

E-COMMERCE WEB APPLICATION USING ANGULAR

Project report submitted in fulfilment of the requirement for the degree of
Bachelor of Technology

in

Computer Science and Engineering by

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Under the supervision of

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to

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Department of Computer Science & Engineering and Information
Technology

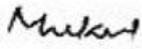
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Certificate

Candidate's Declaration

I hereby declare that the work presented in this report entitled **E-Commerce web application using angular(2+)** in fulfilment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering submitted in the department of Computer Science & Engineering and Information Technology, Wagnaghat is an authentic record of our own work carried out over a period from February 2020 to May 2020 under the supervision of Mr. Bobin Sondhi.

The matter embodied in the report has not submitted for the award of any other degree or diploma.



Mukul Garg 161209

This is to certify that the above statement made by the candidate is true to the best of my knowledge.



Mr. Bobin Sondhi

Dated: 24-05-2020

Acknowledgement

It is my pleasure to be indebted to various people, who directly or indirectly contributed in the development of this work and who influenced my thinking, behaviour and acts during the course of study.

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Abstract

Our project is a single page e-commerce application built using angular that is an single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack HTML pages and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web and hence, this web application will help people to find, buy and sell products online.

In this web application we have basically 5 modules namely Auth, Menu, Cart, Orders and Routing modules. The Auth modules consists of registration and login components. The Menu module consists of navbar, sidebar and main-content module. The Cart module consist of cart, shipping/delivery address components. The Orders module consists of placed orders and checkout components. The Routing modules consists of routing configuration paths which exists under the application.

Keywords: E-commerce, Single Page application, Angular, Components, Directives, Modules, Routing.

TABLE OF CONTENTS

1. INTRODUCTION	1-2
1.1 What is E-commerce	
1.2 Rise of E-commerce – Indian Scenario	
1.3 Online Shopping	
2. LITERATURE REVIEW	2-5
2.1 Advantage of Online Shopping	
2.2 Growth of web-based retailing in India	
3. METHODOLOGY	6-7
3.1 Project Design	
3.2 Problem Statement	
3.3 Objectives	
3.4 Field of observation	
4. WEB-DEVELOPMENT	8-20
4.1 Website	
4.2 Web-page	
4.3 Modern web application	
4.3.1 Single page application	
4.3.2 Multi page application	
4.3.3 SPA or MPA?	
4.3.4 Traditional vs Single page application lifecycle	
4.3.5 Should you go for SPA?	
4.4 Angular Framework	
5. SOFTWARE REQUIREMENT AND SPECIFICATIONS	21
5.1 Hardware Requirements	
5.2 Software Requirements	
5.3 Angular Modules Requirements	
6. UML Diagrams	22-25
6.1 DATA FLOW DIAGRAM	
6.2 USE CASE DIAGRAM	
6.3 ACTIVITY DIAGRAM	

TABLE OF CONTENTS

7. PROJECT	26
7.1 Project Description	
7.2 Project Modules and Components	
7.3 Technical details	
8. PROJECT'S USER INTERFACE	27-31
9. CODE IMPLEMENTATION	32-36
10. FUTURE SCOPE AND FUTURE ENHANCEMENT	37
11. CONCLUSION	38
12. REFERENCES	39
13. PROJECT REPORT PLAGIARISM RESULT	

CHAPTER-1

INTRODUCTION

(1.1) What is E-Commerce?

Electronic business, customarily known E-commerce, is trading things or organizations using personal computers frameworks, for instance, the Internet. Digital exchange draws on progresses, for instance, adaptable business, electronic accounts move, nimbly chain the board, Internet displaying, online trade getting ready, electronic data trade, bill-board organization systems, and automated data grouping structures. Now adays online markets usually uses the World Wide Web for at any rate one bit of the trading, disregarding the way that it may in like manner use various developments, for instance, WhatsApp.

Electronic business associations may use a couple or the total of the going with:

- Web markets locales for retail bargains direct to clients.
- Online buying and selling.
- Gathering and using section data through web contacts and web based systems administration.
- Business-to-business electronic data exchange.
- Marketing to arranged and developed customers by email or fax (for example, with leaflets)

As showed by an Association Chambers of Commerce & Industry of India (ASSOCHAM) diagram, the web based marketing promote in India may create to 2100 crore by 2020 from 70 crore of each 2016 as web get to stabilised.

(1.2) Rise of E-Commerce-The Indian Case

India has reliably been a spot that is known for uncommon potential. The monetary condition of the country has improved various overlap after opportunity and India is by and by creating as one of the primary countries on the world map. Additionally, with a people of in excess of 150 crore and an advancement pace of above 6%, it might be appeared differently in relation to a promoting beast. From this time forward it will in general be a lot of chose why web shopping in India is rising at snappy pace consistently. As development is spreading to the remotest towns and numerous openings for work are acquainting themselves with the jobless youth a consistently expanding number of people are getting care and the money to purchase exorbitant and sumptuous things over the surface-web.

(1.3) Online Shopping

Online Shopping is the methodology whereby buyers direct buy stock and enterprises with no mediator administration over the Internet. The objective of this web application venture is to build up an electronic interface for individuals to purchase and sell items on the web, the site will be a solitary page application that would be simple and intuitive to utilize and henceforth the shopping experience will be wonderful for the clients.

Which organization flashes in your psyche first? Flipkart, Amazon, eBay and so forth.

Taking everything into account, let us talk about the home-created, Indian, web business site page 'Flipkart-lite'.

It started with just 2 lakhs is presently net worth over more than 3000 crores According to the data, the Indian company Flipkart has given to Ministry of Corporate Affairs; the association's pay in 2012–13 was \$67 million. For the fiscal 2013–14, their pay is surveyed to be \$450 million. With this colossal accomplishment flipkart is transforming into the fate of web marketing in India. This paper attempts to enlighten the advancement of online retail business in India with unprecedented to others (separating the client contribution about the game plan of flipkart-lite)

The development has opened an altogether unique universe of chances for us. Not simply we can talk with the individual we love inside minutes anyway nowadays various basic assignments like livelihoods, shopping, blending and various others should be conceivable adequately at the solace of our homes. The idea is that to manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

CHAPTER-2

LITERATURE REVIEW

In online buying, the pace of spread and apportionment of the electronic buying among customers is still not that much in India. Considering above issue an observational examination of electronic buying conduct was grasped. Base on composing review, four overwhelming psychographic parameters to be explicit, manner, motivation, character and trust were concentrated concerning electronic buying. The online buying decision technique models subject to all the four parameters were organized after genuine assessment. The approach is to manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, To manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

(2.1) Advantages

1) Time saving:

It saves us a colossal proportion of time. We can buy any of our favored things from our home just and need not visit the strip malls.

2) Profitable:

Products can be purchased at any rate by buying on the web. It's on the grounds that online stores offer tremendous limits and rewarding proposals on the acquisition of every single item.

3) Additional Profits:

Item is uninhibitedly sent, conveyed to our homes with free of cost without any delivery charges. Also, on the off chance that we discover them not fit to our motivation, we can return them without buying whenever

4) Shop any store around the world:

Never again be constrained topographically. Numerous dealers don't has actual shops at each place in world. At the point when you shop on the web, anyone can buy it from any anonymous market registered with respective domain.

5) Sell blessings legitimately:

Any request made on the web, you can send endowments or even have blessing crates conveyed straightforwardly to their beneficiary. This implies you can stay away from significant delays at the mail station and you can get your blessing conveyed quicker. Numerous stores considerably offer redid cards and blessing wrapping to oblige your present.

6) Find things you probably won't find in stores:

Since physical stores are restricted on space, traders generally don't convey the entirety of the things they sell coming up. On the web, you can locate their whole stock, alongside numerous selections of hues, brands, and even customizable things.

7) Web server runs 24/7:

Buy at whatever point of timestamp. Web server never shuttled down, so there is no worry. Web shopping is perfect for night individuals or any person who is just too involved to even think about evening think about creation a trip to the store. The showing of buying things from destinations and not shops without a doubt put aside a long exertion to blend in with the shopping viewpoint of the Indian customer to manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

The repeat of BBC trades has undeniably extended after some time in the Indian subcontinent. There are many shopping locales, which are by and by observing a conclusive flood in busy time gridlock (this declaration is being made while keeping in observe the presentation of shopping destinations over the latest five years). With a development in the amount of individuals visiting these locales, they have furthermore become ideal stages for advancements and flags of different brands.

Electronic buying, is doubtlessly observing a period, which includes things, for instance, rising number of online arrangements and mind boggling pay and advantage figures. There have been various things, which have gotten the indulgent of online clients and one of them is a handset. Handsets, free of the brand, are being sold in beneficent numbers on different locales. All the critical market players in the communicate correspondences division, FMCG section, organizations, convenient part, etc are doing very well with the arrangements that they are getting from this online stage. The money that is earned is as a rule successfully used by using it in the improvement of the specific R&D workplaces.

Separated, from the organizations progressing admirably, the clients are additionally given numerous phenomenal highlights. Some of them incorporate things, for example, unconditional presents with each online buy while some include uncommon offers that are very prudent and moderate.

(2.2) Growth of web-based retailing in India

India online business has created at an exacerbated yearly improvement pace of 40% AZ09, and is depended upon restimate of \$38 billion entryway by BY60.

The revelations of: Indian Electronic-commerce, The Tip&Toe of the Antarctica, by M. Equity Research-centre back improvement divide on expanding web masses, in excess of 300 million regular workers people, growing adaptable invasion and low degrees of online business development.

"Appeared differently in relation to the east, India's web business industry is still in its soonest arranges. Electronic business contributes only 1.6% of the country's GDP vs 2-4% for various countries, with only 15% of India networked people executing on the web versus 54% for the US and over half for China," said Atula and Nitina in the survey. This improvement will furthermore be supplemented by associations going in for open posting. In the Indian setting, only two web set up associations are recorded as for the business divisions, including Infoedge, which runs India's greatest action entrance.

Possibility of India's online business is also uncommon. Travelling has a great deal of 77% of India's web business, yet electronic-following has gotten the speediest, at a 69% CAGRS between AZ10-15M, to show up at 19% bit of the general business. Stood out from the east, Indian online business industry in the beginning, yet we acknowledge that it may transform into a more noteworthy bit of the entire retail world than in the east.

"We all acknowledge that for some young Indians, Web marketing may transform into their basic strategy to search for the term of their lives. At whatever point tremendous open entryways, for instance, electronic business present themselves, many market individuals battle commandingly to endeavor to ascend as undisputed pioneers to get brand affirmation and customer unwavering quality, and much of the time these players change their strategy on the way to create with the market," said the report.

CHAPTER-3

METHODOLOGY

(3.1) Project Design

The kind of arrangement being used for making this endeavor is Meta-Analysis Design. Meta-assessment is a diagnostic strategy intended to methodically assess and sum up the outcomes from various individual investigations, along these lines, expanding the general example size and the capacity of the specialist to consider impacts of premium.

(3.2) Problem Statement

To manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

(3.3) Objectives

1. To manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.
2. Implementing verification and approval utilizing angular switch watches and through login with google utilizing OAuth-customer id.
3. Implementing login as a visitor usefulness for mysterious client to visit our application.
4. Creation of information model utilizing hub json server.
5. Implementation of RESTful programming interface benefits so as to perform HTTP technique for mentioning, including, refreshing and erasing information.

(3.4) Field of observation

1. Locating qualities and shortcomings of single page application.
2. Locating quantity of future buying.
3. Locating consumer loyalty.
4. Locating discernment among the contenders.
5. Locating the view of the clients about our single page application.

CHAPTER-4

WEB-DEVELOPMENT

Web development is a far-reaching terminology for the stir drew in with working up a webpage for the web-network or an intranet (a private framework network). It can reach out from working up the least unpredictable static single page of plain substance to the most perplexing on the web applications, electronic associations, and casual association organizations. An undeniably extensive once-over of endeavors to which web progression consistently implies, may join web building, site organization, web content new development, client contact, client side/side scripting, web server and framework security arrangement, and web business improvement. Among web specialists, "web-app improvement" generally suggests the rule non-plan portions of building destinations: creating markup and coding. Most starting late Web progression has come to mean the creation of substance the administrators systems. These system manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

For greater affiliations and associations, web headway gatherings can contain numerous people and keep standard methods like Agile systems while making locales to create a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

Tinier affiliations may simply require a lone immutable or contracting architect, or helper undertaking to related business positions, for instance, a designer or information systems master. Web improvement may be a communitarian effort between divisions instead of the space of a doled out office. There are three kind of web engineer specialization: front-end originator, back-end architect, and full-stack engineer.

(4.1) WEB-SITE

A webpage is a combination of related site pages, including media content, ordinarily identified with a commonplace zone name, and disseminated on in any occasion one web server. A webpage may be open by methods for an open Internet Protocol (IP) sort out, for instance, the Internet, or a private network area (LAN), by referencing a uniform resource locator (URL) that perceives the site.

Destinations have various limits and can be used in various structures; a site can be an individual site, a business site for an association, an organization site or a non-advantage

affiliation site. Locales are ordinarily dedicated to a particular point or reason, reaching out from beguilement and casual correspondence to giving news and preparing. All uninhibitedly accessible destinations all things considered contain the World Wide Web, while private locales, for instance, an association's webpage for its delegates, and are consistently a bit of an intranet.

Pages, that are the structure squares of destinations, are reports, ordinarily made in plain substance mixed with orchestrating rules of markup languages such as Hypertext Markup Language (HTML, XHTML). They may unite segments from various locales with suitable markup catches.

Hence, manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web. They creates manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

(4.2) WEB-PAGE

A webpage page, or page, is a report that is sensible for the WWW and web programs. A web program shows a site page on a screen or mobile phone. The site page is what appears, yet the term in like manner suggests a PC record, typically written in HTML or equivalent increment language. Web programs arrange the distinctive web resource segments for the made page, for instance, formats, substance, and pictures, to present the page.

Normal webpage pages give hypertext that joins a course bar or a sidebar menu to other site pages by methods for hyperlinks, as often as possible suggested as associations.

On a framework, to manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

A static website page is passed onto definitely set of page rank systems aside, as web content in the web server's record structure,

While a one of a kind webpage page is delivered by a web apps are driven by the servers-side programming or client side scripting language. Dynamic webpage pages help the program (the user) to enhance the site page through customer commitment to the backendserver.

(4.3) MODERN WEB APPLICATION

They are accidentally supplanting the ancient work area application as increasingly advantageous to utilize, they are anything but difficult to refresh, and they are not bound to one gadget. Furthermore, despite the fact that clients are tenderly versatile ones, the interest for mind boggling and refined applications is now immense is as yet developing. On the off chance that you are contemplating making my angular application, you've likely heard that there are two primary structure designs for web applications MPA and SPAs. Also, obviously, the two approaches has there own advantages as well as disadvantages.

Before the begin transforming the thought in an genuine to manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

Exist an numerous advantages & disadvantages of singleton apps just as of multi-dimensional apps, the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

(4.3.1) SINGLE PAGE APPLICATION

A solitary/singleton page application is an native-application that works together with the web program by capably redoing the current site page with new data from the web server, instead of the native strategy for the program stacking entirely different pages. The goal is speedier advances that cause the site to progressively like a nearby application.

All basic concepts and principal HTML, JavaScript, and CSS code is either recuperated by the program with a singular page load, or the appropriate resources are intensely stacked and added to the page as significant, generally speaking in view of customer exercises. The page doesn't reload whenever at the same time, nor does it move control to another page, regardless of the way that the territory hash or the History API can be used to give the acknowledgment and navigability of free authentic pages in the app.

Hereafter, The singleton application is an application that is like a program and doesn't needs page reloading while navigation. You are using this kind of employments every day. These are, for instance: Gmail ,Google Maps, Facebook or GitHub .

They are connected to serving a surprising UX by endeavoring to imitate a "trademark" circumstance built-in program. It is just a single site page that you visit which by then stacks all other substance using JavaScript — which they seriously depend upon.

SPA requests the markup and data unreservedly and makes a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

Benefits:

- It is brisk, as most resources are simply stacked once all through the future of utilization. Just data is navigated back and forth.
- The headway is unraveled and streamlined. There is no convincing motivation to create code. It is significantly less difficult to start since you can ordinarily initiate headway from a record report://URI, without using any server at all.
- They are definitely not hard to investigate with Chrome, as you can screen mastermind exercises, investigate page segments and data related with it.
- It's less complex to make an adaptable application in light of the fact that the architect can reuse the identical backend code for web application and nearby versatile application.
- They can hold any close by amassing suitably. An application sends only one requesting, store all data, by then it can use this data and works even separated.
- They intently looks like just a Native-application. SPAs are anything but difficult to troubleshoot with Chrome, as you can screen arrange activities, explore page components and information related with it.

Loss:

- They are particularly unsafe and not a straightforward task to make search engine optimization improvement. Its substance is stacked by asynch-await JavaScript – A methodology for exchanging data and invigorating the application without resuscitating the page.

- It is postponed to download considering the way that mind-boggling client structures to be given for the client.
- They need JavaScript engine to be accessible as well as enabled. In case any customer incapable program, and hence becomes near to impossible to present application and its exercises in a correct way.
- They are less secure. Due to cross-site scripts (XSS), it enables aggressors to implant client side substance into web application by various customers.
- Data spill in SPA makes explanation mind blowing system ease off.

(4.3.2) MULTI-PAGE APPLICATION

Multi page applications are the conventional web applications that reload the whole page and shows the enhanced one when a client associates with the web application. Each time when an information is traded to and fro, another page is mentioned from the server to show in the internet browser. This procedure sets aside some effort to create the pages on the server, sending it to a customer and showing in the program which may influence the client experience.

Be that as it may, AJAX had made it conceivable to render only a specific segment of the application, yet this makes the advancement procedure significantly increasingly troublesome and complex.

These applications are huge, greater than SPAs since they should be. Because of the measure of substance, these applications have numerous degrees of UI. Fortunately, it is anything but an issue any longer. To manufacture a single page internet business application utilizing angular architecture that moves the vast majority of the handling work to the customer side, which will permit client to stack a solitary HTML page and progressively update the substance on that page, without reviving it, as client collaborate with the application and helps individuals in purchasing and selling items on the web.

Benefits:

- These are ideal methodology to the clients who need a view guide in order to get familiar with the app. Strong, barely any navigation based route is a basic piece of conventional app.
- They are great as well as simple for legitimate search engine optimization the board. It gives better opportunities to rank for various catchphrases since an application can be enhanced for one watchword for each component.

Loss:

- There exists no alternative to utilize the equivalent backend with portable components.
- Frontend and backend advancement are firmly coupled.
- The advancement turns out to be very mind boggling. The engineer needs to utilize systems for both the customer and backend developer. The outcomes in the more drawn out to use improvement.

(4.3.3) Which one to choose?

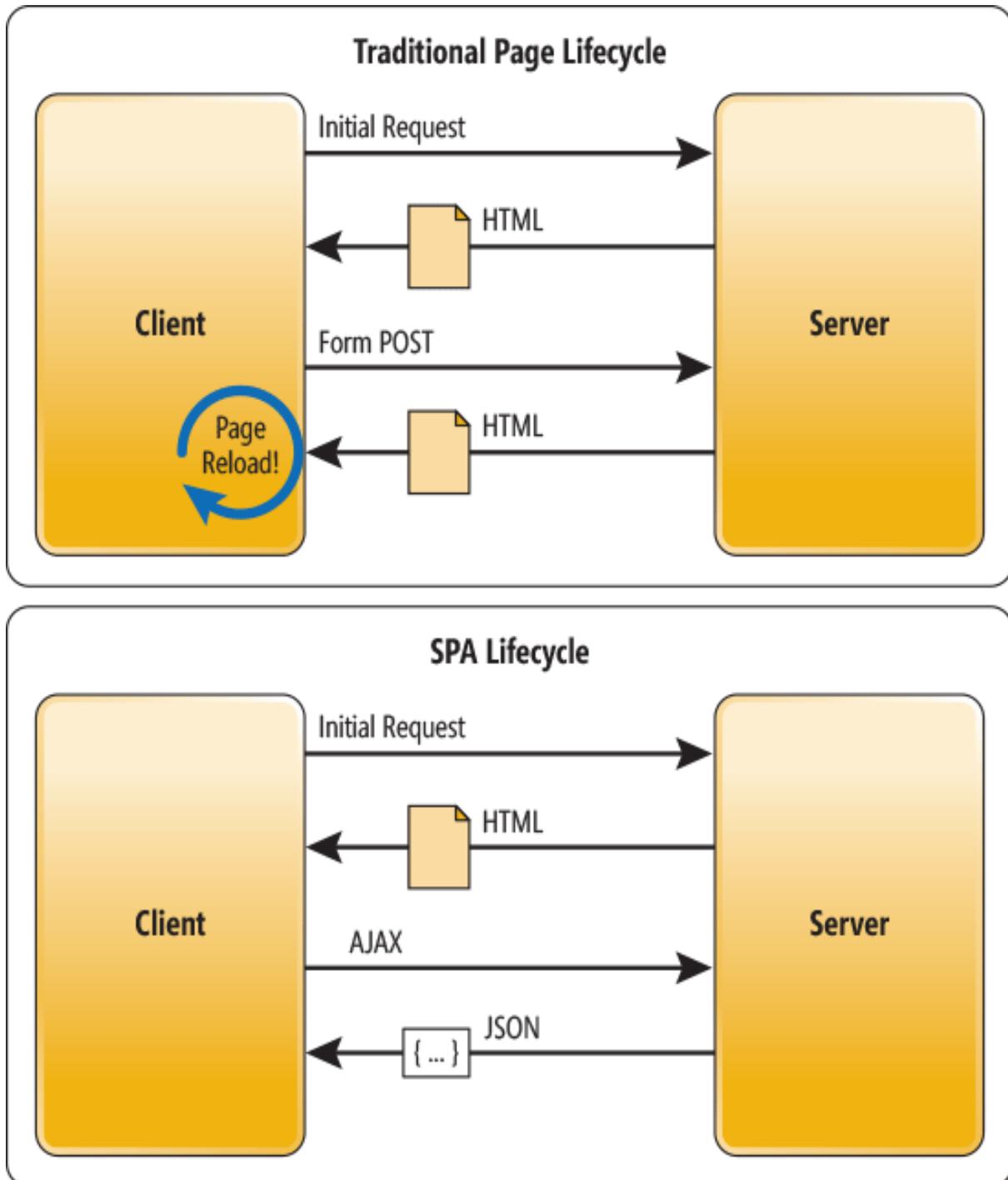
SPA or MPA?

Despite the fact that single page application approach can be utilized to manufacture any sort of web application, here are a few things you should consider before you let it all out.

As a matter of first importance you have to list down the element and capacities you need in your web application. Will a SPA do equity to all the capacity and highlights you need? For example, is your site progressively content-escalated or will it be illustrations concentrated? Or on the other hand both? Could all the designs and substance be fittingly positioned on one page?

Does your business manages explicit item or administration, or you provide food an assortment of items and administrations? On the off chance that your business manages a solitary item, nothing can be impeccable than a solitary page application. While, if your business caters an assortment of administrations or items, you unquestionably need to offer significance to every one of them by bifurcating them in various pages with a multi-page application. This would even give you the advantage of profound connecting of each page.

(4.3.4) TRADITIONAL VS SINGLE PAGE APPLICATION LIFECYCLE

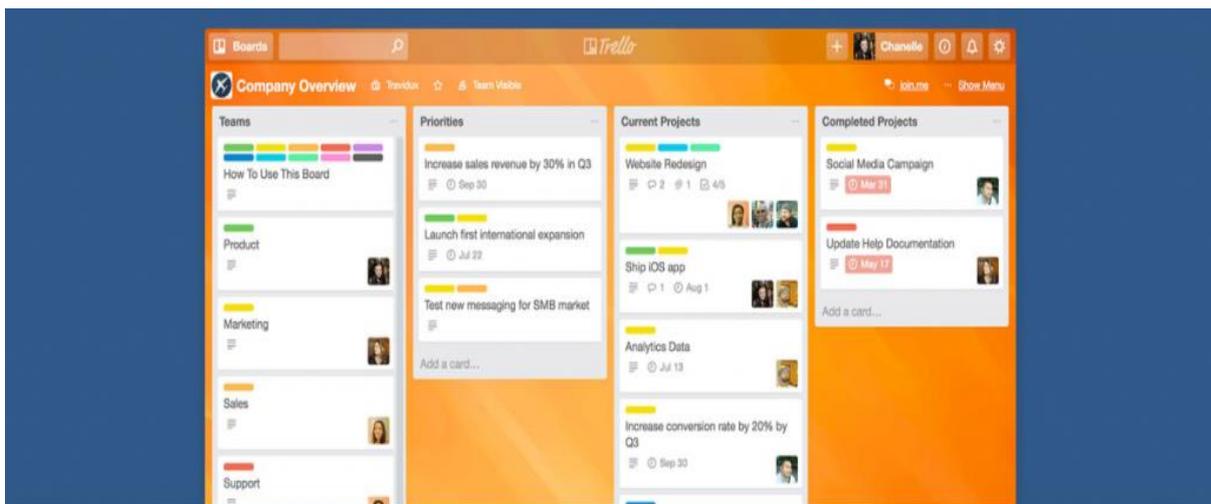


(4.3.5) So, should you go for the SPAs?

Despite the fact that single page application approach can be utilized to manufacture any sort of web application, here are a few things you should consider before you let it all out.

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(Trello — Single Page Application)

Would you like to give an ongoing encounter without a page revive to your client? For example, a continuous vehicle configurator.

Web applications nowadays, regardless of whether it be SPAs or MPAs are exceptionally advanced, include rich and they give stunning client experience. In this way, so as to get most extreme out of these two methodologies, you should think about the requirements of your business and the client.

(4.4) ANGULAR FRAMEWORK

It is an application development framework and platform for building modular and highly manageable singleton paged applications.

Prerequisites

To utilize the Angular structure, you ought to be comfortable with the accompanying:

- JavaScript
- HTML
- CSS

Information on TypeScript is useful, however not required.

Node.js

Ensure your improvement condition incorporates node.js and a npm bundle director.

Precise requires a current, dynamic LTS, or support LTS rendition of Node.js. See the motors key for the particular rendition necessities in package.json document.

- To check your adaptation, run `node -v` in a terminal/reassure window.
- To get Node.js, go to nodejs.org.

Precise, the Angular CLI, and Angular applications rely upon highlights and usefulness gave by libraries that are accessible as npm bundles. To download and introduce npm bundles, you should have a npm bundle supervisor.

The npm customer order line interface, which is introduced with Node.js naturally.

To watch that you have the npm customer introduced, run `npm -v` in a terminal/comfort window.

Step 1: Install the Angular CLI

You utilize the Angular CLI to make ventures, produce application and library code, and play out an assortment of progressing advancement undertakings, for example, testing, packaging, and sending.

Introduce the Angular CLI all around.

To introduce the CLI utilizing npm, open a terminal/support window and enter the accompanying order:

```
npm introduce -g @angular/cli
```

Step 2: Create a workspace and beginning application

You create applications with regards to an Angular workspace.

To make another workspace and introductory starter application:

1. Bootstrap the command line interface order `ng new` and say named it as my-application, as appeared here:

```
ng new my-application
```

2. The `ng new` order prompts you for data about highlights to remember for the underlying application. Acknowledge the defaults by squeezing the Enter or Return key.

The Angular CLI introduces the vital Angular npm bundles and different conditions. This can take a couple of moments.

The CLI makes another workspace and a straightforward Welcome application, prepared to run.

Step 3: Run the application

The Angular CLI incorporates a server, so you can without much of a stretch form and serve your application locally.

1. Go to the workspace organizer (my-application).
2. Launch the server by utilizing the CLI order `ng serve`.

`ng serve` order dispatches the server, watches your documents, and modifies the application as you make changes to those records.

The `--open` (or just `-o`) choice naturally opens your program to <http://localhost:4200/>.

(4.4.1) Hierarchy of Angular application

Every Angular application consist of:

1. A root modules known as AppModule that act a container for similar components, directives, pipes, services and many features modules in a Tree based structure as follows:

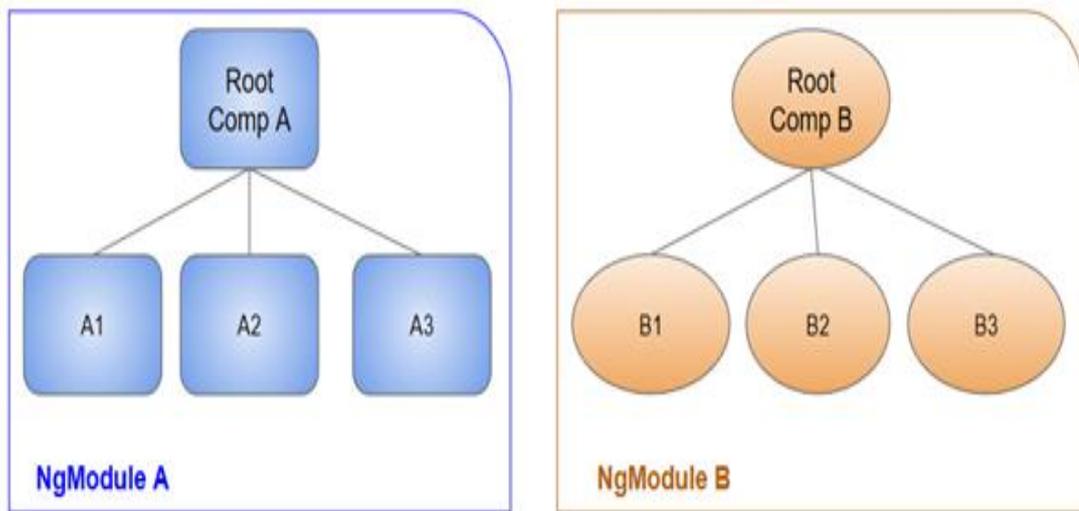


Fig 4.4.1 (a) Hierachy of modules in angular application

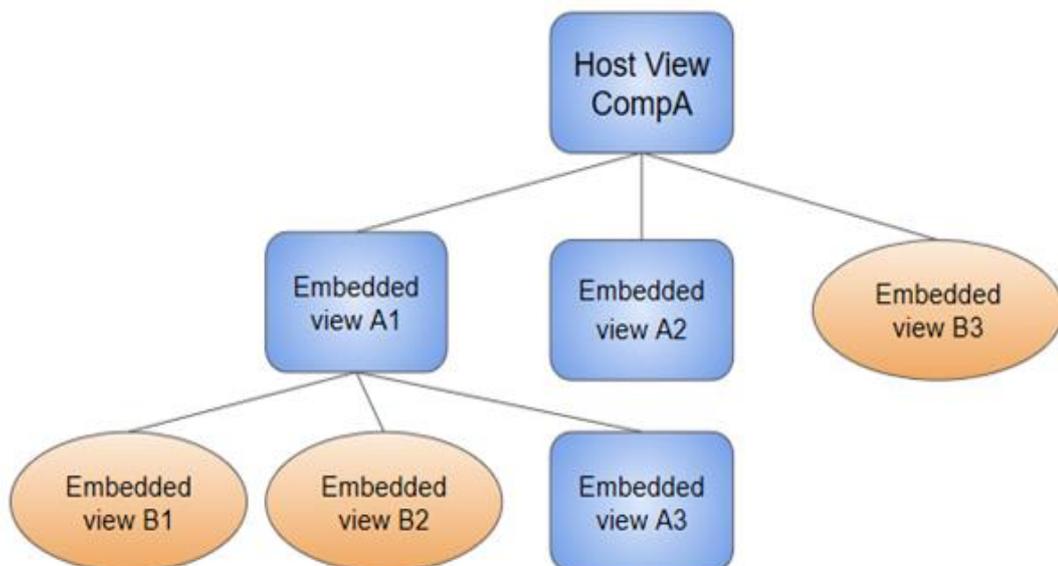


Fig 4.4.1 (b) Hierarchy of root and embedded modules

2. A root component known as AppComponent which contains the app view logic and others modules act as child components in a tree structure as follows:

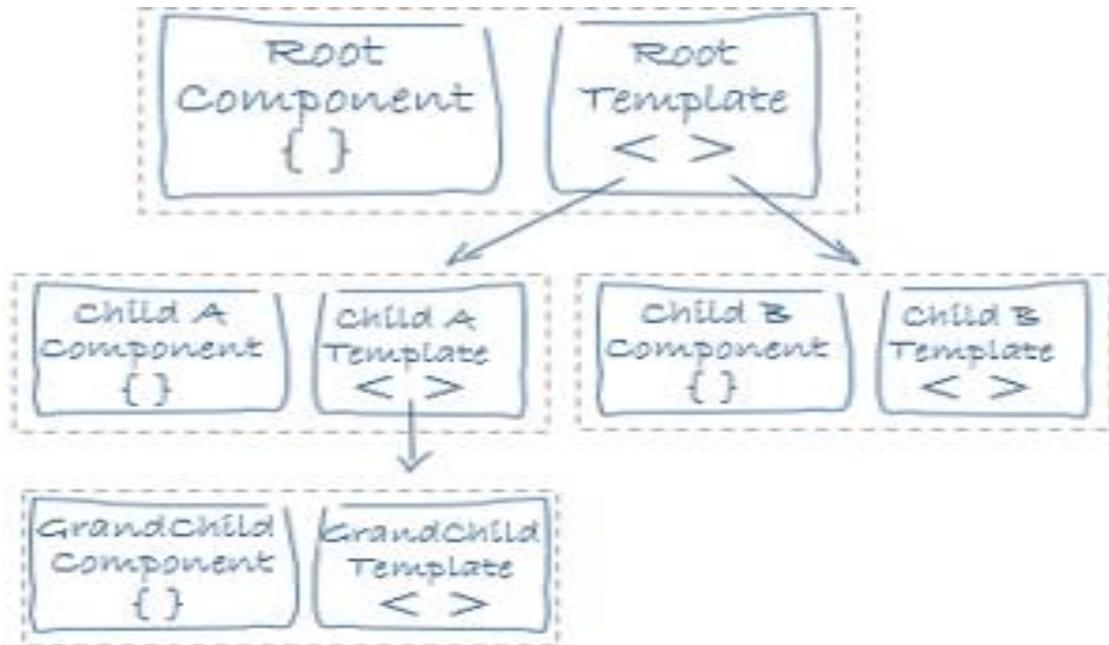


Fig 4.4.2 Hierarchy of root and child components

3. A service file that contains application business logic and are injected into components class constructor as as dependency through Angular's Dependency Injection system demonstrated as follows:

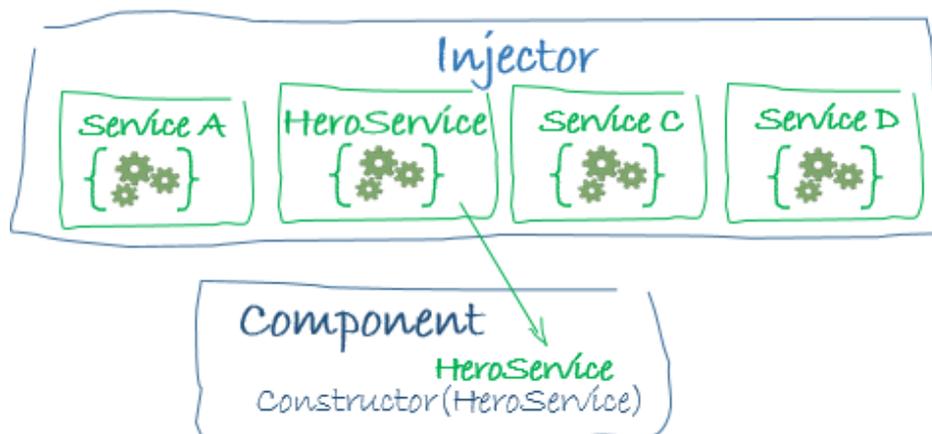


Fig 4.4.3 DI system

(4.4.2) Structure of Angular application

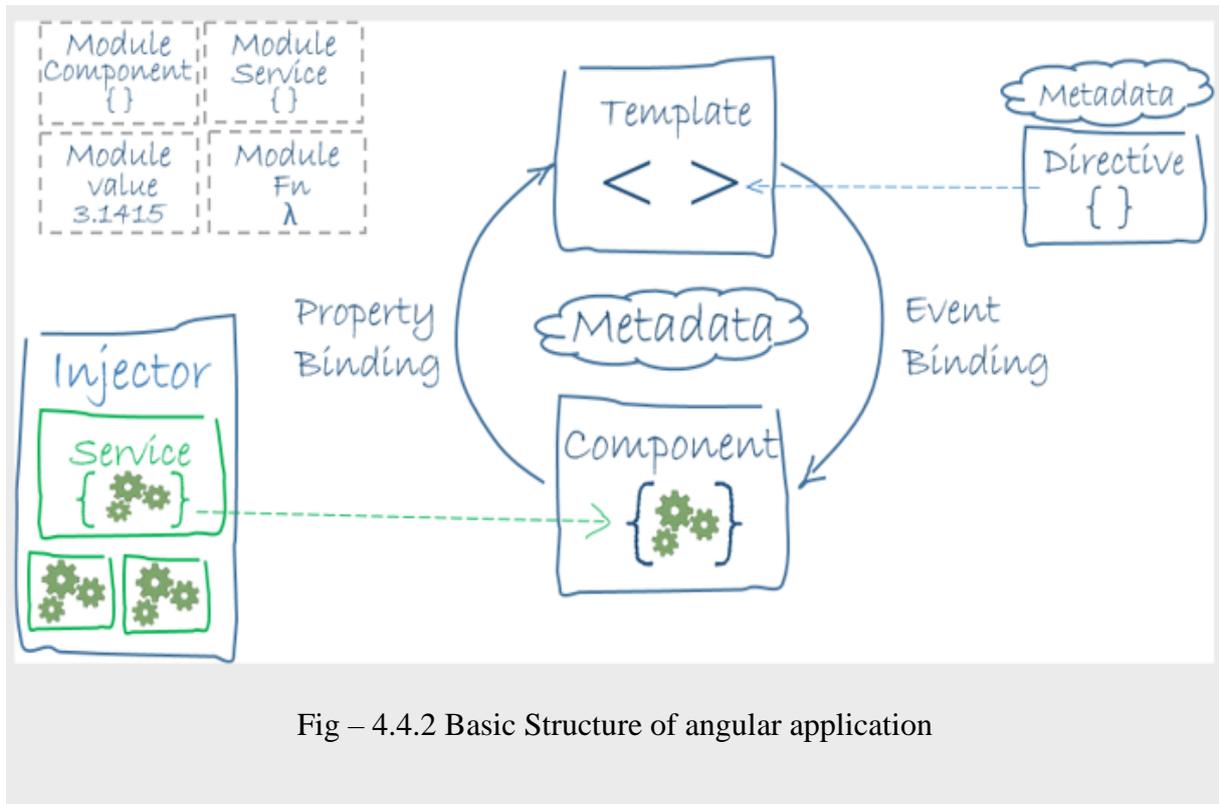


Fig – 4.4.2 Basic Structure of angular application

CHAPTER-5

SRS - SOFTWARE REQUIREMENT AND SPECIFICATION

a. Hardware Requirements

The assurance of equipment is huge in the nearness and fitting working of any item. While picking equipment, the size and need are also critical.

Processor	Intel core i7
RAM	16 GB
HDD	1TB

b. Software Requirements

Windows	7, 8, 10
UI development languages	HTML, CSS, BS4, Angular Material, MDC
Scripting languages	JavaScript, TypeScript
UI Framework	Angular 2+
Sever	node json-server
Database	JSON {key:value} collection pair
Tools	MS Visual Studio, Angular CLI, node package manager

c. Angular Modules Requirements

Module name	Installation command
Social login module	<code>npm i --save angularx-social-login</code>
Pagination module	<code>npm i ngx-pagination</code>
MDC module	<code>npm i @angular-mdc/web</code>
Material module	<code>ng add @angular/material</code> or <code>npm i --save @angular/cdk @angular/material @angular/material hammerjs</code>

CHAPTER-6

UML (UNIFIED MODELING LANGUAGE) DIAGRAMS

(6.1) Data flow Diagrams

Data Flow Diagrams show the movement of data from external components into the structure, and beginning with one system then onto the following inside the structure. There are 4 images for drawing a DFD:

- I. Square that defines our context information.
- II. Oval defining the main information.
- III. Rectangle defining description.
- IV. Disk image defining overall context information.

Below figures are the Data Flow Diagrams for the SPA web application framework. Each step inside the framework is first appeared as a Level-1 DFD and later as a Detailed level-2 DFD.



Fig 6.1

First Level DFD

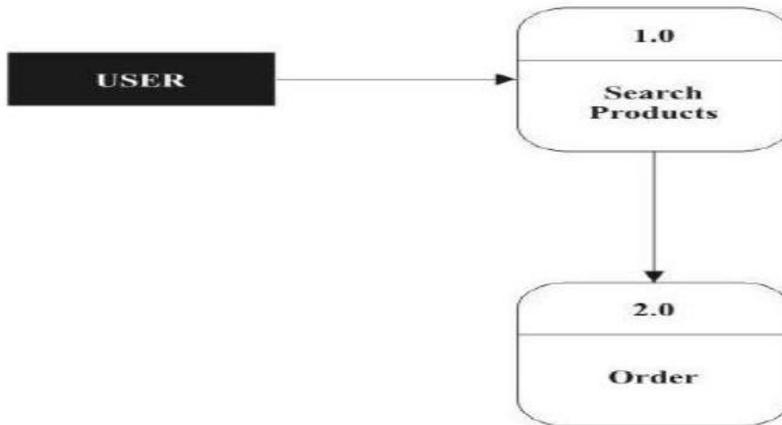


Fig 6.1.1

SECOND LEVEL DFD

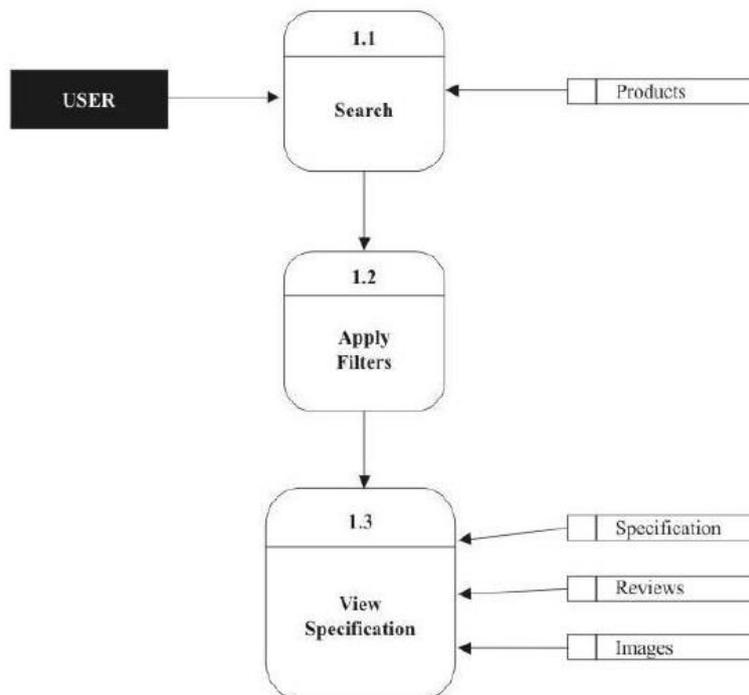


Fig 6.2.1

THIRD LEVEL DFD

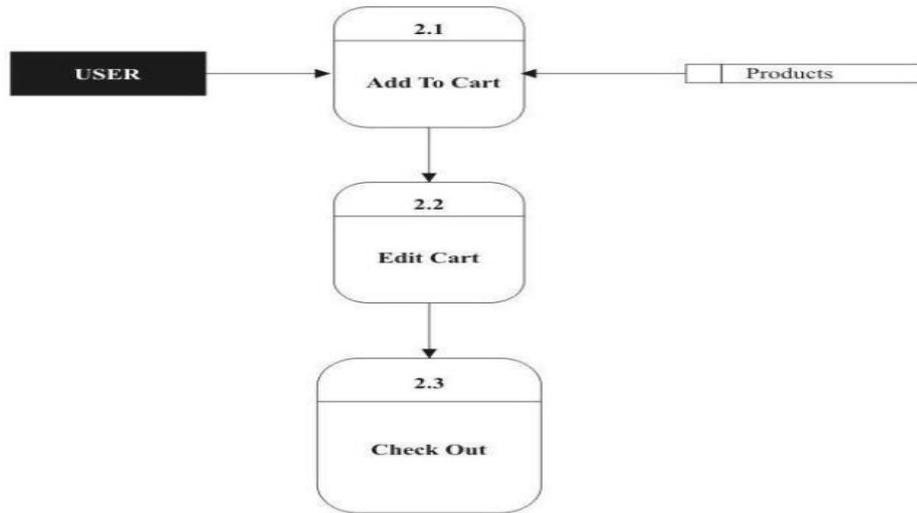


Fig 6.2.2

(6.2) Use case Diagram

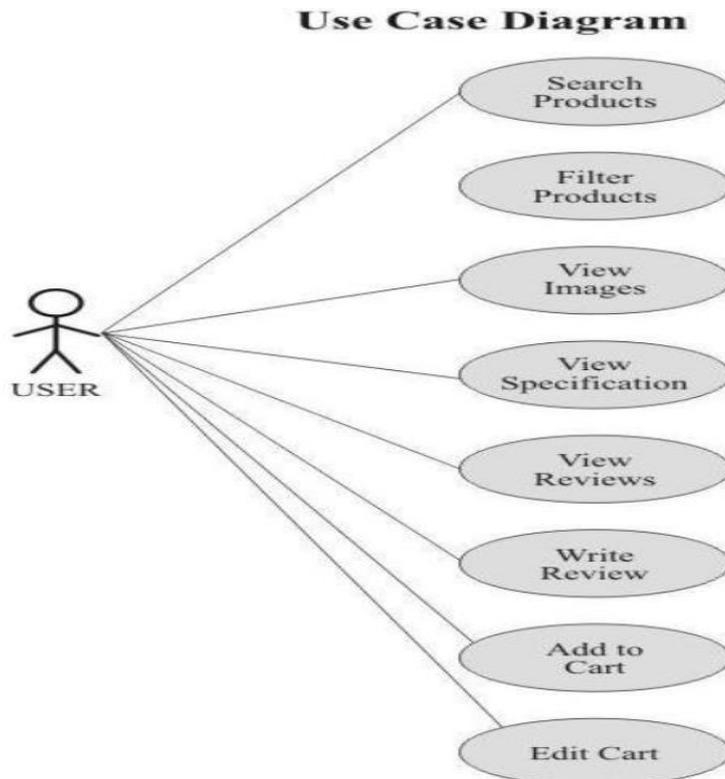


Fig 6.3.1

(6.3) Activity Diagram

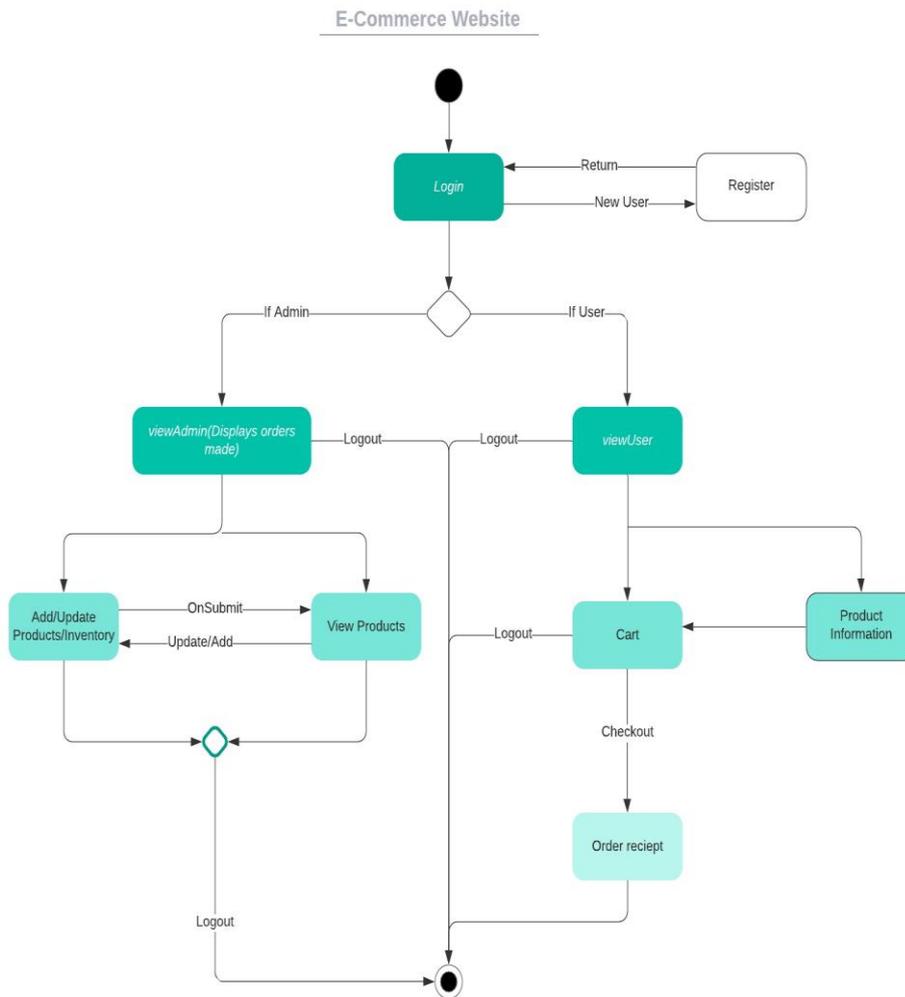


Fig 6.3.2

CHAPTER-7

PROJECT

7.1 PROJECT DESCRIPTION

Name: E-commerce web application using Angular

Technologies Used: HTML, CSS, BS, JS, TS, Angular, Angular Material, MDC

Tools Used: MS Visual Studio code, Angular CLI, Node package manager

Server: node JSON Sever

Database: JSON {key: value} pair collection

Operating System: Windows

7.2 PROJECT MODULES AND COMPONENTS

1. Auth Module

- 1.1. Registration component
- 1.2. Login (Manual/Google) component

2. User View Module

- 2.1. Toolbar component
- 2.2. Sidebar component
- 2.3. View Products component

3. Cart Module

- 3.1. Shopping Cart component
- 3.2. Delivery/Billing Address component
- 3.3. Checkout component
- 3.4. Placed order component

4. Routing Module

7.3 TECHNICAL DETAILS:

- JS, Angular, Angular Material and MDC. Ajax and XHR used to do network requests to load html pages dynamically and TypeScript is transpiled to JavaScript by angular complier so that the browser can understand and hence, performs to perform client-side scripting.
- Database model is made on node json server.
- Reactive forms are made using Angular.
- The whole web application is a single page application build using Angular (JavaScript client-side frame)

CHAPTER-8

PROJECT'S USER INTERFACE

1. Registration component

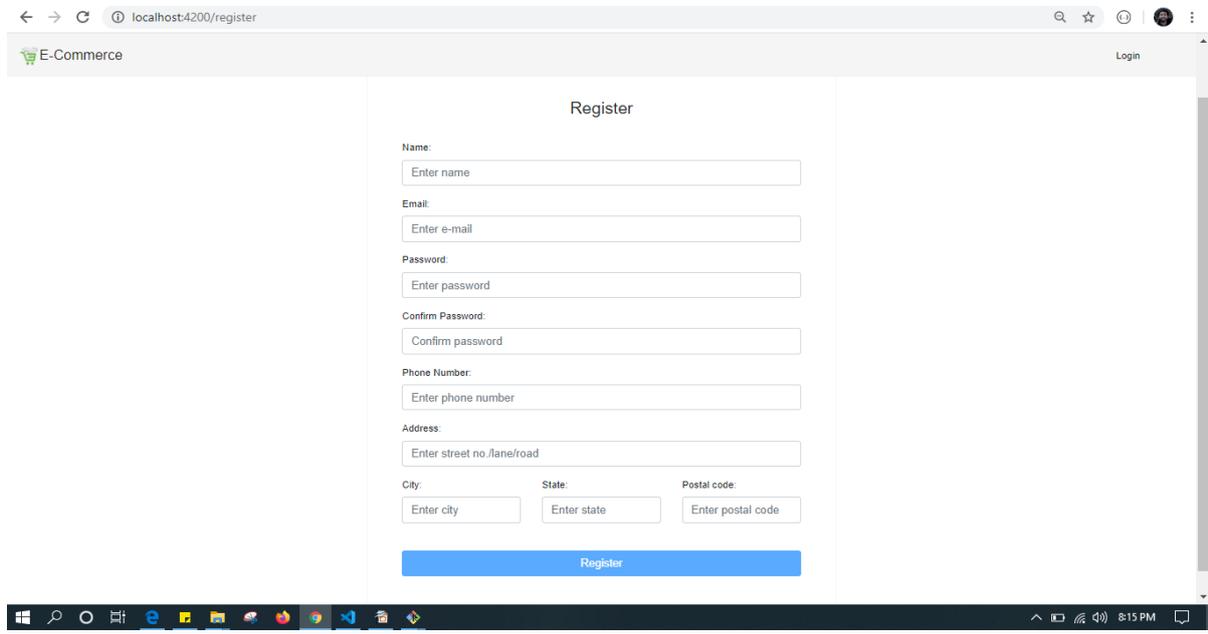


Fig 8.1 Registration view

2. Login Component

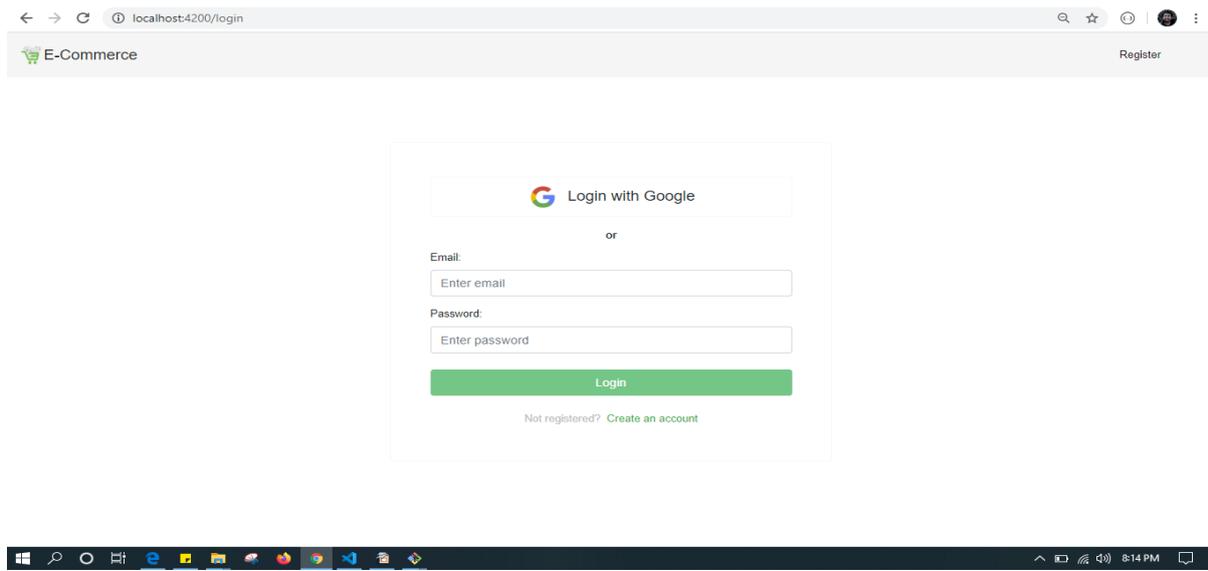


Fig 8.2 Login view

3. Social-Login Component

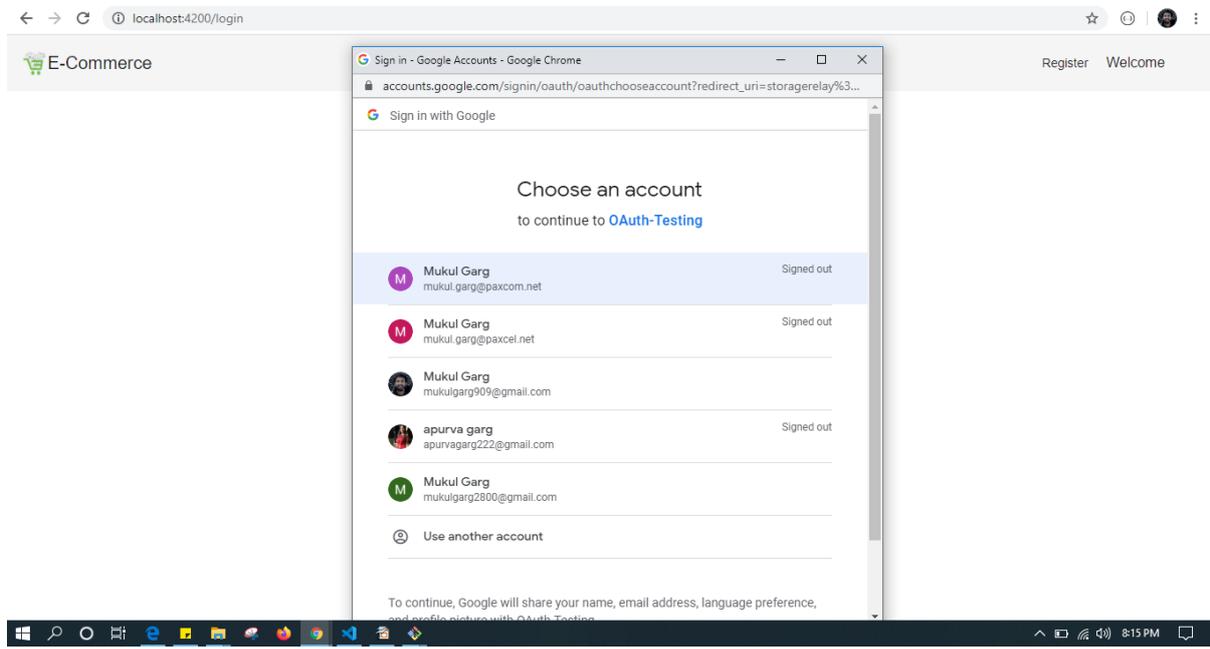


Fig 8.3 Login with google view

4. User-view (Home) Component

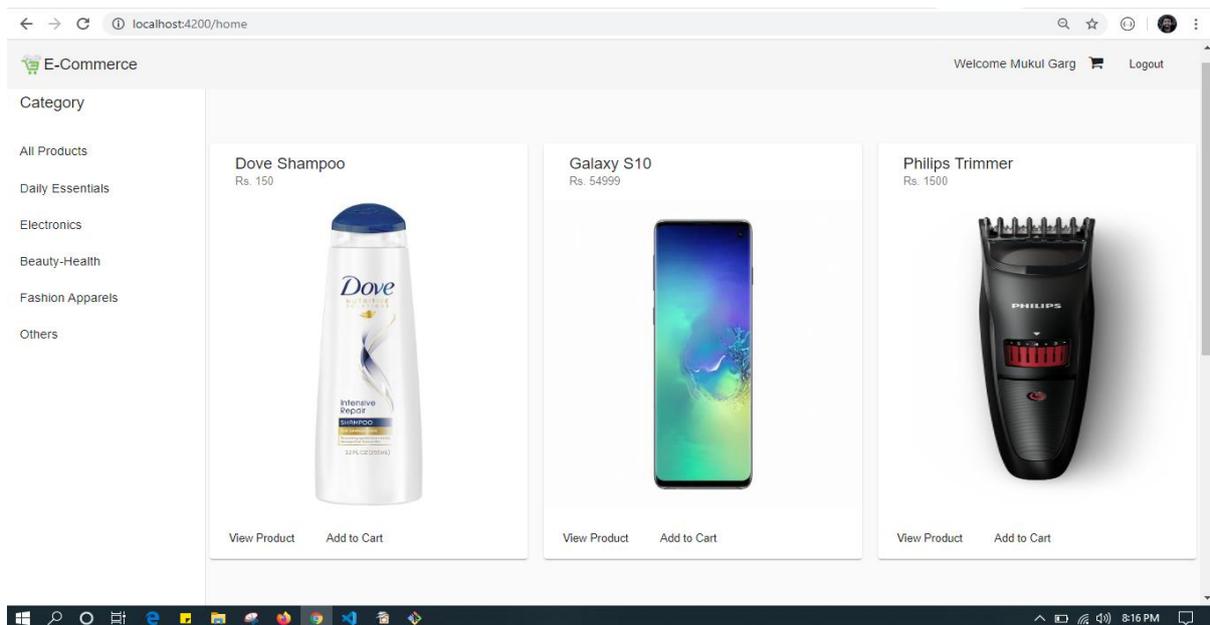


Fig 8.4 Home view

5. Cart Component

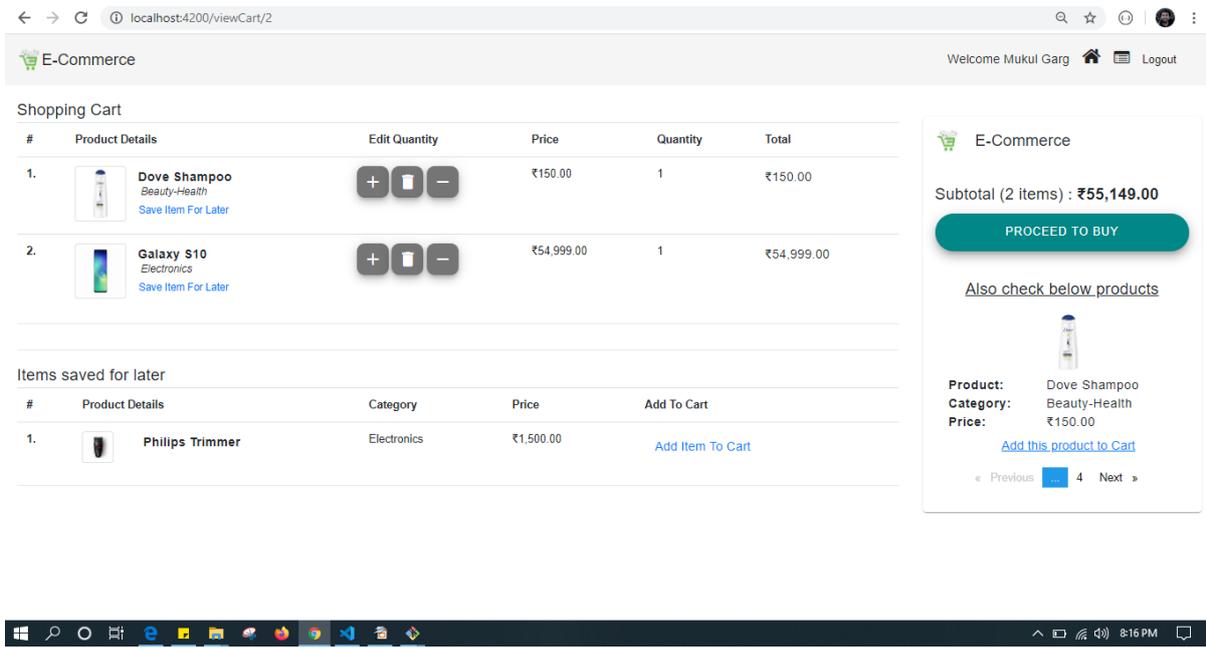


Fig 8.5 Cart view

6. Update address Component

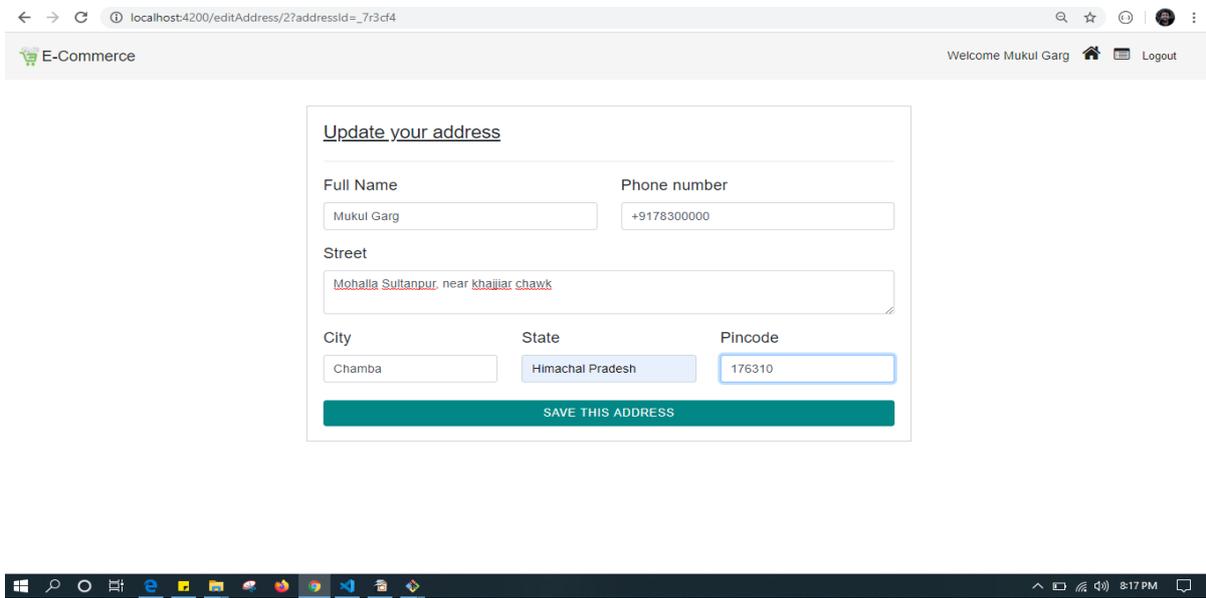


Fig 8.6 Update address view

7. Address Component

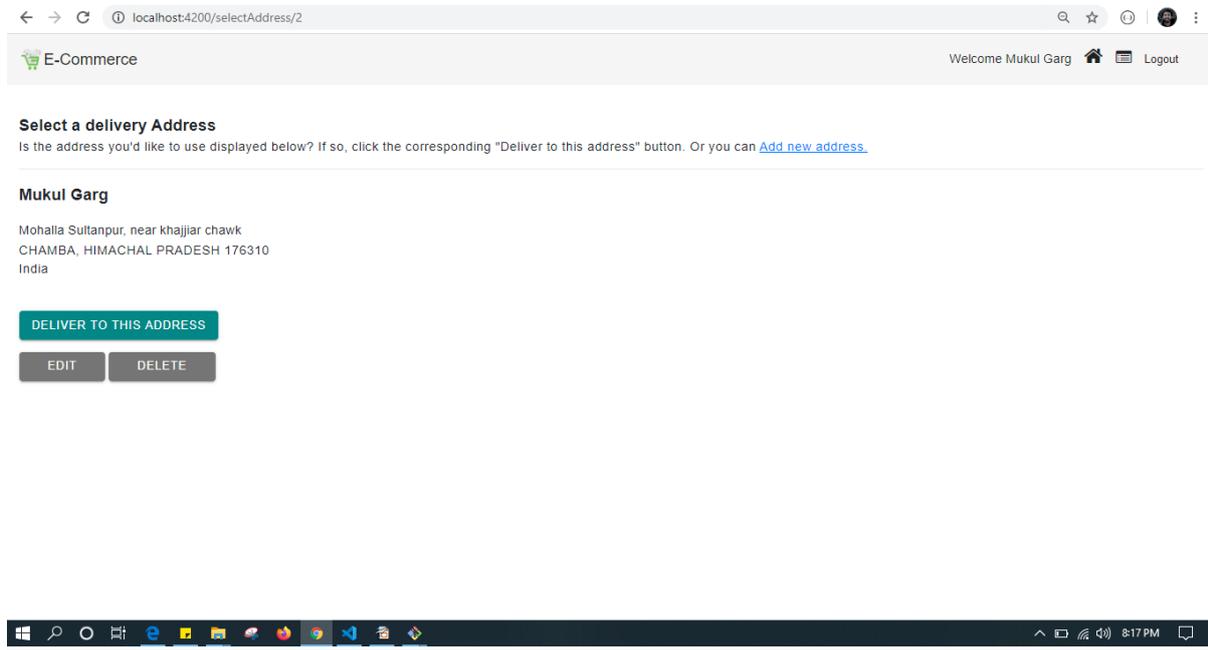


Fig 8.7.1 Select delivery address view

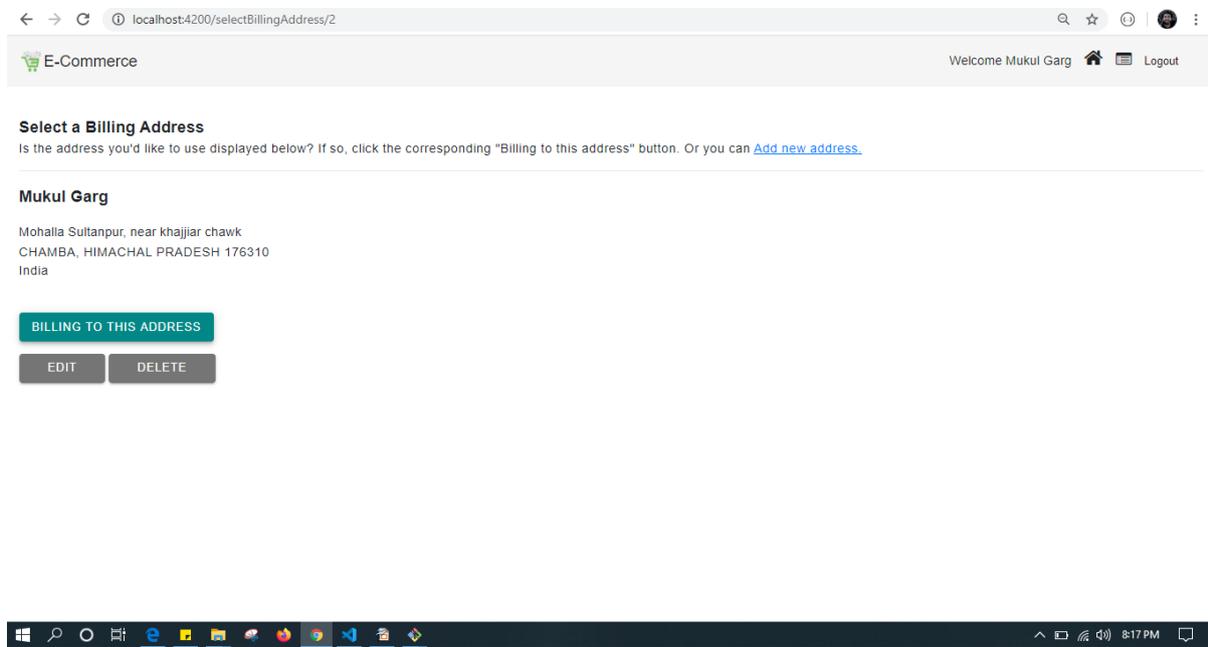


Fig 8.7.2 Select billing address view

8. Place order Component

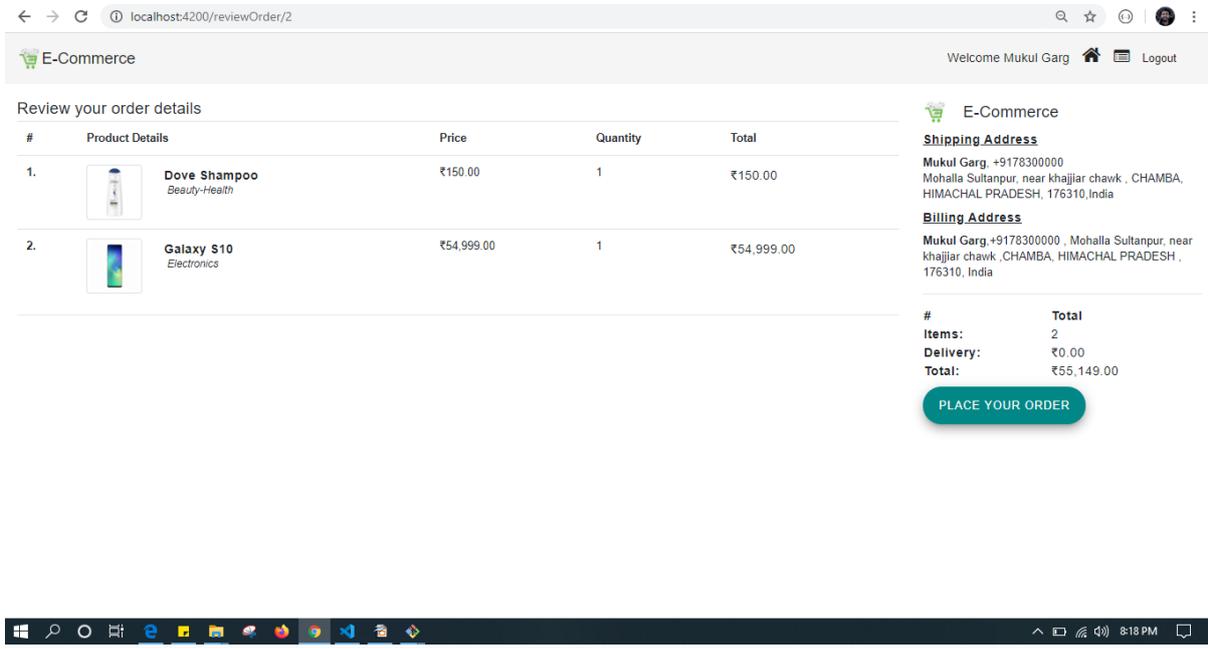


Fig 8.8 Place order view

8. View placed order component

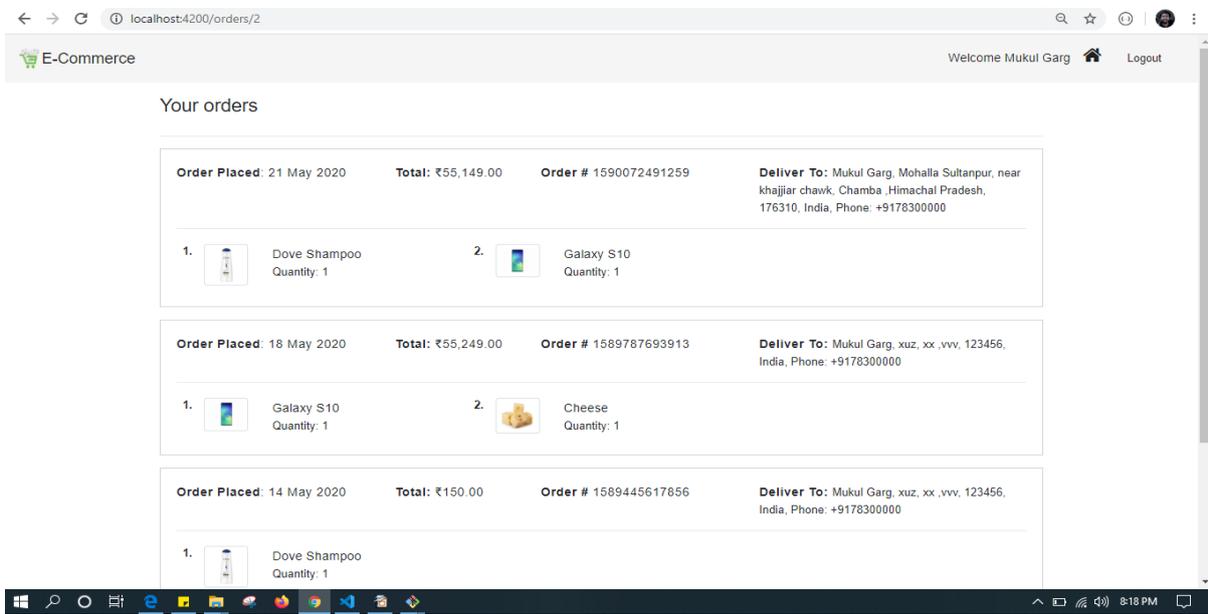


Fig 8.8 Placed order view

CHAPTER-9

CODE IMPLEMENTATION

1. Auth Module

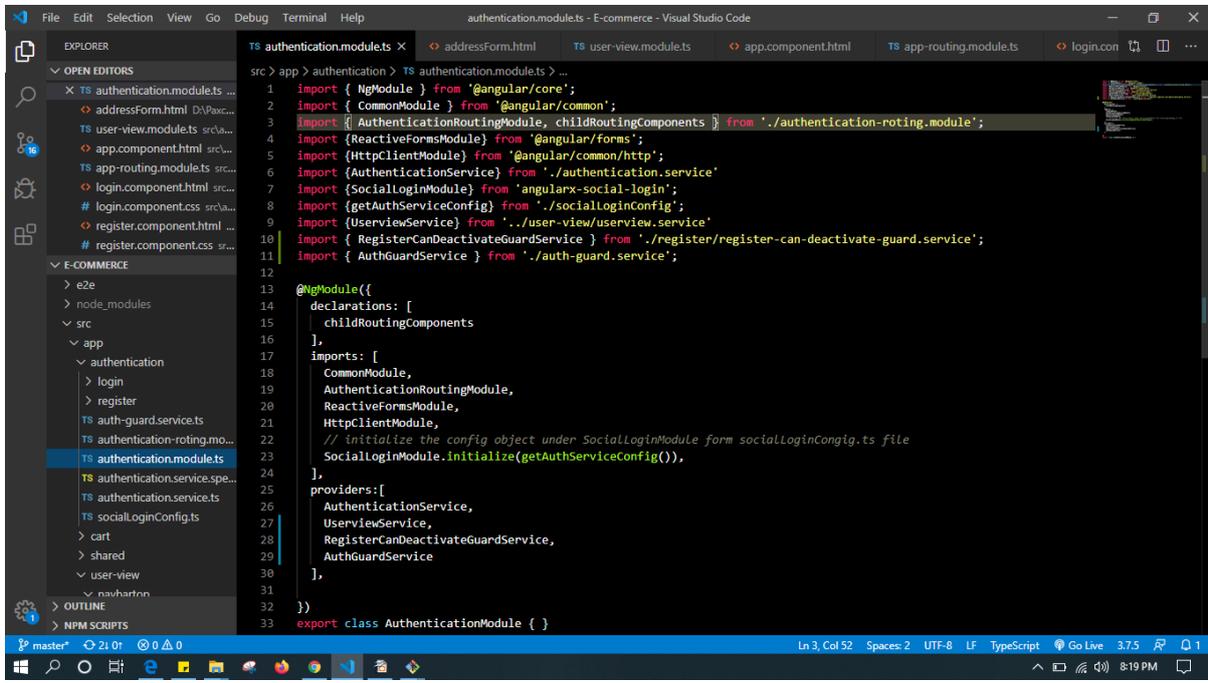


Fig 9.1 Auth module

2. Login Component

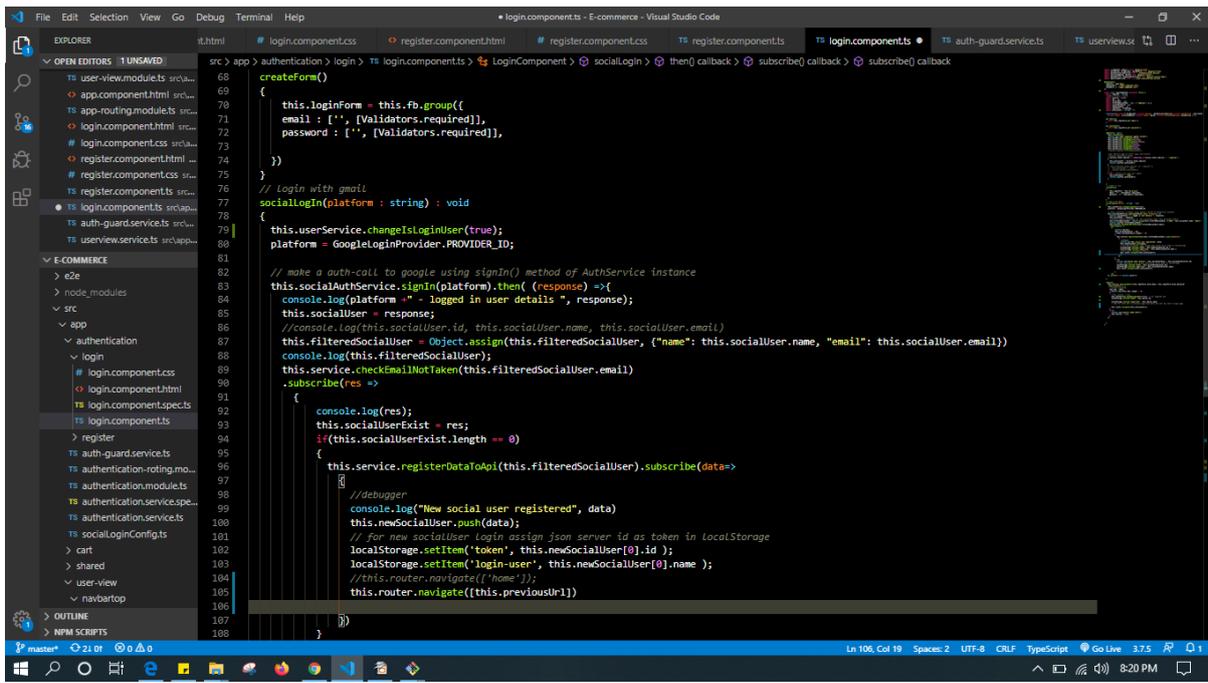


Fig 9.2 Login component

3. Registration Component

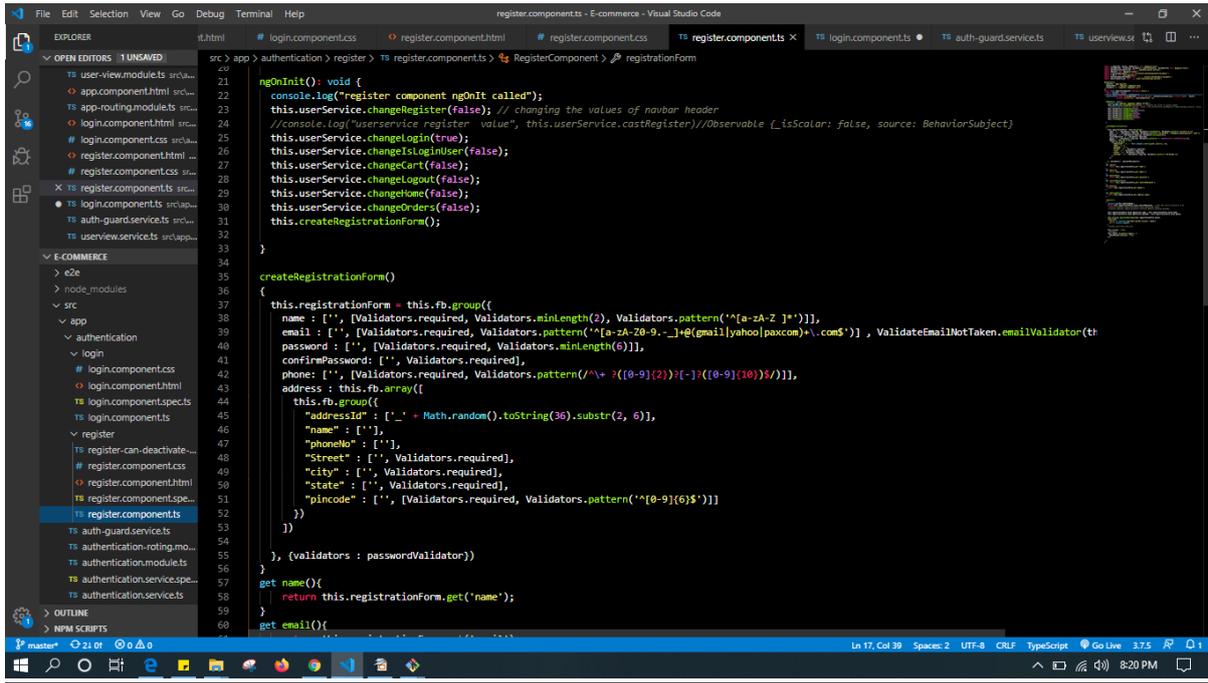


Fig 9.3 Registration component

4. User-view Component

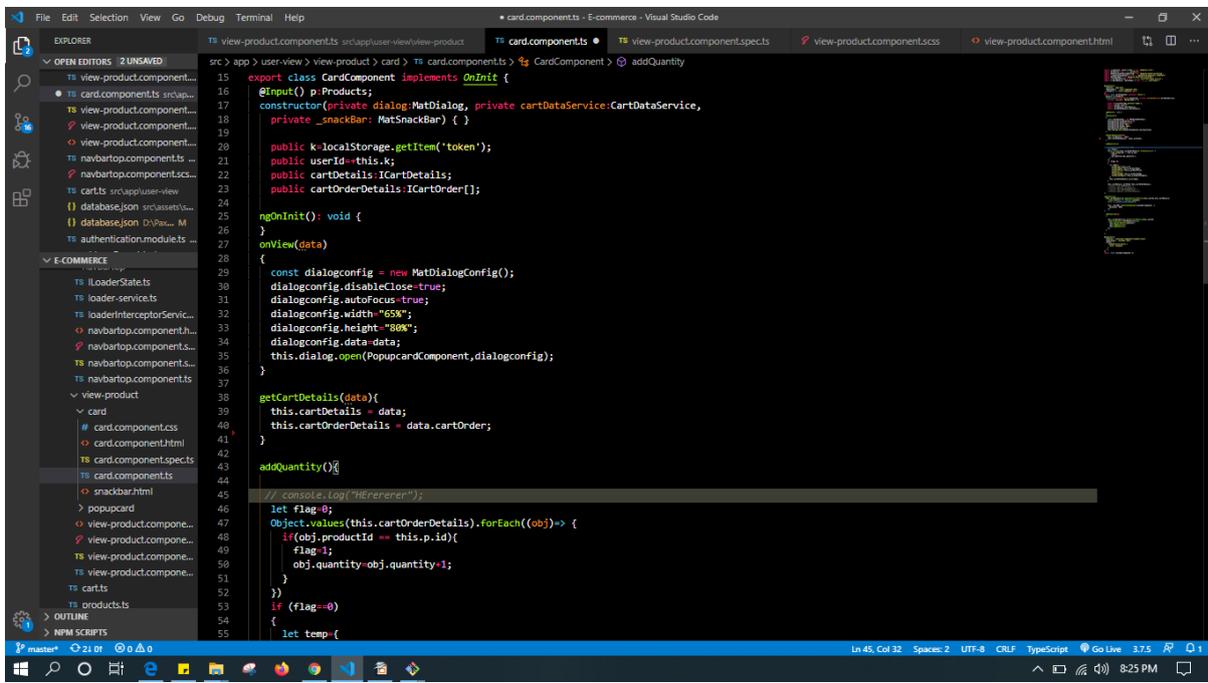
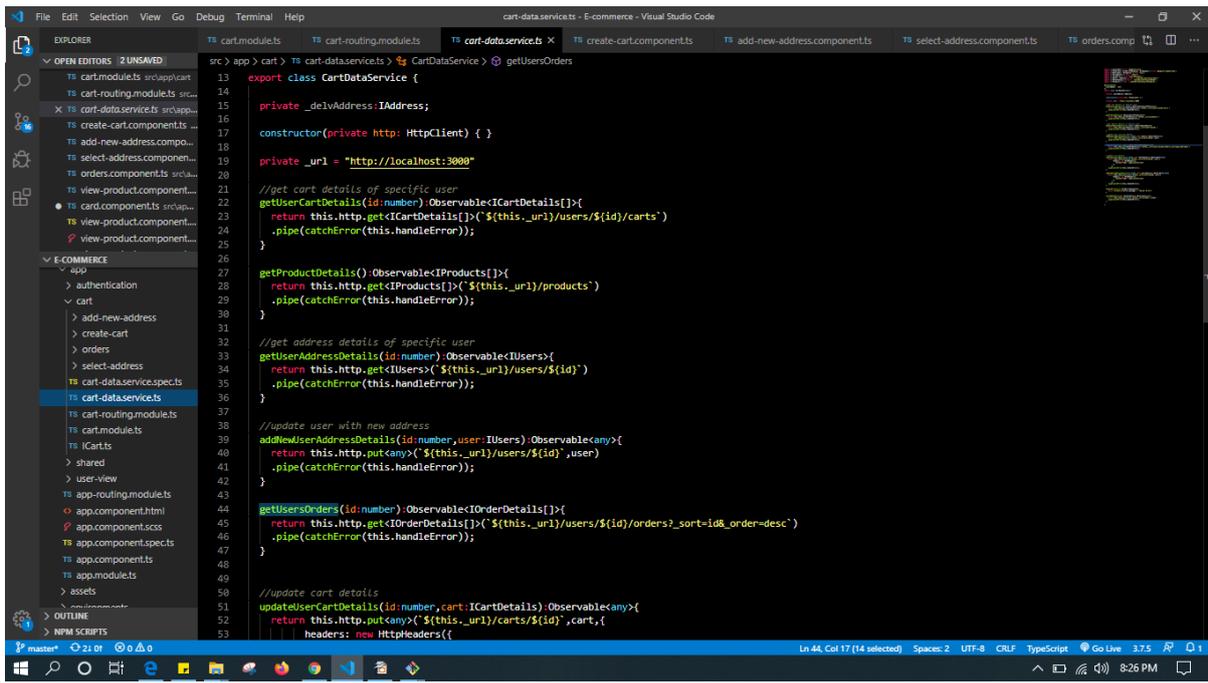


Fig 9.4 User-view component

5. User cart Component



```
export class CartDataService {
  private _delvAddress: IAddress;
  constructor(private http: HttpClient) { }

  private _url = "http://localhost:3000"

  //get cart details of specific user
  getUserCartDetails(id:number):Observable<ICartDetails[]>{
    return this.http.get<ICartDetails[]>(`${this._url}/users/${id}/carts`)
    .pipe(catchError(this.handleError));
  }

  //get product details of specific user
  getProductDetails():Observable<IProducts[]>{
    return this.http.get<IProducts[]>(`${this._url}/products`)
    .pipe(catchError(this.handleError));
  }

  //get address details of specific user
  getUserAddressDetails(id:number):Observable<IUsers>{
    return this.http.get<IUsers>(`${this._url}/users/${id}`)
    .pipe(catchError(this.handleError));
  }

  //update user with new address
  addNewUserAddressDetails(id:number,user:IUsers):Observable<any>{
    return this.http.put<any>(`${this._url}/users/${id}`,user)
    .pipe(catchError(this.handleError));
  }

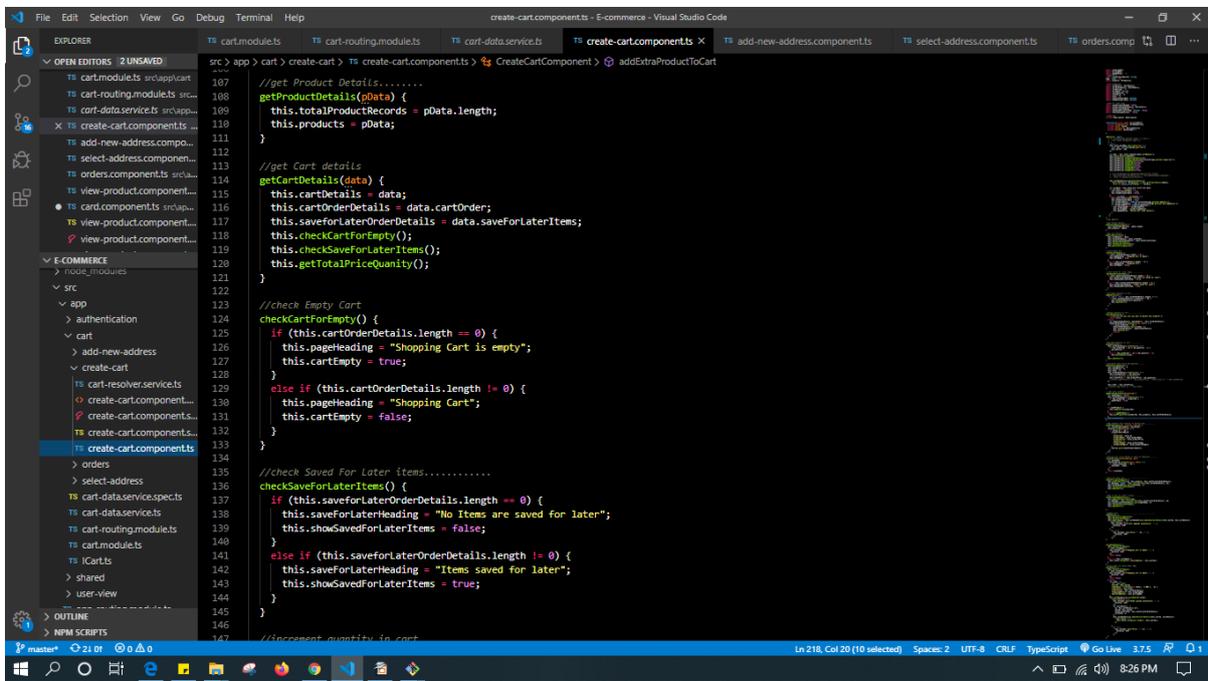
  //get users orders
  getUsersOrders(id:number):Observable<IOrderDetails[]>{
    return this.http.get<IOrderDetails[]>(`${this._url}/users/${id}/orders?_sort=id&_order=desc`)
    .pipe(catchError(this.handleError));
  }

  //update cart details
  updateUserCartDetails(id:number, cart:ICartDetails):Observable<any>{
    return this.http.put<any>(`${this._url}/carts/${id}`,cart,{
      headers: new HttpHeaders({

```

Fig 9.5 User cart component

6. Initial cart Component



```
//get Product Details.....
getProductDetails(pdata) {
  this.totalProductRecords = pdata.length;
  this.products = pdata;
}

//get Cart details
getCartDetails(data) {
  this.cartDetails = data;
  this.cartOrderDetails = data.cartOrder;
  this.saveForLaterOrderDetails = data.saveForLaterItems;
  this.checkCartForEmpty();
  this.checkSaveForLaterItems();
  this.getTotalPriceQuantity();
}

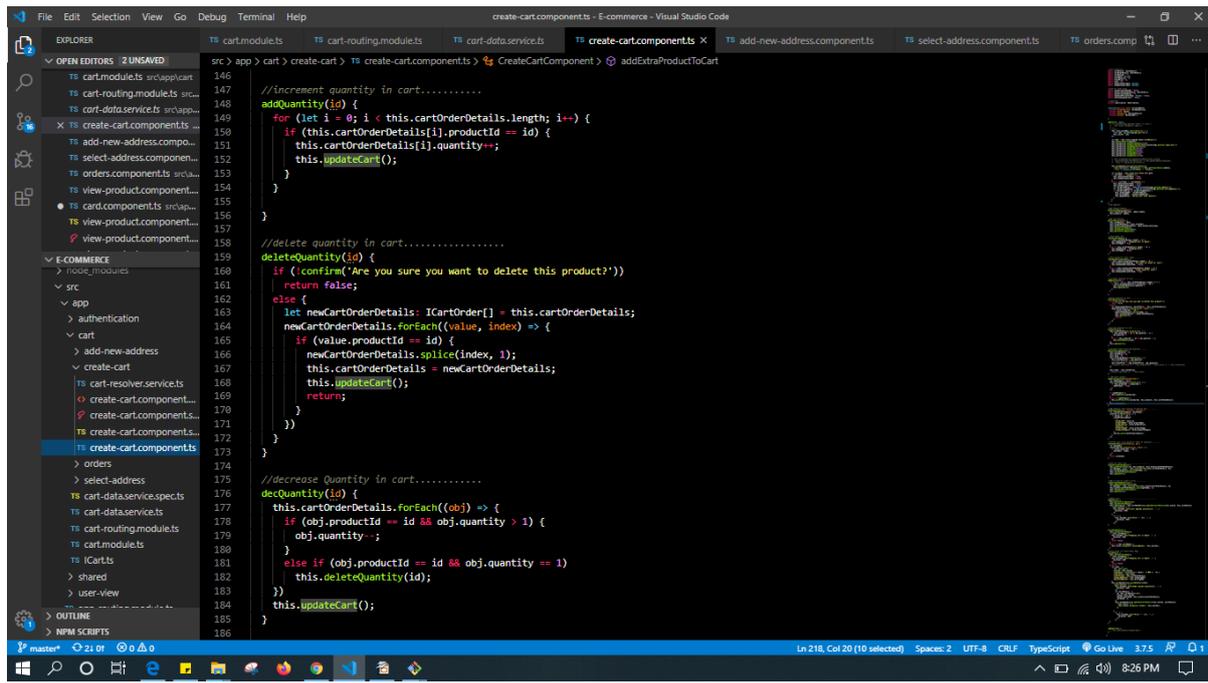
//check Empty Cart
checkCartForEmpty() {
  if (this.cartOrderDetails.length == 0) {
    this.pageHeading = "Shopping Cart is empty";
    this.cartEmpty = true;
  }
  else if (this.cartOrderDetails.length != 0) {
    this.pageHeading = "Shopping Cart";
    this.cartEmpty = false;
  }
}

//check Saved For Later Items.....
checkSaveForLaterItems() {
  if (this.saveForLaterOrderDetails.length == 0) {
    this.saveForLaterHeading = "No Items are saved for later";
    this.showSavedForLaterItems = false;
  }
  else if (this.saveForLaterOrderDetails.length != 0) {
    this.saveForLaterHeading = "Items saved for later";
    this.showSavedForLaterItems = true;
  }
}

//increment quantity in cart
```

Fig 9.6 Initial cart component

7. Placed order Component



```
src > app > cart > create-cart > create-cart.components.ts > CreateCartComponent > addExtraProductCart

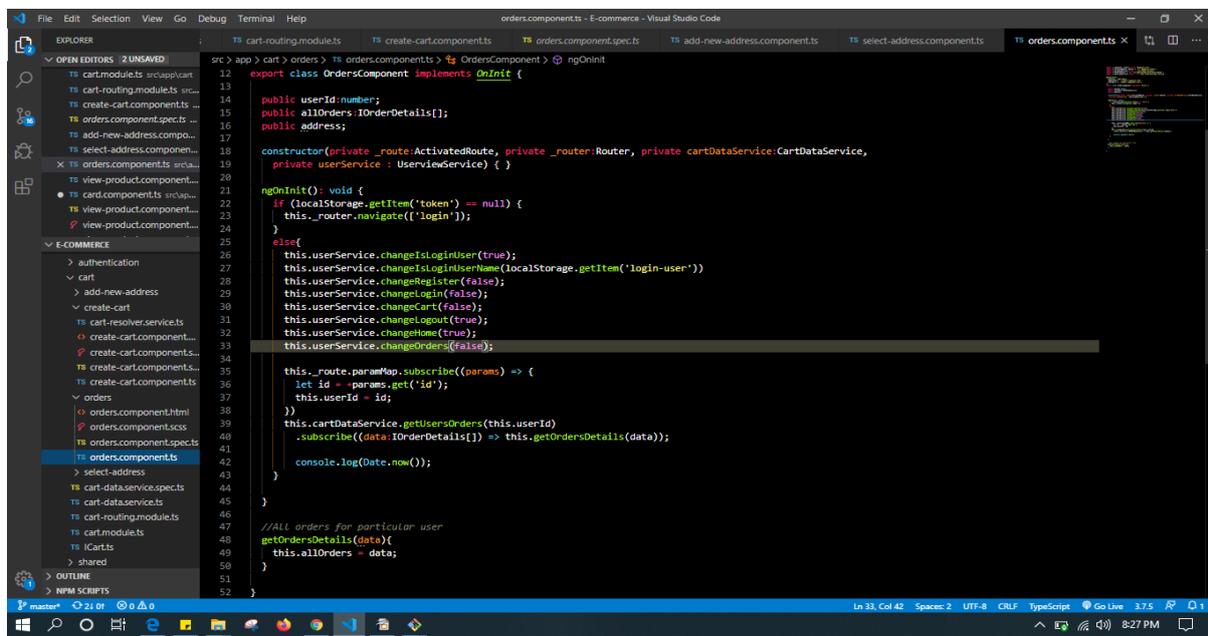
//increment quantity in cart.....
addQuantity(id) {
  for (let i = 0; i < this.cartOrderDetails.length; i++) {
    if (this.cartOrderDetails[i].productId == id) {
      this.cartOrderDetails[i].quantity++;
      this.updateCart();
    }
  }
}

//delete quantity in cart.....
deleteQuantity(id) {
  if (!confirm('Are you sure you want to delete this product?'))
    return false;
  else {
    let newCartOrderDetails: ICartOrder[] = this.cartOrderDetails;
    newCartOrderDetails.forEach((value, index) => {
      if (value.productId == id) {
        newCartOrderDetails.splice(index, 1);
        this.cartOrderDetails = newCartOrderDetails;
        this.updateCart();
        return;
      }
    })
  }
}

//decrease Quantity in cart.....
decQuantity(id) {
  this.cartOrderDetails.forEach((obj) => {
    if (obj.productId == id && obj.quantity > 1) {
      obj.quantity--;
    }
    else if (obj.productId == id && obj.quantity == 1)
      this.deleteQuantity(id);
  });
  this.updateCart();
}
```

Fig 9.7 Placed order component

8. View orders Component



```
src > app > cart > orders > orders.component.ts > OrdersComponent > ngOnInit

export class OrdersComponent implements OnInit {
  public userId:number;
  public allOrders:IOOrderDetails[];
  public address;

  constructor(private route:ActivatedRoute, private router:Router, private cartDataService:CartDataService,
    private userService : UserService) { }

  ngOnInit(): void {
    if (localStorage.getItem('token') == null) {
      this.router.navigate(['login']);
    }
    else{
      this.userService.changeIsLoginUser(true);
      this.userService.changeIsLoginUserName(localStorage.getItem('login-user'))
      this.userService.changeRegister(false);
      this.userService.changeLogin(false);
      this.userService.changeCart(false);
      this.userService.changeLogout(true);
      this.userService.changeHome(true);
      this.userService.changeOrders(false);
    }

    this.route.paramMap.subscribe((params) => {
      let id = params.get('id');
      this.userId = id;
    })
    this.cartDataService.getUsersOrders(this.userId)
      .subscribe((data:IOOrderDetails[]) => this.getOrdersDetails(data));
    console.log(Date.now());
  }

  //All orders for particular user
  getOrdersDetails(data){
    this.allOrders = data;
  }
}
```

Fig 9.8 View orders component

9. JSON based database schema

The figure consists of three vertically stacked screenshots of a web browser displaying JSON data from a database. Each screenshot shows a different collection of data.

Top Screenshot: /users
The JSON structure is as follows:

```
{
  "users": [
    {
      "address": {
        "addressId": "7r3cf4",
        "name": "Mukul Garg",
        "phoneNumber": "+917898000",
        "street": "Mohalla Sultanpur, near khajjiar chawk",
        "pincode": "176310",
        "city": "Chamba",
        "state": "Himachal Pradesh"
      },
      "name": "Mukul Garg",
      "email": "mukulgarg99@gmail.com",
      "id": 2
    },
    // 4 items
  ],
  "products": [
    {
      "id": 1,
      "productName": "Dove Shampoo",
      "productPrice": 150,
      "productQuantity": 50,
      "productDetails": "Good for dry hair",
      "productImage": "./assets/shared/dataImage/dove.jpg",
      "productCategory": "Beauty-Health"
    },
    // 7 items
  ],
  "orders": [
    // 7 items
  ]
}
```

Middle Screenshot: /orders
The JSON structure is as follows:

```
{
  "orders": [
    // 7 items
  ],
  {
    "id": 1589218525852,
    "userId": 3,
    "orderDate": "11 May 2020",
    "orderTotal": 150,
    "orderPlaced": [
      {
        "productId": 1,
        "productName": "Dove Shampoo",
        "productPrice": 150,
        "quantity": 1,
        "productImage": "./assets/shared/dataImage/dove.jpg",
        "productCategory": "Beauty-Health"
      }
    ],
    "shippingAddress": {
      "street": "Mohalla Sultanpur, near khajjiar road",
      "city": "Chamba",
      "state": "Himachal Pradesh",
      "code": "176310"
    },
    "deliveryAddress": {
      "street": "Mohalla Sultanpur, near khajjiar road",
      "city": "Chamba",
      "state": "Himachal Pradesh",
      "code": "176310"
    }
  },
  // 7 items
}
```

Bottom Screenshot: /carts
The JSON structure is as follows:

```
{
  "carts": [
    {
      "id": "1",
      "userId": 1,
      "saveForLaterItems": [
        {
          "productId": 3,
          "productName": "Philips Trimmer",
          "productPrice": 1500,
          "quantity": 1,
          "productImage": "./assets/shared/dataImage/trimmer.jpg",
          "productCategory": "Electronics"
        }
      ],
      "cartOrder": []
    },
    {
      "id": "3",
      "userId": "3",
      "cartOrder": [1],
      "saveForLaterItems": [
        {
          "productId": 1,
          "productName": "Dove Shampoo",
          "productPrice": 150,
          "quantity": 1,
          "productImage": "./assets/shared/dataImage/dove.jpg",
          "productCategory": "Beauty-Health"
        }
      ]
    },
    // 4 items
  ]
}
```

Fig 9.9 – JSON collection database

CHAPTER-10

FUTURE SCOPE & FUTURE ENHANCEMENT

We are thinking of making some modifications and adding advanced new features in our web application.

Some of them are :-

1. UI add-ons modifications (Breadcrumbs, Infinite Scrolling, Pagination, Expansion Panel, Badges)
2. Admin module implementation to manage products inventory and orders.
3. Users to sell their products.
4. Payment-gateway and OTP module implementation.
5. Login as guest module implementation.

CHAPTER-11

CONCLUSION

We have effectively executed our project in named 'E-commerce web application utilizing angular framework till what we have chosen to work in phase 1. Now, in the phase 2 we will:

- We will add-on advanced angular material components to improve our web application GUI and visual representation.
- Through various online hosting platform available like Firebase, AWS, Heroku, we will host our e-commerce web application which will be live soon.
- We have successfully built our application upto client end and we are working on the administration part as well.
- At last, we trust that this will go far in advancing.

CHAPTER-12

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Project report

ORIGINALITY REPORT

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