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E-Commerce Website for Heritage of Uttarakhand Using React Java Script

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ABSTRACT: The aim of this study is to create an e-commerce site for the heritage of Uttarakhand, an online store that may be used for selling representative cultural products of Uttarakhand globally. The present work includes the theoretical information about e-commerce, React JS and it describes the development process of the site. The result of this work is a responsive e-commerce site. This website is able to handle an online test payment and has its content in English which is the most common language globally. This site is accessible in computer devices as well as in mobile devices. The complete interface has been designed using React JS.

KEYWORDS: Heritage of Uttarakhand, E-commerce, React JS, Webshop Development

I. INTRODUCTION

E-commerce is the process of selling and buying goods through the internet. Businesses have seen the benefits of using the internet to increase the number of customers and at the same time to reduce their operational expenses. Therefore, IT companies are developing e-commerce platforms [1] that can be used by any kind of business, from entrepreneurs to big companies. React JS is an efficient, flexible, and open-source JavaScript library, which has been developed and maintained by Facebook [2]. It is capable of rendering front-ends of web apps that are simple, speedy, and scalable. Being a native of the beautiful state of Uttarakhand, we are always fascinated by the rich cultural heritage. This study gives us the opportunity to understand the importance for our own cultural entities and to have their website online. We considered that this outcome would be the perfect chance to make this culture reach out to more people. Also, this is useful to all the students and small entrepreneurs who would like to start their own online commerce, but they lack the knowledge and the financial resources to do it. The present work is divided into two parts, the theoretical section and the practical section. In the theoretical part there is the information about e-commerce, React JS and how it can be used as an e-commerce platform. In the second part the focus is on the environmental setup and development of the site. It includes information about the tools that have been used during the work.

II. LITERATURE REVIEW

This section presents the theoretical background of e-commerce, what are the benefits of having an e-commerce website and the classification of e-commerce sites according to their target market. Also it contains information about e-commerce platforms.

E-commerce: The process of commerce occurs when two entities are willing to do an exchange of products or services. There are two types of commerce: domestic and foreign commerce. Domestic commerce takes place when the trade of products or services takes place inside the border of a country. For example, when a factory sells their products to a retailer that is located in the same city. On the other hand, foreign trade occurs when organizations that are located in different countries exchange products between each other. There are plenty of reasons why an organization decides to trade with an entity in another country, but the main reason is that they cannot find that article or service in their own country. For instance, due to climatic and geographical conditions, Finland is not able to grow certain fruits and vegetables. Thus, those products are imported from other places, like Brazil. In the past, the big corporations were the only ones available to do foreign commerce, because it required a considerable amount of economic resources. But with the emergence of the internet, nowadays it is possible for any small and medium company to start offering and selling their products to markets from around the world by having an online presence. Briefly the term e-commerce, also known as electronic commerce, can be defined as the process of selling and buying goods through the internet. Although the main essence of e-commerce is to sell and buy products and services, there are other 8 activities involved that are necessary in order e-commerce can occur. Some of this business activity is

the administration of the supply chain, market research, customer relationship, among others.

E-commerce benefits: E-commerce offers many benefits to the owners of a business and to their consumers. From the consumer's perspective, e-commerce allows the users to buy a product from the commodity of their home. This can save them the time it takes to go to the shop and pay for the product, which at the end they can utilize in another activity. Another benefit is the product availability. With the internet, the users can visit online shops from a business that is located in other countries, allowing them to buy products that they would not have access to otherwise. Not only the consumers are benefited from electronic commerce; businesses get benefited from e-commerce too. The main advantage is that it can increase sales. They are able to sell their products to a broader audience of customers that are located around the world. E-commerce allows the use of different payment methods, which permit people from different backgrounds to acquire the products offered in their online shops. Another important benefit of e-commerce is that it reduces the cost of a business. E-commerce permits businesses to operate with a little amount of economical and human resources. With a properly established e-commerce site, it is no longer necessary to have a physical store. This reduces the amount of economic resources needed to pay for fixed expenses, such as rent and electricity. As we can see there is a considerable amount of benefits that e-commerce brings to the consumers and owners of a business. These benefits motivate consumers to use more the internet as a platform to buy products; and the businesses to sell their products online.

E-commerce risks: Although there is a considerable amount of reasons to start implementing an e-commerce site, it is important to know the risks that the users can face. One of the main risk of e-commerce for 9 businesses is the information security. Nowadays the amount of cyber-attacks has increased. During these attacks valuable information from customers can be stolen, such as credit card information. This, in turn, will affect the image of a business. Information Privacy is an issue that customers are considering while selecting what site they will shop in. Therefore, it is important to take into account certain security practices that will reduce the chance of being attacked. This can be achieved by updating the e-commerce platform to the latest version and by using third party software's that will maintain safe the server where the e-commerce site is hosted. Other risk that can occur to e-commerce sites is related to its technology. For example, there could be a problem in the server where the site is located. This will cause that the site will not be accessible to the clients anymore. In order to minimize this risk, it is recommendable to look for a reliable host provider who can guarantee that the website will be online most of the time.

E-commerce platforms: IT companies have seen the necessity of the market of selling their products online, but they lack the expertise or the resources to create the system from the scratch. This pushed companies, like Magento, to create a platform that integrates the tools that are required to do e-commerce, such as: content management, marketing, pricing and promotion, order and inventory management. Depending on the type of license they used to distribute their product, e-commerce platforms can be divided in the next groups:

Open Source e-commerce platform: Like any open source software, this type of platform can be used and modified without paying any monthly fee or license fee. This allows the users develop customized e-commerce sites, which they can be modified and updated according to the needs of the web shop [3].

On the other hands there are some disadvantages of using this kind of platforms. First of all, the user needs more technical know-how to implement it in the business. Although it is possible to find documentation on the internet that will teach how to use it, the user will need the help of a developer who understands the technologies used by the platform. Another disadvantage is the limited amount of features it offers. Although it contains the basic features to start a web shop, at some point it will require the functionalities of the paid version in order to improve the efficiency of the online store. Open source e-commerce platforms are recommended for business that are starting to offer their products to the market and want to start selling their products online. On the contrary, if a company is already quite known by their target market, it is preferably to choose a platform that will be able to handle the demand of the customers.

Software as a Service e-commerce platform: Another way to implement an e-commerce site is by using Software as a Service e-commerce platform. Software as a Service, known also by its acronym SAAS, is a new software business model. In this model the provider charges the user depending on the amount of time or the amount of features which are used. The program is distributed to the users through the internet, so they do not need to install any software on their own computers. There is a wide range of programs which are already being delivered using the Software as a Service model, including as an e-commerce platform. There are many advantages and disadvantages of using SAAS e-



commerce platforms. This kind of platforms allows the user to create a high quality e-commerce site in a short amount of time and without the need of technical skills. Another advantage is that the software provider will take care that the web shop is secure and available online. Therefore, the user has more time to focus in the 12 core activities of their e-commerce site, such as handling orders and getting new customers. Using this platform might not be for all businesses. There are some businesses that requires a more complex e-commerce platform that can be integrated into their current system. This kind of platform is not flexible because it is not possible to access the source code. This limits the user in the creation of an e-commerce site according to the features that the SAAS software contains. Another aspect it is important to consider is the budget. Using this type of platforms requires the payment of a monthly fee, which it means it has a fixed cost that needs to be taken into account. At the end, this solution might be more expensive than using a commercial or open source e-commerce platform. As it can be seen, this platform is not for all businesses. Although this platform is easy to develop and deploy, there are other aspects to consider before deciding to use SAAS e-commerce platforms.

Commercial e-commerce platform: Commercial e-commerce platform is the counterpart of the open source platform. It requires the payment of a license fee in order to install the program in a computer. This kind of platforms gives the possibility to use all the capabilities of the program. Another advantage of using this platform is that the software provider has a support service, which the user can contact any time there is an issue with the program.

III. PROPOSED SYSTEM

PAYMENT METHODS

The core activity of an e-commerce site is to generate sales. Therefore, accepting payments is one of the main aspects of an e-commerce site. Nowadays there is a wide range of payment methods that can be integrated in the site. This can be achieved by integrating a payment gateway to the ecommerce platform or to have a contract with a Payment Service Providers who handles the payments of the site.

Payment Gateway: A payment gateway is the service obtained from a third party that accepts debit and credit card payment. This company receives the transaction request from the website and sends it to the payment processor. The payment processor are the companies that are in contact with the banks and who are in charge of verifying that the information the user give is correct and it has the necessary resources to cover the payment. If the information is valid, the payment will be accepted. Then the payment processor will send the status of the payment to the payment gateway, which sends the same status to the e-commerce website.

Payment Service Providers: The Payment Service Provider, also known as PSP, is an organization that offers a payment system which handles different kind of payment methods. Besides handling payments, they offer extra services related to fraud protection and currency exchange. In order to use their services, depending on the company, it is required to pay a monthly fee and a fee for every completed transaction.

RazorPay Payment Service Provider: Razorpay is the only payments solutions provider in India that allows businesses to accept process and disburse payments with its product suite. Customers can avail access to all payment modes like credit and debit cards, UPI, and popular mobile wallets. With flash checkout, they can also transact seamlessly by just entering the CVV and 3D-secure. Also, Razorpay's International Payments feature has introduced multi-currency support for up to 100 currencies, including United States Dollars, Great Britain Pounds, Singapore Dollars, Euros and UAE Dirham.

REACT JS

React JS is a JavaScript library used in web development to build interactive elements on websites. It specializes in helping developers build user interfaces, or UIs. In terms of websites and web applications, UIs are the collection of on-screen menus, search bars, buttons, and anything else someone interacts with to USE a website or app. Before React JS, developers were stuck building UIs by hand with "vanilla JavaScript" (developer speak for the raw JavaScript language on its own) or with less UI-focused React predecessors. That meant longer development times and plenty of opportunities for errors and bugs. So, in 2011, Facebook engineer Jordan Walke created React JS to improve UI development [4]. React is a library for building composable user interfaces. It encourages the creation of reusable UI components, which present data that change over time. Lots of people use React as the V in MVC. React abstracts away the DOM from you, offering a simpler programming model and better performance. React can also render on the server using Node, and it can power native apps using React Native. React implements one-way reactive data flow, which reduces the boilerplate and is easier to reason about than traditional data binding.

React Features:

JSX – JSX is JavaScript syntax extension. It isn't necessary to use JSX in React development, but it is recommended. It's the combination of HTML and JavaScript features.

Components – React is all about components. You need to think of everything as a component. This will help you maintain the code when working on larger scale projects and makes it easy to manage.

Unidirectional data flow and Flux – React implements one-way data flow which makes it easy to reason about your app. Flux is a pattern that helps keeping your data unidirectional.

User experience - React is responsible for smooth usage of application without reloading when switching between pages. Hence gives great user experience.

React Advantages- Uses virtual DOM which is a JavaScript object. This will improve apps performance, since JavaScript virtual DOM is faster than the regular DOM. Can be used on client and server side as well as with other frameworks. Component and data patterns improve readability, which helps to maintain larger apps. Easy accessible of pre-saved packages that can be us.

React JS Environment Setup- To work on ReactJS we need to install NodeJS and npm. NodeJS is the platform needed for the ReactJS development. NPM stands for Node Package Manager, which is an application and repository for developing and sharing JavaScript code.

Step 1: Download Node.js Installer

In a web browser, navigate to <https://nodejs.org/en/download/>. Click the Windows Installer button to download the latest default version. The Node.js installer includes the NPM package manager. Figure 1 illustrates the step1.

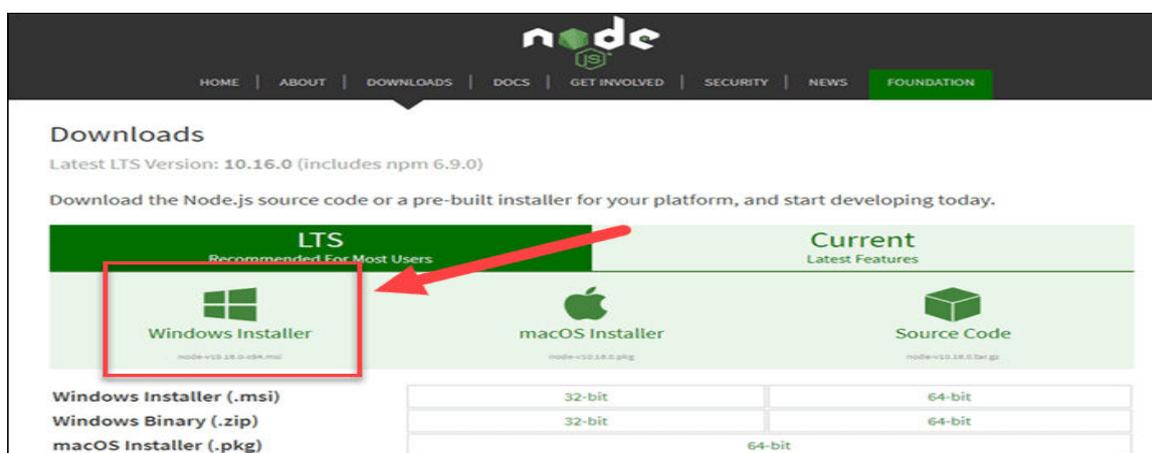


Figure1: Node.js Installer

Step 2: Install Node.js and NPM from Browser

- Once the installer finishes downloading, launch it. Open the **downloads** link in your browser and click the file. Or, browse to the location where you have saved the file and double-click it to launch.
- The system will ask if you want to run the software – click **Run**.
- You will be welcomed to the Node.js Setup Wizard – click **Next**.
- On the next screen, review the license agreement. Click **Next** if you agree to the terms and install the software.
- The installer will prompt you for the installation location. Leave the default location, unless you have a specific need to install it somewhere else – then click **Next**.
- The wizard will let you select components to include or remove from the installation. Again, unless you have a specific need, accept the defaults by clicking **Next**.
- Finally, click the **Install** button to run the installer. When it finishes, click **Finish**.

Step 3: Verify Installation

Open a command prompt (or PowerShell), and enter **node -v**. The system should display the Node.js version installed on your system. You can do the same for NPM via command **npm -v**. Figure 2 illustrates the step 3.

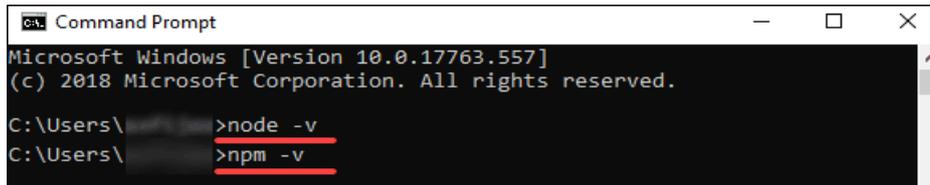


Figure2: Verify Installation

Step 4: Creating a React app

- a) Go to the folder where you wish to create the React app.
- b) Press **Shift +right click** which will open a drop down menu. Select **Open with PowerShell window here**. Figure 3 illustrates step 4(b).

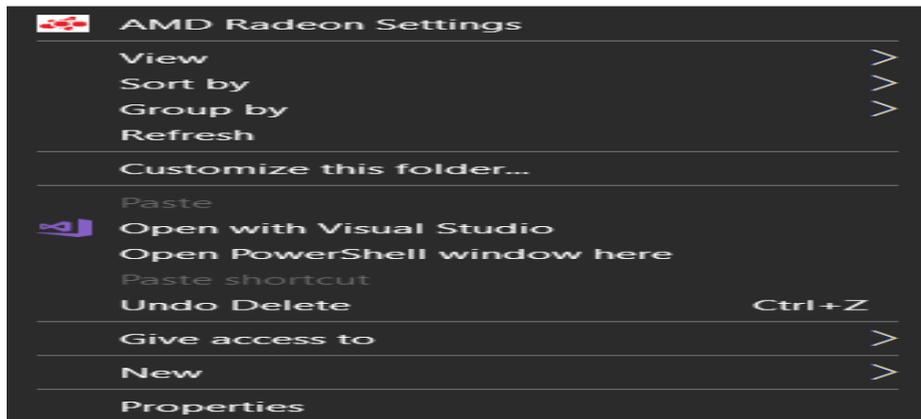


Figure3: Illustration of step 4(b)

- c) On PowerShell window write **npm create-react-app <nameofapp>** to create react application. Now you can work on this app using Visual Studio Code or any other platform that supports React JS
- d) Open VS Code and Open the folder which you have created. Figure 4 illustrates step 4(d).

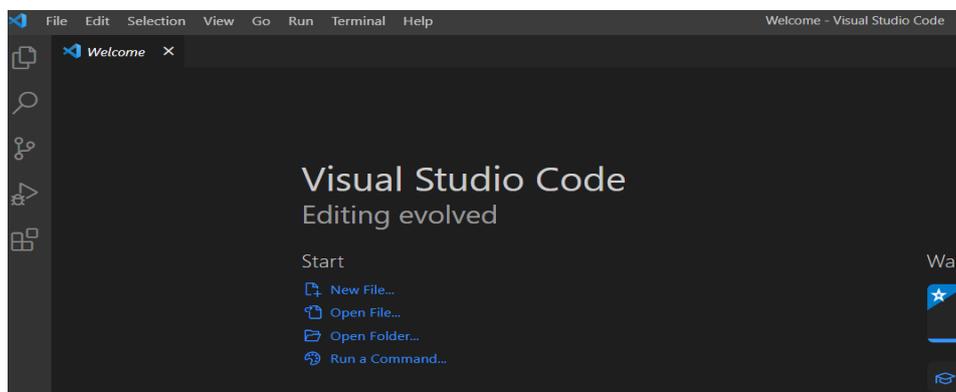


Figure4: Illustration of step 4(d)

- e) Select the **Terminal** option and then **New Terminal** from the menu bar. Figure 5 illustrates step 4(e).

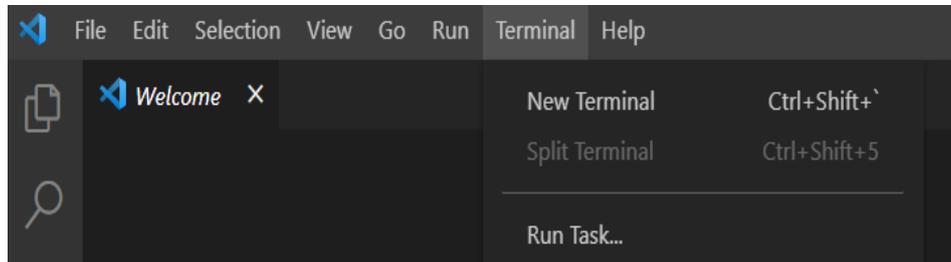


Figure5: Illustration of step 4(e)

f) Write code on the opened terminal **npm start**. Figure 6 illustrates step 4(f).

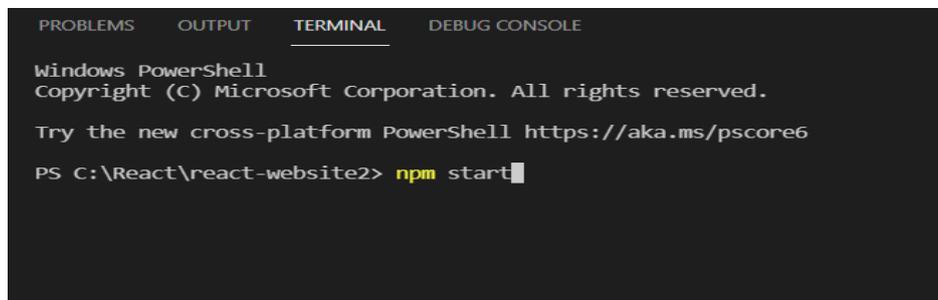


Figure6: Illustration of step 4(f)

g) Your React App has been created. Figure 7 illustrates step 4(g).

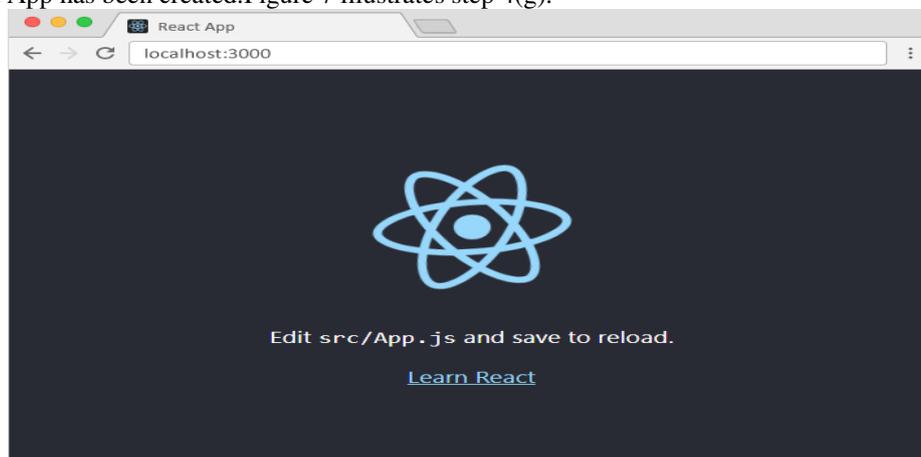


Figure7: Illustration of step 4(g)

IV.RESULTS AND DISCUSSION

We use dependencies and extensions to ease the process of coding and also provide attractive interface. These dependencies are libraries where some functions are pre-defined. Material UI is a simple and customizable component library to build faster, beautiful, and more accessible React applications. Using the MUI React library you can add MUI components to your React apps and switch seamlessly between MUI CSS/JS and MUI React even within the same app. Commerce JS [5] is a powerful e-commerce SDK for building custom cart and checkout experiences. Commerce.js is trusted by developers around the world to deliver API driven e-commerce into web, mobile, augmented, and virtual shopping experiences. React-hook-form[6]-[7] is a library that helps you validate forms in React. React-hook-form is a minimal library without any other dependencies. It is performant and straightforward to use, requiring developers to write fewer lines of code than other form libraries. React Router DOM enables you to implement dynamic routing in a web app. Unlike the traditional routing architecture in which the routing is handled in a configuration outside of a



running app, React Router DOM facilitates component-based routing according to the needs of the app and platform. This extension provides you JavaScript and React/Redux snippets in ES7 with Babel plugin features for VS Code. Snippets info: Every space inside { } and () means that this is pushed into next line :) \$ represent each step after tab. Table 1 shows code installation.

Table 1: Code to install

npm install @material-ui/core @material-ui/icons	npm install @material-ui/core @material-ui/icons
npm install @chec/commerce.js	npm install @chec/commerce.js
npm install react-hook-form	npm install react-hook-form
npm install react-router-dom	npm install react-router-dom

The website development process of the e-commerce site was done using React as well as Commerce JS. First the look of the website was designed which included the navigation bar, the placement of product items, their details & categories and the name and logo of the website. Next the e-commerce functionalities were integrated into the website, which consisted of installing and configuring the required plugins for adding items to cart and checkout. The front-end look of the e-commerce website “Heritage of Uttarakhand” is shown in figure 8. Figure 9 shows the details of the product the price and pictures of the product. Figure 10 shows what items are present in the cart and other details. Figure 11 shows the address form for checkout. Figure 12 shows the payment form for checkout. Figure 13 shows the order details and id. An order confirmation mail is also sent to the customer’s email id consisting of all the order details.

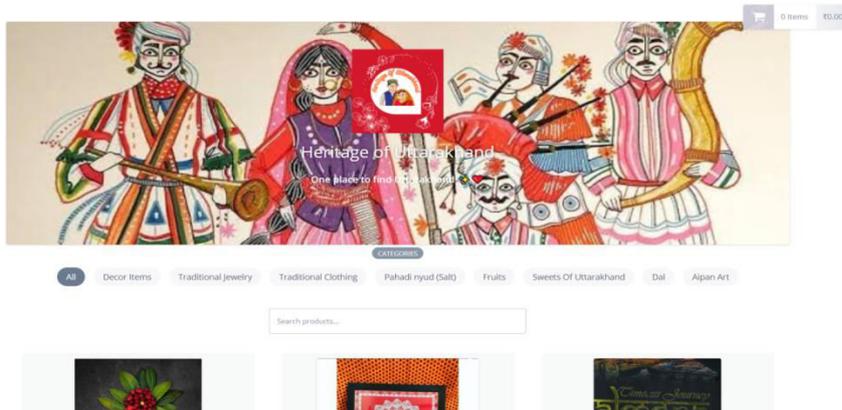


Figure8: Front-end look of the e-commerce website “Heritage of Uttarakhand”



Figure9: Product details and description

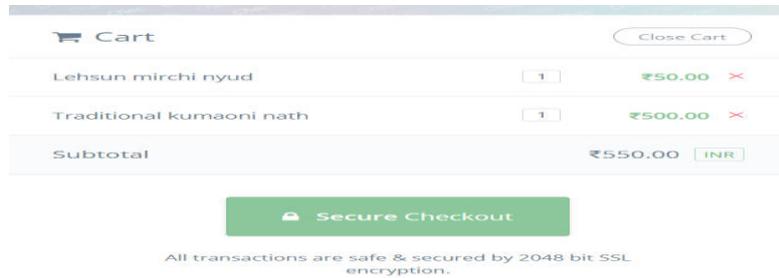


Figure 10: Items in the cart and other details

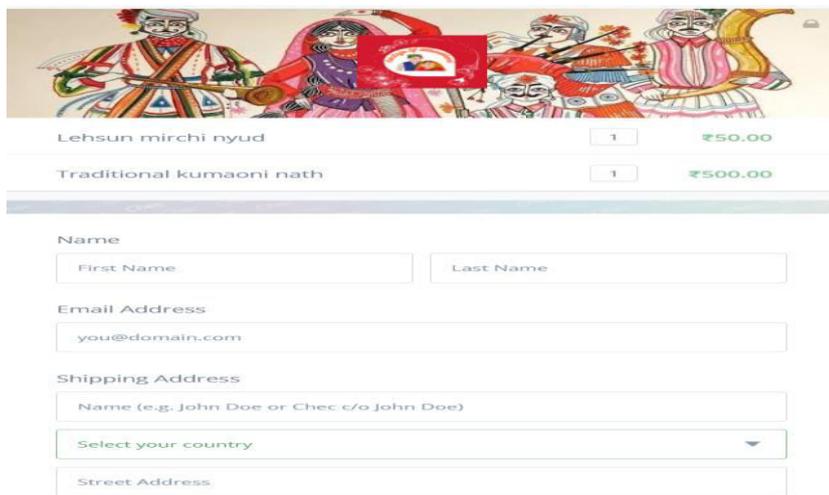


Figure 11: Address form for checkout



Figure 12: Payment form for checkout

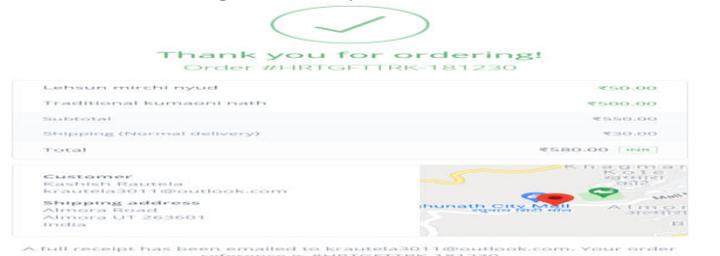


Figure 13: Order details and ID

V. CONCLUSION

E-commerce has changed the way the people buy and sell products. More people are starting to notice the benefits of having an e-commerce site to increase the sales of their product and get customers from other countries. There are also risks that are needed to be considered before starting an e-commerce site. Nonetheless the demand for e-commerce site has been increasing, which invites software companies to create e-commerce platforms that are affordable for all kind of users and are simple to implement. Therefore platforms like Commerce JS are developed in order to cover the need



for that kind of users. In order to use React JS as an e-commerce platform, “Commerce JS” is required to be installed. This plugin has provided the required functionalities to build custom cart and great checkout experience. It also provides functionality to process transaction from client. In order to accept online payments from banks, a payment service provider that was compatible with them is required. The responsive layout of the site and the payment functionality are tested. The functionality test results are positive. The website Heritage of Uttarakhand has been designed and is able to handle a test payment. The layout is responsive and the user experience is great.

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