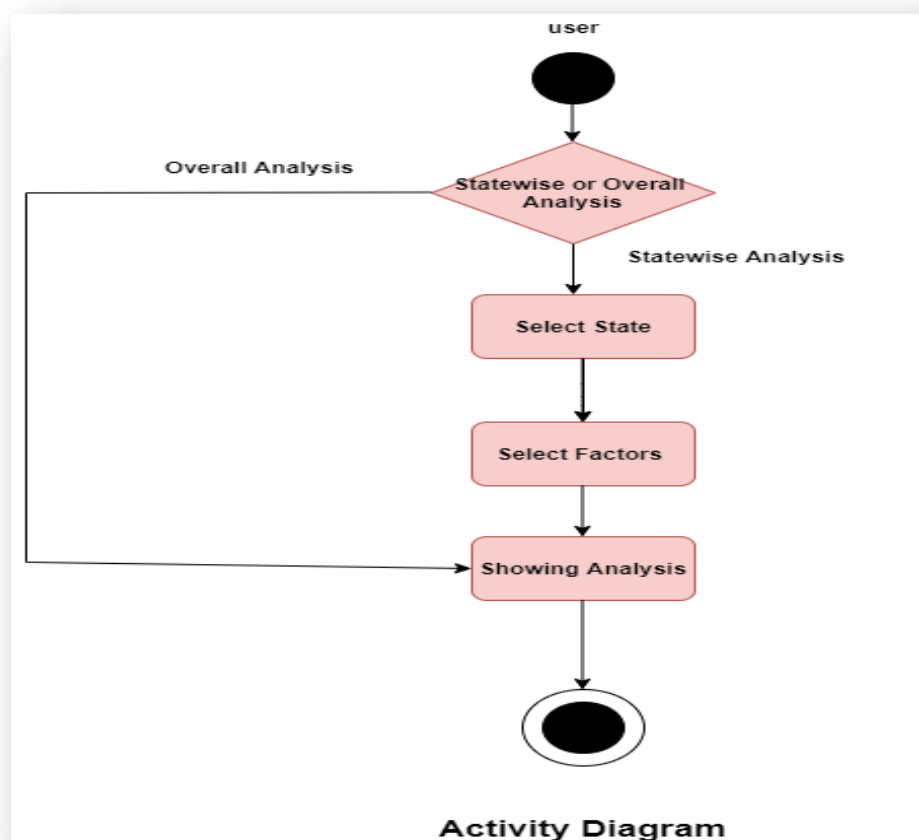
Fig 5.2 Activity Diagram

5.3. STATE DIAGRAM

A state diagram is used to represent the condition of the system or part of the system at finite instances of time. It's a behavioral diagram and it represents the behavior using finite state transitions. State diagrams are also referred to as **State machines** and **State-chart Diagrams**.

These terms are often used interchangeably. So simply, a state diagram is used to model the
dynamic behavior of a class in response to time and changing external stimuli. We can say that each and every class has a state but we don't model every class using State diagrams. We prefer to model the states with three or more states.

Uses of state chart diagram
- ❖ We use it to state the events responsible for change in state (we do not show what processes cause those events).
- ❖ We use it to model the dynamic behavior of the system.
- ❖ To understand the reaction of objects/classes to internal or external stimuli.

1. **Initial state –** We use a black filled circle represent the initial state of a System or a class.

Figure – initial state notation

2. **Transition –** We use a solid arrow to represent the transition or change of control from one state to another. The arrow is labeled with the event which causes the change in state.

Figure – transition

3. **State –** We use a rounded rectangle to represent a state. A state represents the conditions or circumstances of an object of a class at an instant of time.

Figure – state notation

4. **Fork –** We use a rounded solid rectangular bar to represent a Fork notation with incoming arrow from the parent state and outgoing arrows towards the newly created states. We use the fork notation to represent a state splitting into two or more concurrent states.
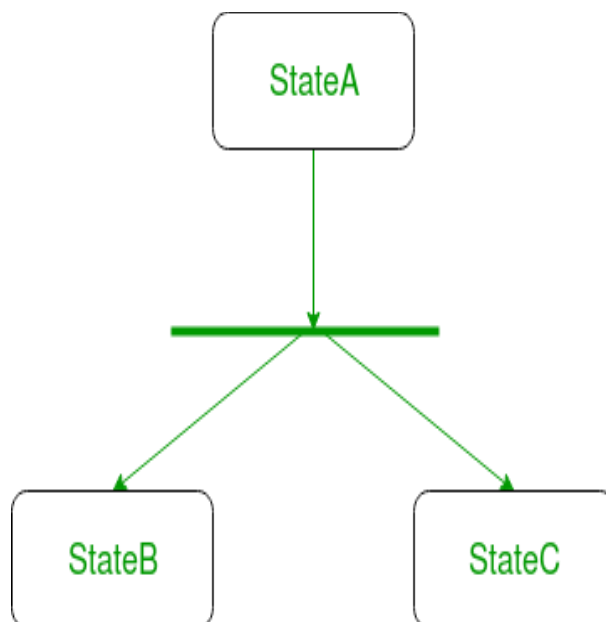
Figure – a diagram using the fork notation

5. **Join –** We use a rounded solid rectangular bar to represent a Join notation with incoming arrows from the joining states and outgoing arrow towards the common goal state. We use the join notation when two or more states concurrently converge into one on the occurrence of an event or events.
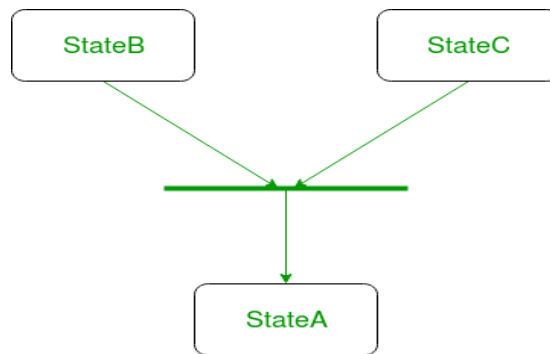
Figure – a diagram using join notation

6. **Self-transition –** We use a solid arrow pointing back to the state itself to represent a self-transition. There might be scenarios when the state of the object does not change upon the occurrence of an event. We use self-transitions to represent such cases.

Figure – self transition notation

7. **Composite state –** We use a rounded rectangle to represent a composite state also. We represent a state with internal activities using a composite state.
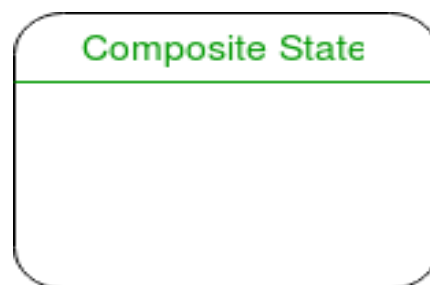
Figure – a state with internal activities

8. **Final state –** We use a filled circle within a circle notation to represent the final state in a state machine diagram.

Figure – final state notation
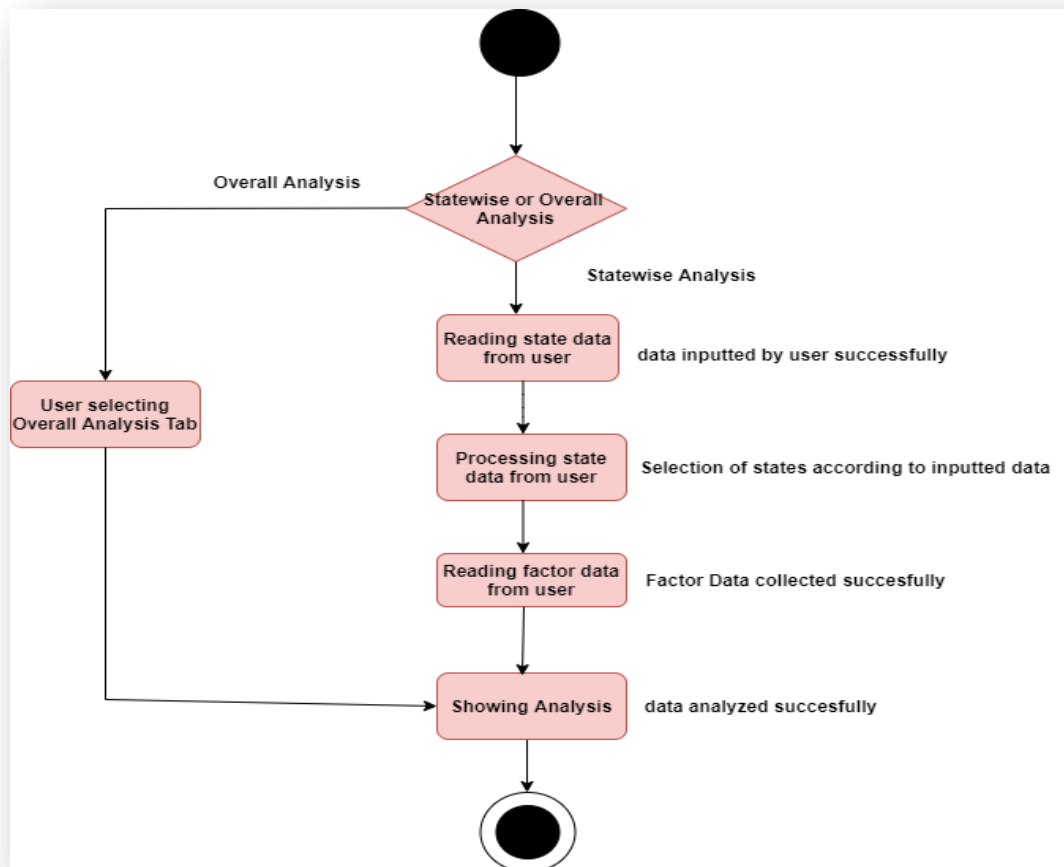
Fig 5.3 State Diagram

5.4. SYSTEM MODEL

In this system, we have used agile model. 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 each iteration are 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.
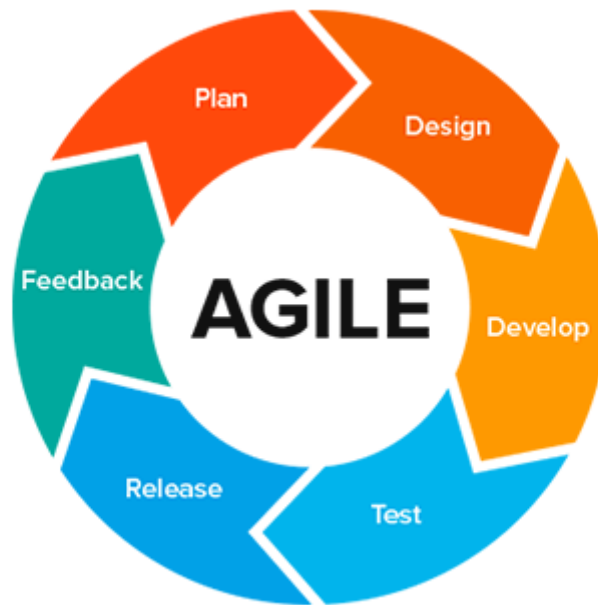
Fig 5.4 Agile Model

Phases of Agile Model:

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

- ❖ Requirements gathering.
- ❖ Design the requirements.
- ❖ Construction/ iteration
- ❖ Testing/ Quality assurance
- ❖ Deployment
- ❖ Feedback

Benefits of Agile model

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

Chapter 6
Conclusion and Future Work

6.CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

Our main idea was to perform an analysis on **"How different Factors affect the GDP of a nation and each other".** So, with this project not have we achieved that but also provided state wise information regarding the development of states with a user-friendly website implementation.

The analysis not only sheds light on the state of our nation but also gives us a overall understanding of the various states of nation and where they stand when compared to each other. It also makes the role factors like literacy, length of coastline and the various sectors on which our economy is dependent plays on affecting our GDP.

6.2 LIMITATION OF PROJECT

There are certain limitations that are faced by this project:
- ❖ The charts displayed have to be made independently the website does not have the feature visualizing the data.
- ❖ The result of analysis has to be updated yearly otherwise it becomes outdated.
- ❖ The website does not have many features for user interaction.
- ❖ The analysis is limited by availability and accuracy of data.

6.3 FUTURE ENHANCEMENT

There is still scope of enhancement in this project, some of them are:
- ❖ Forgoing the need for independent visualization, a way for the analysis to be performed in real time.
- ❖ Added features for user interaction and more choices for visualization.
- ❖ Increasing the scope from India to whole world.
- ❖ A way to verify the results of analysis.

Chapter 7
Bibliography and References

7.BIBLIOGRAPHY AND REFERENCES

7.1 BIBLIOGRAPHY

- ❖ http://www.mospi.nic.in
- ❖ https://data.gov.in
- ❖ https://en.wikipedia.org
- ❖ https://www.karnataka.gov.in
- ❖ https://state.bihar.gov.in
- ❖ https://www.cgstate.gov.in
- ❖ https://wb.gov.in
- ❖ https://www.andaman.gov.in
- ❖ https://ladakh.nic.in
- ❖ https://www.jk.gov.in
- ❖ https://www.ap.gov.in
- ❖ https://www.goa.gov.in
- ❖ https://lakshadweep.gov.in
- ❖ http://assam.gov.in
- ❖ https://www.maharashtra.gov.in
- ❖ http://dnh.nic.in
- ❖ http://uk.gov.in
- ❖ http://www.punjab.gov.in
- ❖ http://www.telangana.gov.in
- ❖ http://up.gov.in
- ❖ https://www.py.gov.in
- ❖ http://sikkim.gov.in
- ❖ http://tn.gov.in
- ❖ http://chandigarh.gov.in
- ❖ http://gujaratindia.gov.in
- ❖ http://odisha.gov.in
- ❖ http://tripura.gov.in
- ❖ http://nagaland.gov.in
- ❖ http://mizoram.gov.in
- ❖ http://haryana.gov.in

- ❖ http://daman.nic.in
- ❖ http://rajasthan.gov.in
- ❖ http://arunachalpradesh.gov.in
- ❖ http://mp.gov.in
- ❖ http://himachal.gov.in
- ❖ http://meghalaya.gov.in
- ❖ http://kerala.gov.in
- ❖ http://manipur.gov.in
- ❖ http://jharkhand.gov.in
- ❖ http://delhi.gov.in
- ❖ http://github.com
- ❖ http://delhi.gov.in
- ❖ https://www.investopedia.com/
- ❖ https://en.wikipedia.org/
- ❖ https://simplemaps.com/

7.2 REFERENCES

❖ Economic condition of the whole world by Aman Kharwal –

  https://thecleverprogrammer.com/2020/05/26/gdp-analysis-with-data-science/

❖ State-Wise GDP Research and Analysis –

  https://github.com/sinhasangram/GDP-Analysis

❖ Current economic Condition by World Bank–

  https://data.worldbank.org/indicator/NY.GDP.MKTP.CD

7.3 SNAPSHOTS

7.4 Home Page

This page is entry point of our site, Here for layman who visits the site should know first about gdp and its related terminologies. This page contains brief description about gdp and its terminologies related to it and it also contains latest data about gdp of india.
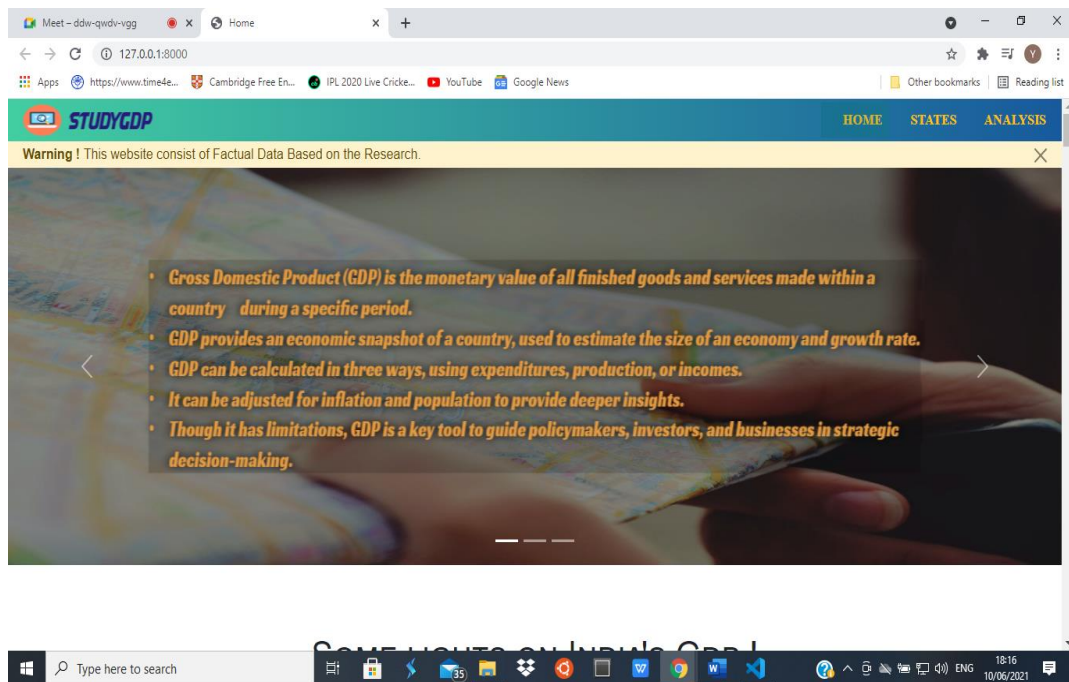
7.5 Introduction
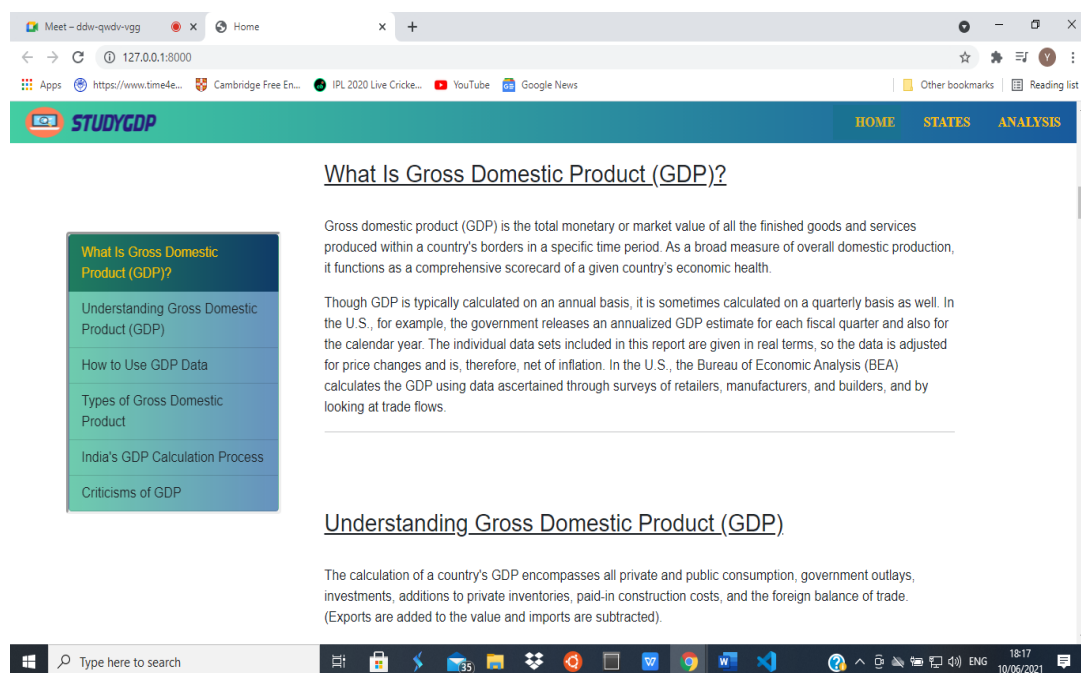
7.6 States Page

This page takes the user to individual states page. There is two ways to select the State

- ❖ First – By selecting in search menu.
- ❖ Second – By selecting that state in map of India.
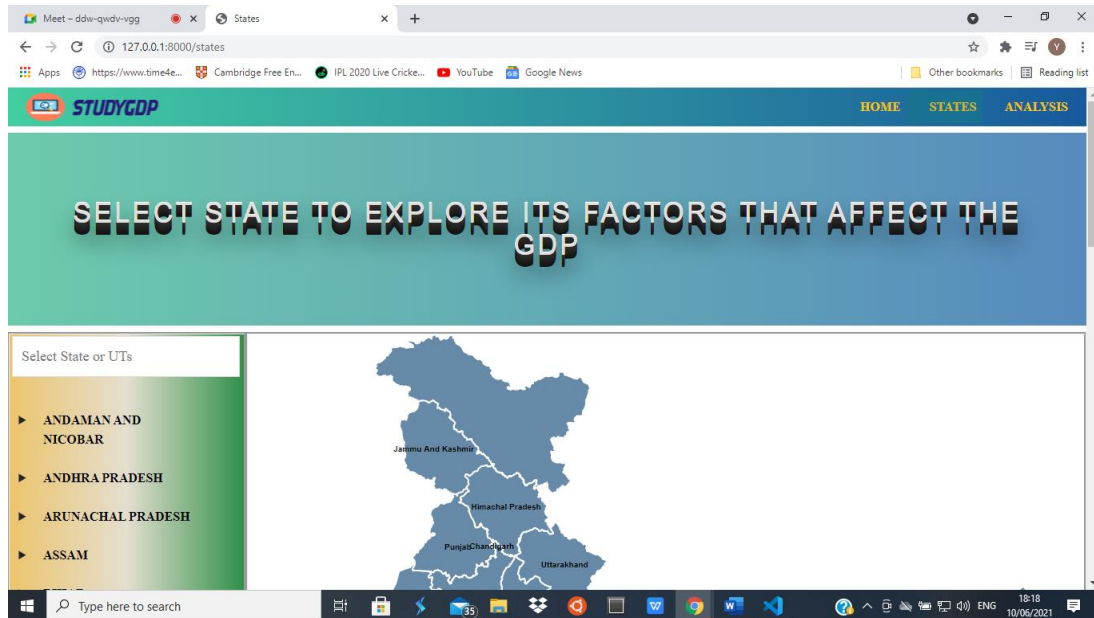
7.7 Map
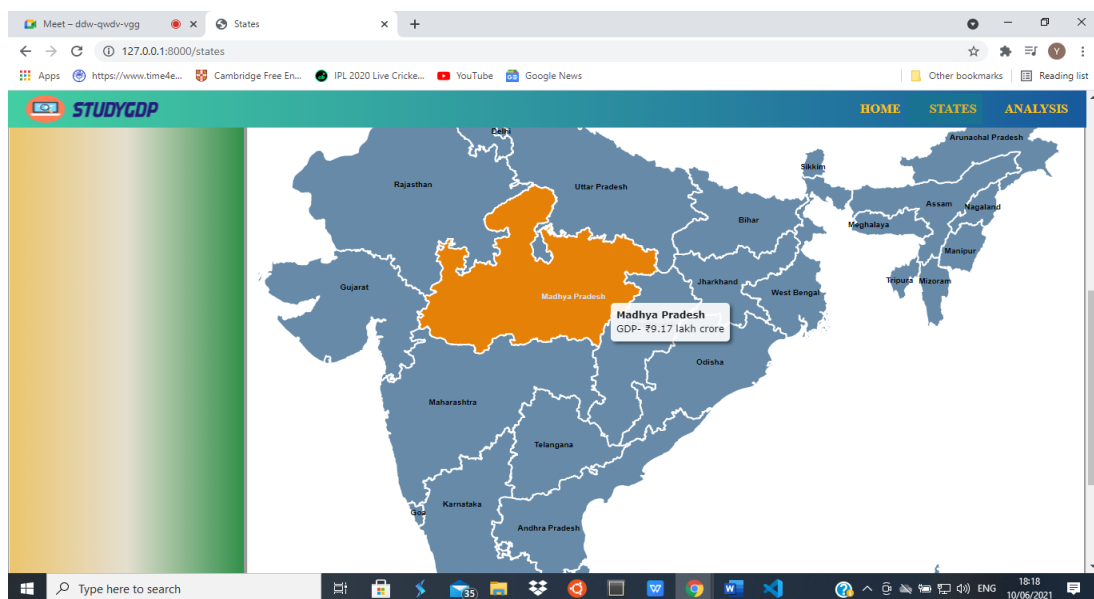
7.8 Indivdual State Page

Here we have accessed Madhya Pradesh. This page contains analysis of state that has been selected.
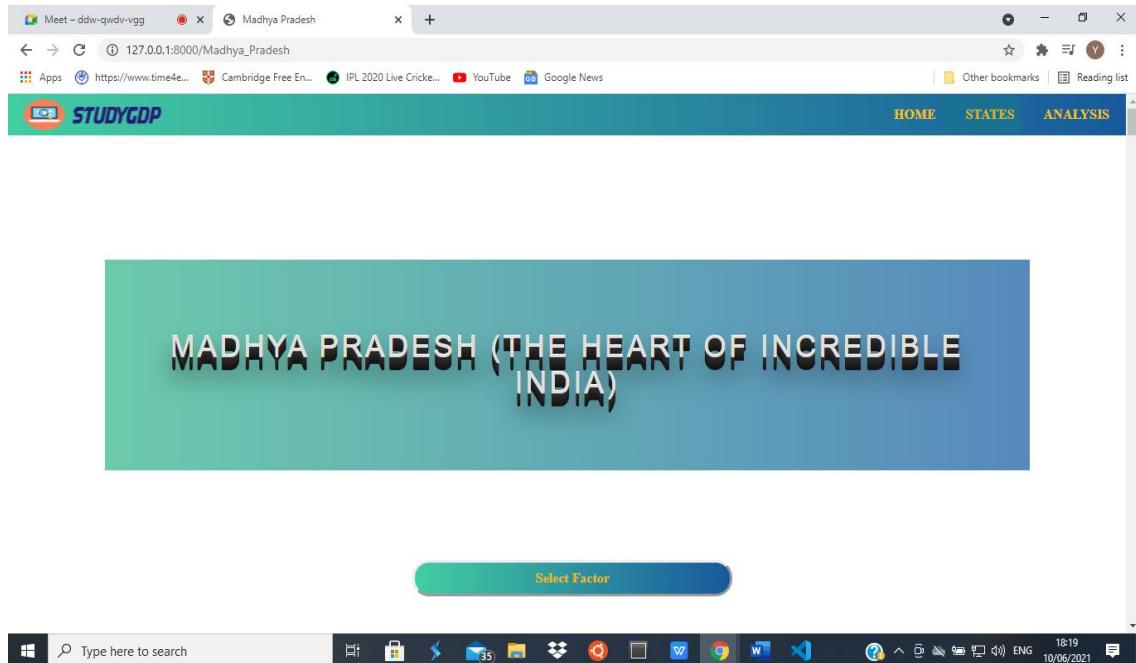
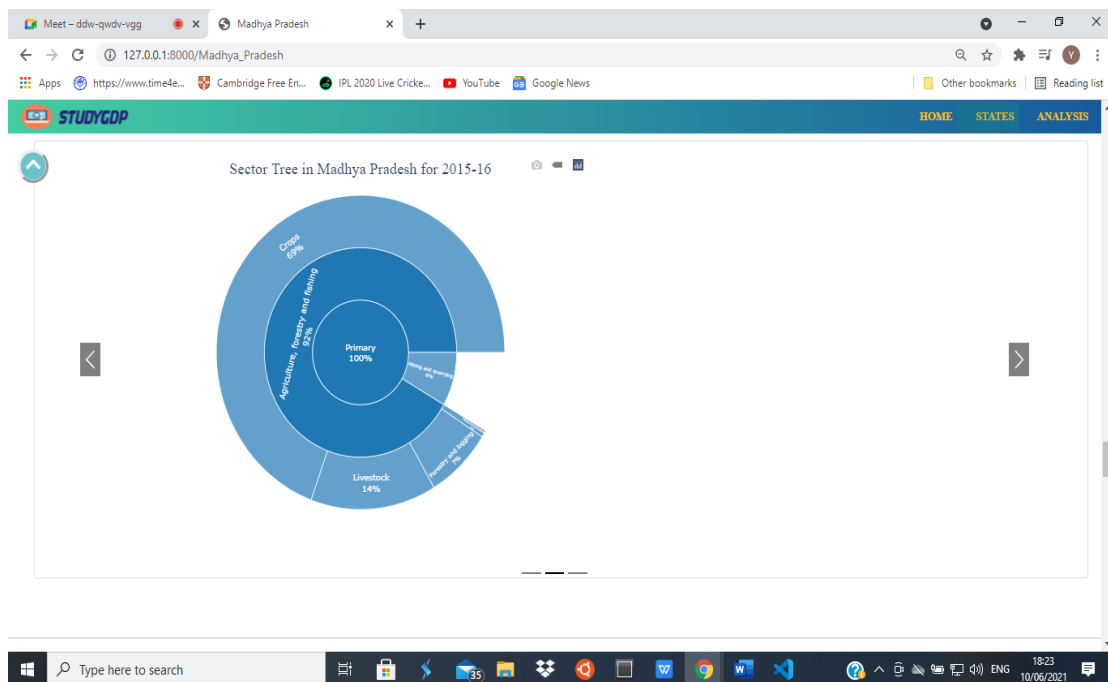## 7.9 Select Factor
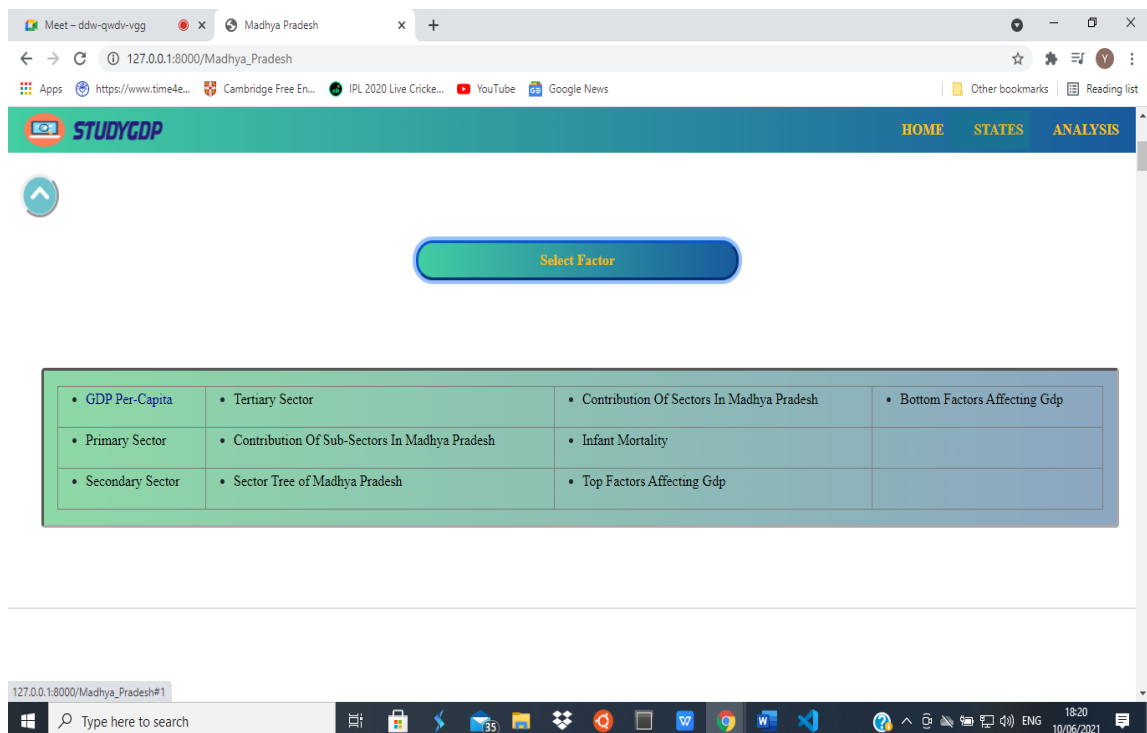
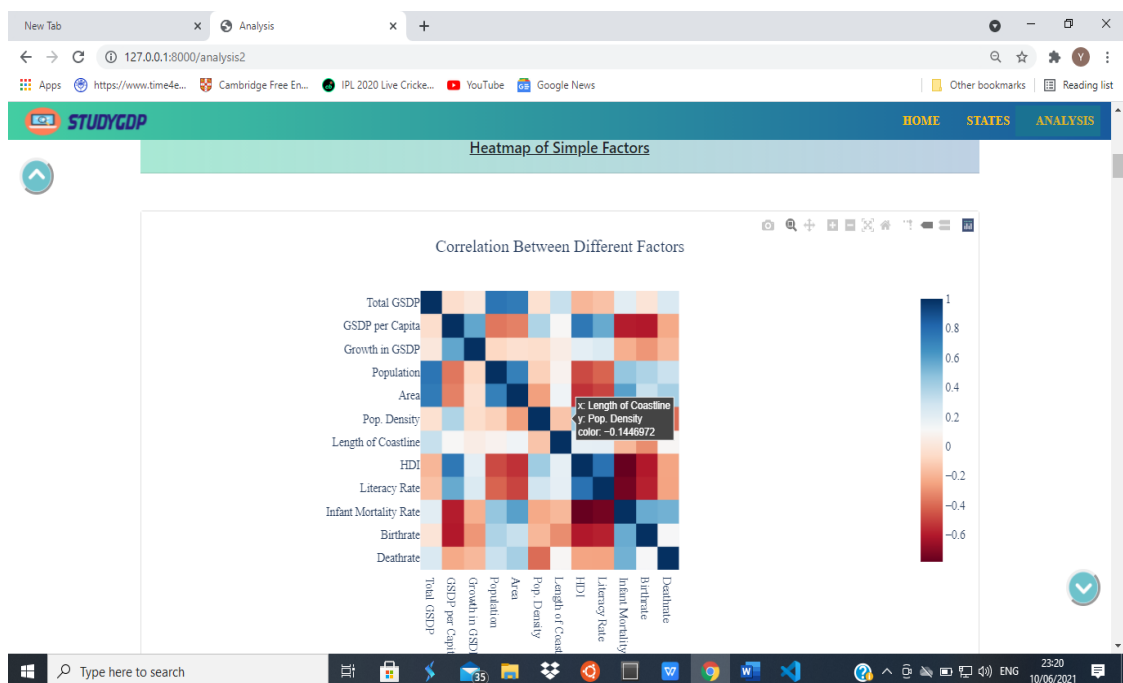## 7.10 GSDP per Capita Year-Wise Comparison
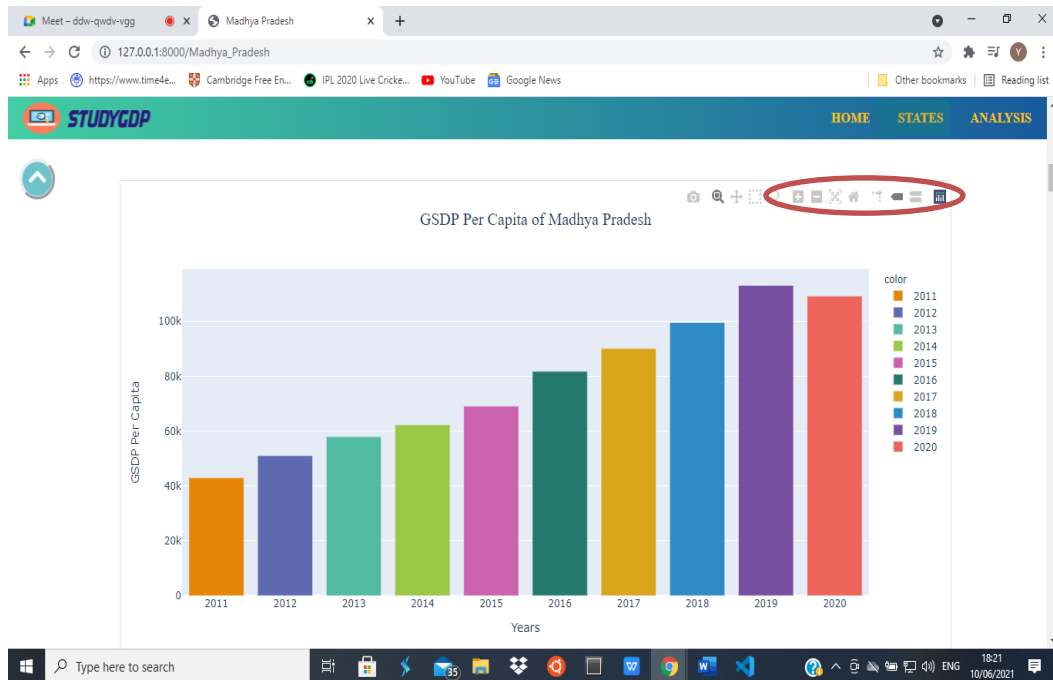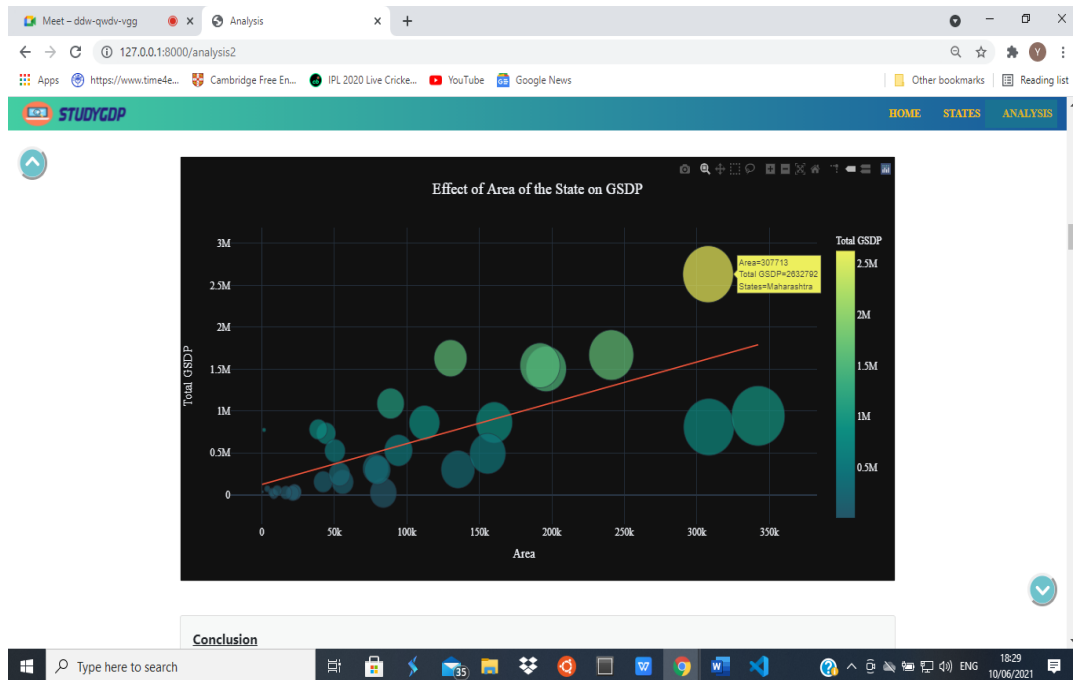

7.11 Zoom Function
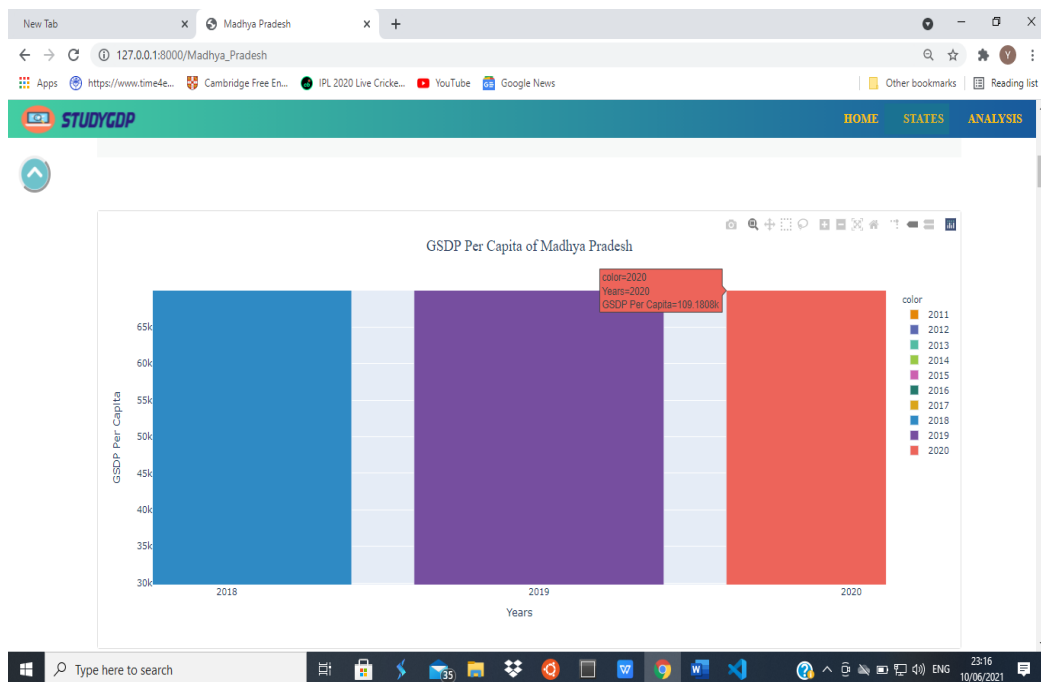
7.12 Sector Tree
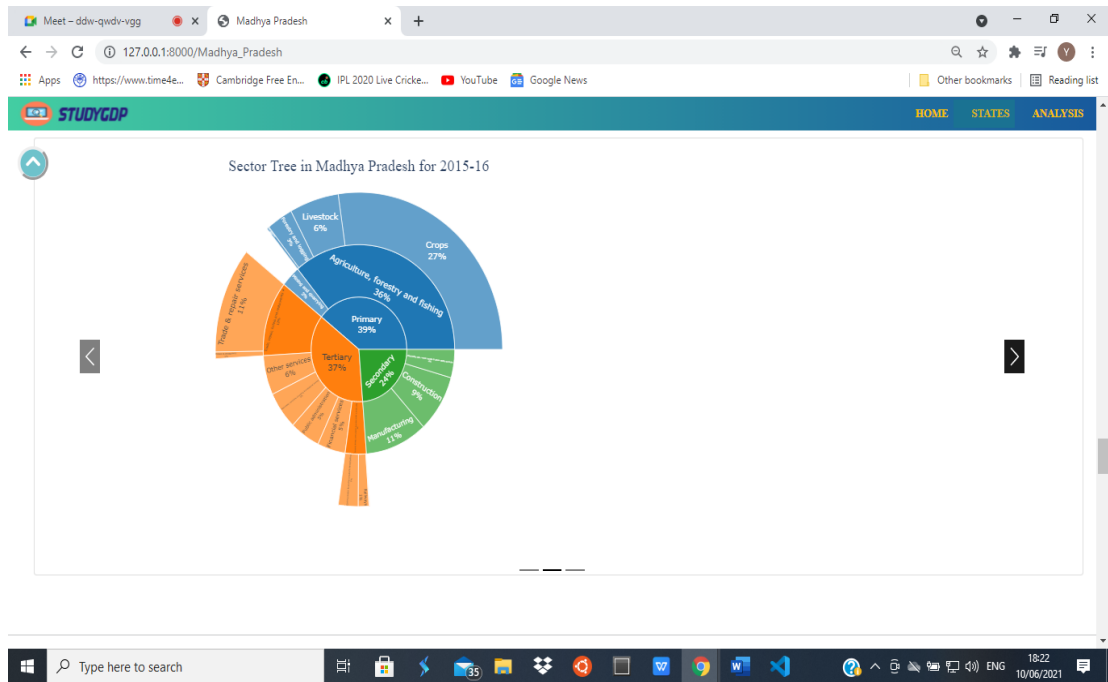
7.13 Sector Tree Detailed

7.14 Ranking of States by Total GSDP

Analysis page -This page contains overall analysis through various factors.

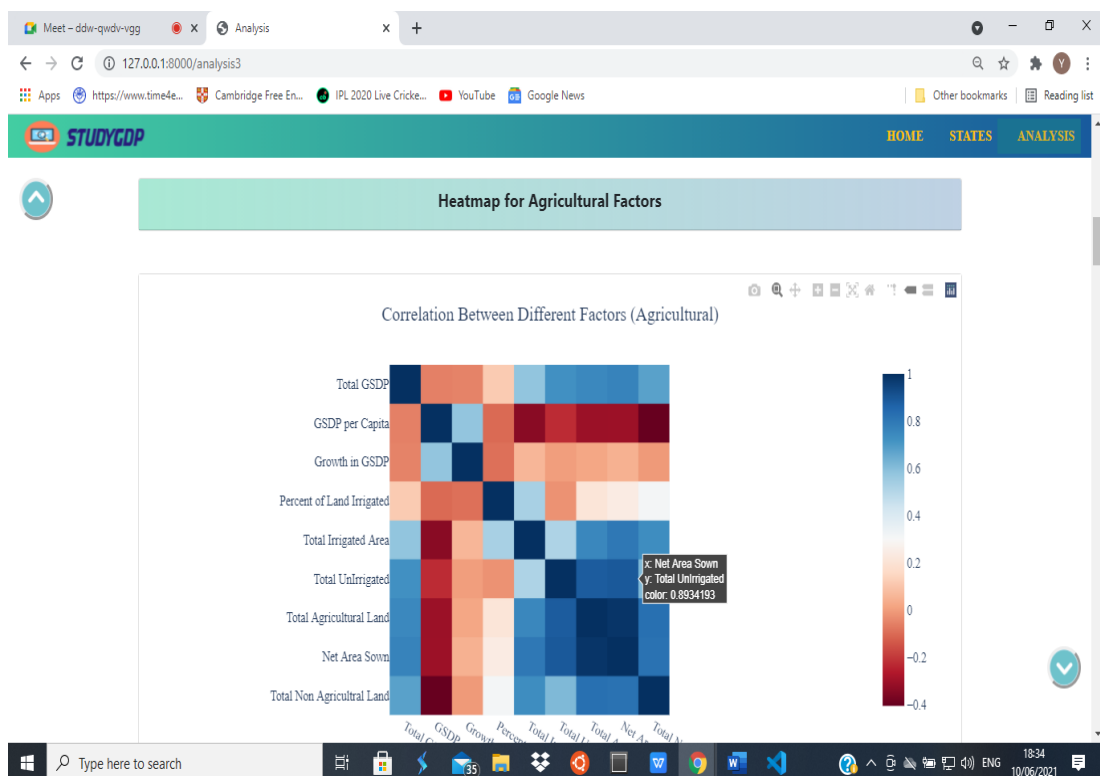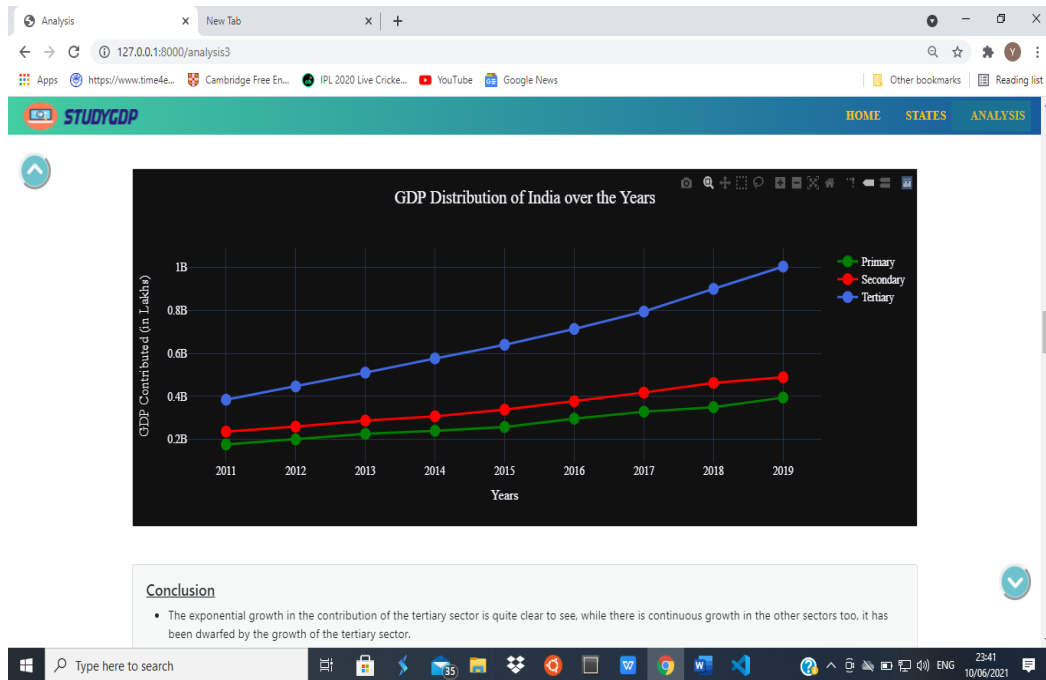## 7.15 Heatmap of Factors Effecting GDP

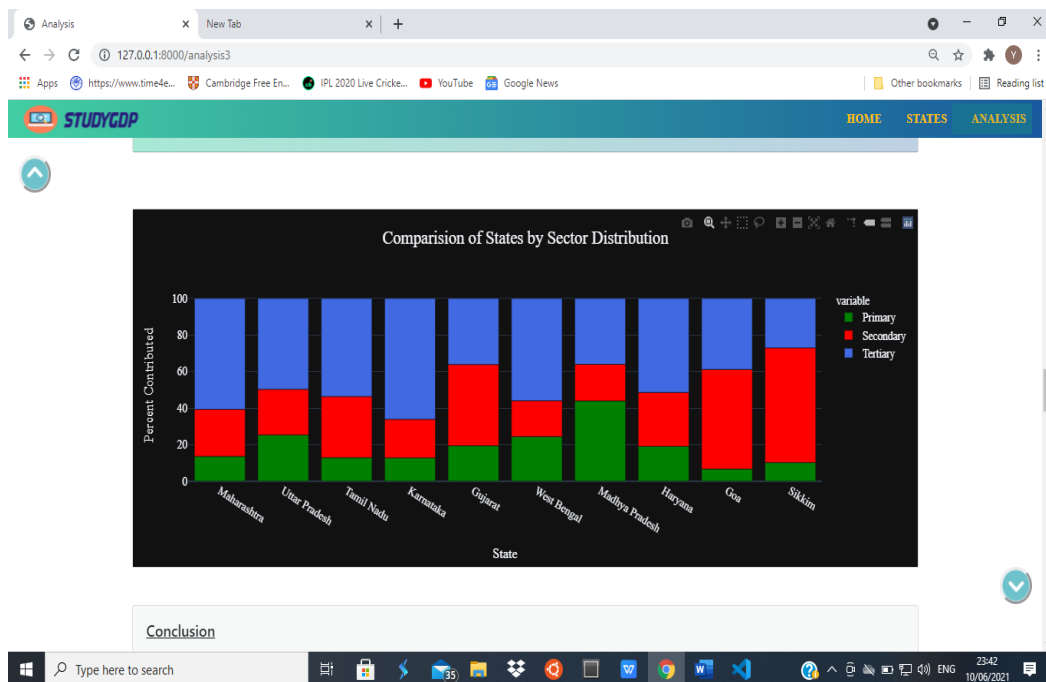## 7.16 Bubble Chart of Factor Effecting GDP
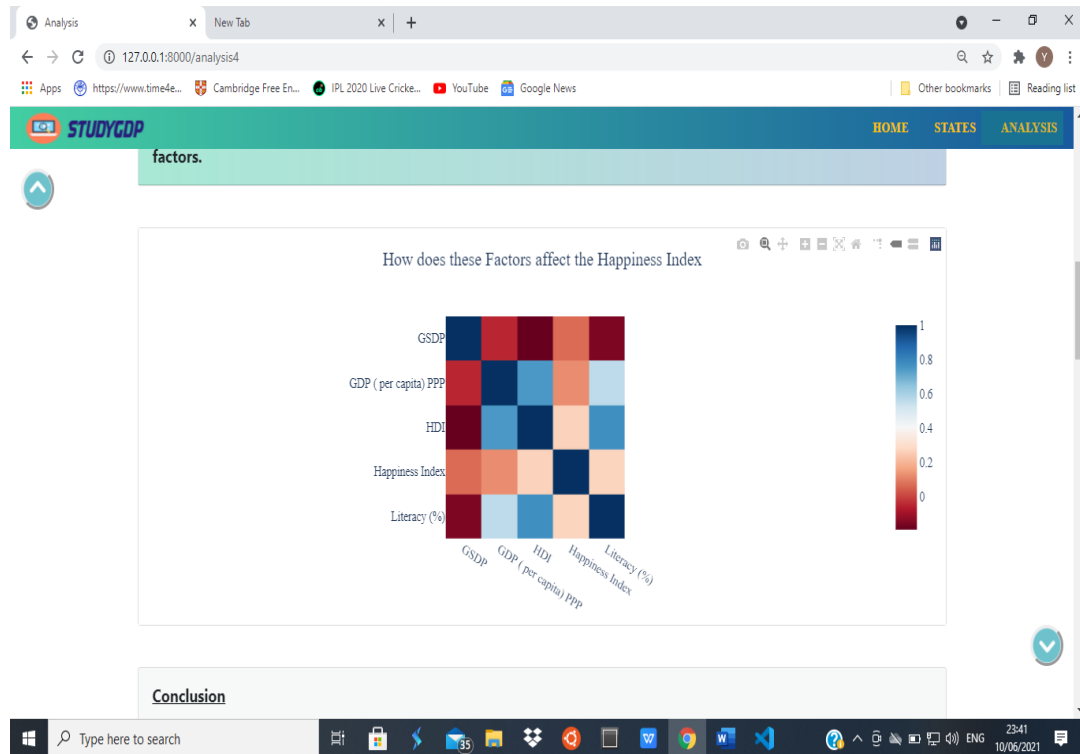

7.17 Heatmap Showing Correlation

7.18 GDP Distribution over the Years

7.19 Comparison of Sector Distribution

7.20 Heatmap Happiness index

Glossary

Term	Definition
Software Requirements Specification	A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. For example, this document.
Stakeholder	Any person with an interest in the project who is not a developer.
User	Reviewer or Author.
SDLC	Software Development Life Cycle
Business	Which the user has registered to the system
User	Business Owner who is registered with the system
Client	To whom the user asks for transaction approval
System	Project
Product	Project