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Web based E-commerce system integrated with Chatbot

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A B S T R A C T

E-commerce has the potential to be a huge success in today's commercial world. E-Commerce platform is used for purchasing of the human required goods and selling of items through it as well as the payments of the purchased goods made through online mode over the different payment platforms over the internet. E-commerce may represent a paradigm change that affects both marketers and customers. Rather, e-commerce is merely a new way to spice up existing business methods. It's causing a complete shift in the traditional company model. A web application, which is a piece of software that runs on a website. It is a computer-based software programme that is saved locally on the system's operating system. It is used by users or administrators over the Internet. It can be used to create an application for a variety of platforms. However, we believe that using Python is the safest option and can be employed in a variety of situations. It also plays a significant role in our web apps. Hackers won't be able to use SQL Injection as rapidly if the web application is written in Python. This project is intended to create a chatbot to be used by customers to get their queries responded easily from the e-commerce website. This chatbot has the capacity to make friendly conversations and respond to the queries. Moreover, it provides information with product details, payment method and many more.

Keywords: E-commerce, Python, Chatbot etc.

1. Introduction

E-commerce is the practice of conducting business over the internet. All transactions and deals are conducted over the internet. An ecommerce site is an online store similar to a physical store where customers come in, look at the goods, make a purchase, and then leave. However, an ecommerce website design gives owners access to a back-end area where they can go in and check on other orders as well as manage products. The primary goal of our project is to develop a general-purpose e-commerce web application in which the products (men's wear, women's wear, and children's wear) are displayed, can be purchased through our website via the Internet from the comfort of one's different places. However, for the sake of execution, this project will concentrate on an online clothing business. An online store is a virtual store on the Internet where clients may explore and select things of interest. To collect the desired things, a shopping cart can be utilized. When you go to check out, the items in your shopping basket will be shown as an order.

Chatbots, commonly referred to as chatterbots, are artificial intelligence (AI) systems used in messaging apps. Clients will be benefited from this product because it is an automated program that continuously interacts with customers like a human would and costs very less to use when compared to customer care services. Chatbots will be having a friendly discussion and responding to quickly to customer questions.

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Payment gateways provide e-commerce web application service providers with a way for online merchants, brick-and-click retailers, and conventional brick-and-mortar retailers to accept various payment methods including credit cards and direct payments. A bank may offer a payment gateway to its users, but it can also be offered separately by a different financial service provider, such as a payment service provider. The transfer of data between a payment portal like website, cell phone, or interactive voice response service and the particular bank is made possible via a payment gateway.

Merchants can accept a wide variety of payment methods by using payment gateways on their websites, applications, and storefronts. The payment gateway is a web server to which a merchant's web-application or mobile application is linked, but it is not directly engaged in the money transfer. A payment gateway is a system that connects a variety of institutions, clients, and payment methods. Various institutions, clients, and payment methods can be connected by a payment gateway.

2. Literature Review

2.1 Web Development using Flask and Python:

Web is the most widely and quickly utilized networking tool, meeting the needs of all types of users and providing solutions to any problem. We must select the appropriate technology in order to create and develop such well-defined and well-structured systems. As a result, flask and python can be used to create a dynamic web application or portal. A well-designed web page or application can readily attract users, resulting in the project's success. Using "python" and "flask," you can meet the technological requirements of a web development project. Flask has the technical advantages like Integrated support for unit testing, secure cookies, extensive documentation, Restful request dispatching etc. Python and Flask are web development languages that are both portable and interactive, with the ability to support dynamic semantics. It is also feasible to connect new modules to python in order to extend the language's fundamental features. Because of Python's robustness, many great websites are migrating to it. This paper concludes that, in contrast to other languages used for web development, Python is faster, more versatile, and more powerful than java, perl, and tcl, and so on..

2.2 E-commerce websites development:

In the present developing world, the growing number of people use e-commerce websites for making their everyday purchases. The article outlines numerous ways to build e-commerce websites as well as best practices and solutions to development problems. The entire development process of e-commerce is divided into two parts. Development forms include front-end development and back-end development. There are several tabs visible on the front-end, including the home page, administration page, contact page, and cart page etc… which comes under the UI designing. The Back-end part comprises of the coding parts of front-end pages and the database connection and its interaction with the front-end. This paper shows the developing of the e-commerce with standard languages such as: HTML, CSS, JavaScript, BootStrap for the front-end part and PHP for the back-end part and MySql for its database connection.

2.3 The E-commerce platform:

People now a days are completely dependent on internet. Web based will always give a upper hand where client base is increased, as we can see individuals who are interstate or abroad. Having a web-based store allows you to operate without the need for a physical location, and allows your customers the option to buy your product whenever they want to. Regardless of the e-commerce site you use, you will be able to move your products online. Online shopping can be used to send and receive large quantities of data, items, and installments between customers, website owners, and providers. Online platforms will offer item depiction, pictures, cost, and product reviews. A typical application will be split into two parts: front-end development and back-end development. During front-end development, the site's login page, home page, contact page, admin page, shopping cart page, and payment page are developed visually.

By default, the back end will manage the database and all interactions with the front end. For front end developing we use JavaScript. It is a client-side programming language designed specifically for web development. It was simply a matter of combining JavaScript code with HTML5 code. The markup language used for web pages in applications is called hypertext markup language. A client-side scripting language typically used in web browsers, JavaScript allows the user to interact with client-side scripts.

2.4 JAICOB Chatbot with Data Science:

Chat bots execute automated tasks using software. The chat bot is designed to converse with humans through written or audio means. Using a chat bot, you can interact as if you were talking with a human, answering questions and interacting further. CHATBOT is the word where we are hearing everywhere over the internet. People are getting habituated to this feature. Nowadays, every online application has the capacity to interact with clients and answer questions and requests. Chat bot feature usage has been increased rapidly because whenever a user interacts the level of satisfaction is on higher side and it facilitates finding the necessary information in a more comfortable way. These

are fantastic analytical tools for everyone, because end users are more likely to submit messages to chat bots than to real humans. Chat bots produce favourable user responses such as engagement, active learning, and sociability when compared to e-learning training.

2.5 Xatkit Chatbot with less code:

Chatbots, such as those used for customer service, education, and e-commerce, enable companies and end users to communicate directly, by executing certain activities and improving the user experience. Most of them today have built-in capabilities for chatbots. In order to meet quality criteria, chatbots are becoming more complicated software artifacts that require a more systematic development strategy. We have introduced XatKit chatbot developed using Model Driven Engineering technique. XatKit performs rich conversation flow between user and a bot. XatKit is going to used by end users in real life scenarios. It uses the reusability of the code. It could also use NLP engine for text analysing phase. XatKit improves by moving towards a product line approach and can be quickly update several versions of the same bot. Xatkit is a ready-to-use, complete tool that can be utilized in real-world settings. The bot specification will be increasingly diverse at the language level, moving towards a product-line approach to allow businesses to design and rapidly update several variants of the same bot at the same time.

2.6 Merits and Demerits of Chatbot:

Over the last few years, e-learning has gained in popularity with the introduction of new technology. people can expand their knowledge anytime and anywhere by using their mobiles. Learning and studying can take place wherever and whenever the student chooses. In e-learning platforms, students often experience feelings of loneliness and isolation due to the lack of interaction between professors and students. Throughout today's modern education, e-learning is becoming increasingly popular. Since younger students may be more familiar with these new forms of technology and are more likely to be interested in new ways of learning, many higher education institutions, including universities, are increasingly using E-Learning platforms. Chatbots can be used to engage in chats or respond to questions any time of the day or night, while real-life teachers help solve issues with learning. By increasing the bot's intelligence, additional learning-related issues can be understood and solved. It creates an interactive learning environment that is similar to a typical classroom with all of the benefits of E-learning, as well as a more human-like engagement because it is based on voice dialogue.

2.7 Chatbots with Dailogue Management:

Chat bot is like a question answer pair between user and the computer system. The disclosure tree acts as an interface. For example if user gives a dailogue to a system, the responses should aligned on the left and other responses on the right which are system responses. We have developed a chatbot for complex queries are best suitable for user interactive. The conversation between user and system should not be just like a conversation , it should be like clarification request and perfect, suitable clarification response. Chatbots used earlier are responsive to user. So we use DT for building the chatbot effectively. The chatbot examples are siri- iphone and Cortana-Windows.

2.8 Chatbots with Response Generation:

Chatbot is based on question and answer interaction between human being and a robot. In this paper, we first find a generated response from generation based polisher and then GR is passed into polished response filter. According to the evaluate relevance score, the robot id going to gives the output. The output generated is based on score. If the score is high then the output is achieved to that node. Retrieval polished response generation for chatbot is an advanced technology which gives efficient, fluent answers. The first model used is retrieval based which is written by humans. The main disadvantage is irrelevant context. Retrieval based is similar to computational contextual. The second model is generation based which is language rules learned learning during the training process. The main disadvantage is safe responses and grammatical errors. The combined two models gives efficient question and answer pair fluent and no grammatical errors.

3. Related Work

3.1 Python:

A high-level programming language such as Python puts a strong emphasis on code readability. In the web development, the source lines of code (SLOC) is less in python when compared to the traditional programming languages. Python has extensive standard libraries, which make the web development code straight forward, simple and easy to understand. Python is used on a various systems like Windows, Mac, Linux, etc. Python has a simple syntax which is analogous like English. Python is categorized in three ways: object-oriented, functional, and procedural. Python is an interpreter language, which means that the lines of code runs fast, as it is written. As a result of it, the prototyping will be done very fastly as compared to other languages.

3.2 Flask:

A Python Application Programming Interface, Flask, allows users to create web-based applications, it is developed by Armin Ronacher. Flask's framework is easier to understand and develop a simple web application than Django's. Web Frameworks, often referred to as Web-Application Frameworks, are a collection of modules and libraries that enable programmers to create applications without writing protocol or thread code. A free and open source web application framework, Flask is popular among web developers. This tells us that flask is supplied with all of the tools, frameworks, and the technologies which helps the users to build a web application. It can be used in conjunction with web pages, a blog, a wiki, a web-based calendar application, or a commercial website. PyFlask is a Python-based framework for building web applications. Flask uses Werkzeug WSGI toolKit and Jinja2 template engine to develop an application. Flask is one of the micro framework's Categories. Micro-frameworks are often frameworks that depend on few or no additional libraries. Flask is divided into categories like "Static files" and "Template files. "All Jinja templates, including the HTML pages, are stored in the template files. Static files, on the other hand, include all the static scripts required for a website, such as CSS, JavaScript, and image files etc.

3.3 E-commerce:

E-commerce, it is frequently used to simply refer to the buying and selling of the products or services over the internet, and the movement of funds and data necessary to perform the required transactions. online commerce is the another name for Electronic commerce. As a business approach, e-commerce is rapidly growing in popularity and acceptance. A majority of businesses have websites that enable them to conduct commercial transactions via various payment gateways via the internet today. The number of people purchasing items online is definitely increasing in recent years. "Online stores" refer to virtual stores that exist on the Internet and allow users to explore chosen goods of interest. Using a shopping cart, a customer can collect goods that interest him/her. As soon as the user makes a payment, the items in the shopping cart will be presented to him or her as an order. Additional statistics should be provided by the user in the website like Address, Mobile number etc. to finish the purchase. The customer is asked to provide the details like name, house number, street name, city, state and also the verified e-mail id. The very next moment of the product is placed, the customer gets an order placement notification to their e-mail. There are four market segments in which e-commerce operates: business-to-business, business-to-customer, customer-to-customer, and customer-to-business. The way customers shop, purchase the products and consume the services has evolved as a result of e-commerce. In the present scenario, the people are increasingly using their systems and smart devices to place an order for the required goods which can be delivered immediately to their required places. As a result, the retail sellers has been effected. Amazon and Alibaba has risen in popularity. Traditional retailers have indeed been forced to change their ways of doing business as a result of their growing popularity.

3.4 Chatbot:

According to the Natural language processing (NLP), the Chatbot is classified into the four parts. The front-end is the primary part, then it followed by the knowledge base, the back-end part, and finally the corpus, which will be containing of the training data. On the front end, the customer is communicated. Natural language understanding refers to the process of interpreting context and purpose of user input. The user will be responded with a suitable response. The knowledge base is used to determine the Chatbot's knowledge, that is done with using the NLU and supported on the back-end. The Corpus domain is used by the back-end to create the knowledge base. The user provides the input to the Chatbot in the mode of Text or Speech. By entering the data into a conversation management system for processing, a suitable response is generated, and the Chatbots are instructed to take appropriate actions based on the input. Both the text and speech used to create and provide the responses.

The Chatbot is constructed with the help of Artificial Intelligence and Machine Learning (AIML), that has the raw analytics data. In order to get the necessary data, the analytics tool uses raw data. Any website or application keeps track of all the statistics that clients submit. AIML is a set of queries and responses that can be used by the chatbots. Three sections make up the report: a template, a collection of categories, and a pattern. Patterns and templates are included in every area. Chatbot-Customers may enter a variety of patterns when requesting products and services. The Template is the answer to each pattern.

4. Proposed Methodology

4.1 Overall Architecture:

We have developed the web application in such a way that the Customer can visit the website and view the products. The Customer needs to be authenticated andneed to verify his/her email then he will be able to Buy the required products. The user can use the Chatbot provided in the website and can clarify his/her doubts regarding the website. After the selection of products, the customer should make the payment of the products he/her wanted to purchase. Admin have the access to make changes in the website and take necessary actions. Generally many websites have customer care services available for users to clarify their doubts. But the Major drawback of the traditional customer care services is, they are not available 24/7. To overcome this, we have integrated a chatbot in this website which is developed using the Natural Language Processing (NLP). These Chatbots are available 24/7 and can be responded quickly to user queries. The main advantage

of using the chatbots are, the usage of man power is reduced and the working expenditure will be saved. The problems arised in the human communications in the customer care services can also be controlled using these chatbots. The Chatbots are very highly programmed and can be responded quickly. After the selection of the products required for users, the users should add the products to the cart. Finally the orders are placed by making the payment. Our website was developed by the python programming language which was a trending technology. This technology provides good accuracy and security to the developed website. And we have integrated a chatbot in the website, where the traditional e-commerce websites does not contain it. Traditional e-commerce website contains only customer care services, that does not available every time to the customer. This problem can be reduced by using the chatbots. This Chatbots are trained by Admin with the required datasets which provides the answers to the customer queries. We should train the chatbots using the Natural Language Processing (NLP) with the training data set and tested using the test data set.

CUSTOMER – The customer can login to the website and view the products, select the products and Make the payment.

ADMIN – The Admin has all the permissions to make changes in the website and perform the necessary tasks.

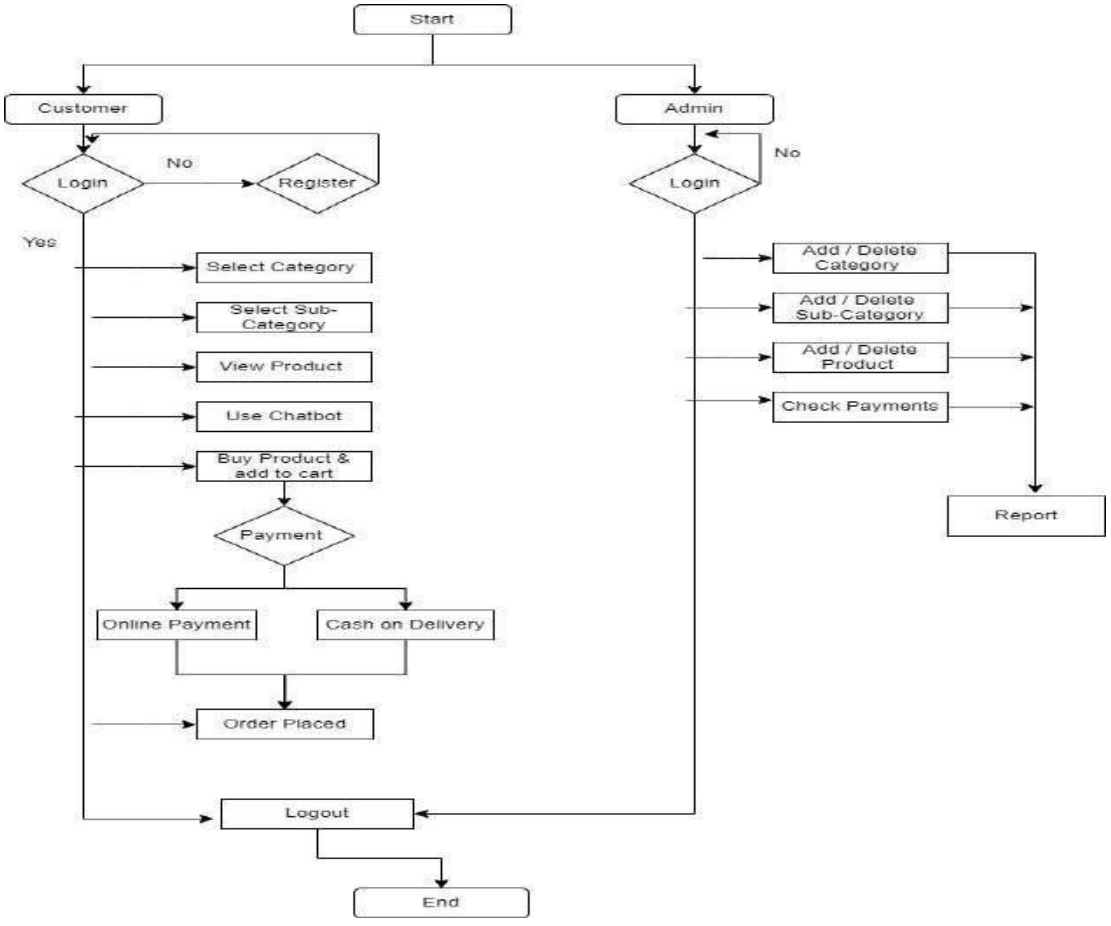

Fig 4.1: Flowchart of the proposed system

4.2 Proposed System:

Our system consists of two parts frontend and backend. The whole frontend is designed in HTML, CSS, BootStrap and JavaScript using the help of the available Widgets and Material UI. The backend is designed in the Python language using the flask. The Postgresql is used for the database connection in the back end. As compared to traditional backend languages like PHP, Java Script, etc. Python is very advanced and powerful. We have used the python language for the backend development and the flask frameworks in the python. The Python is very advanced language and can be easily programmed . The security of the python is high compared to the traditional languages. The Postgresql is used for the database connection in this website development. Traditional languages used the MySQL database connection which are less secured. The MySQL database can be cracked by SQL injections. This problem is overcommed in the postgresql. The Flask is a light weighted web application framework in the Python. The Python is a advanced language using for the programming. The Python

language has less source line of code compared to the traditional languages, this makes the backend programming of the website easier and can be developed in the less time. Using the python programming language provides more security than the other traditional languages. The following are the screenshots of the working model of the application in frontend.

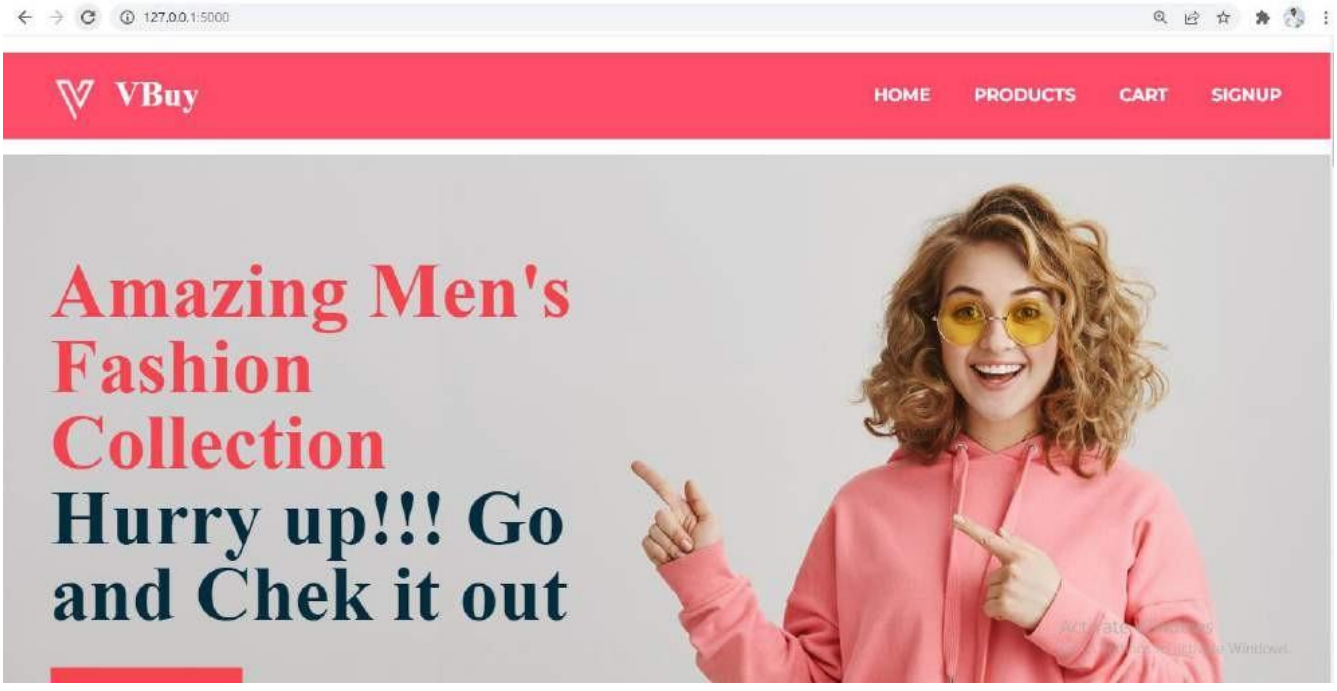

Fig 4.2.1: Home Page of proposed website

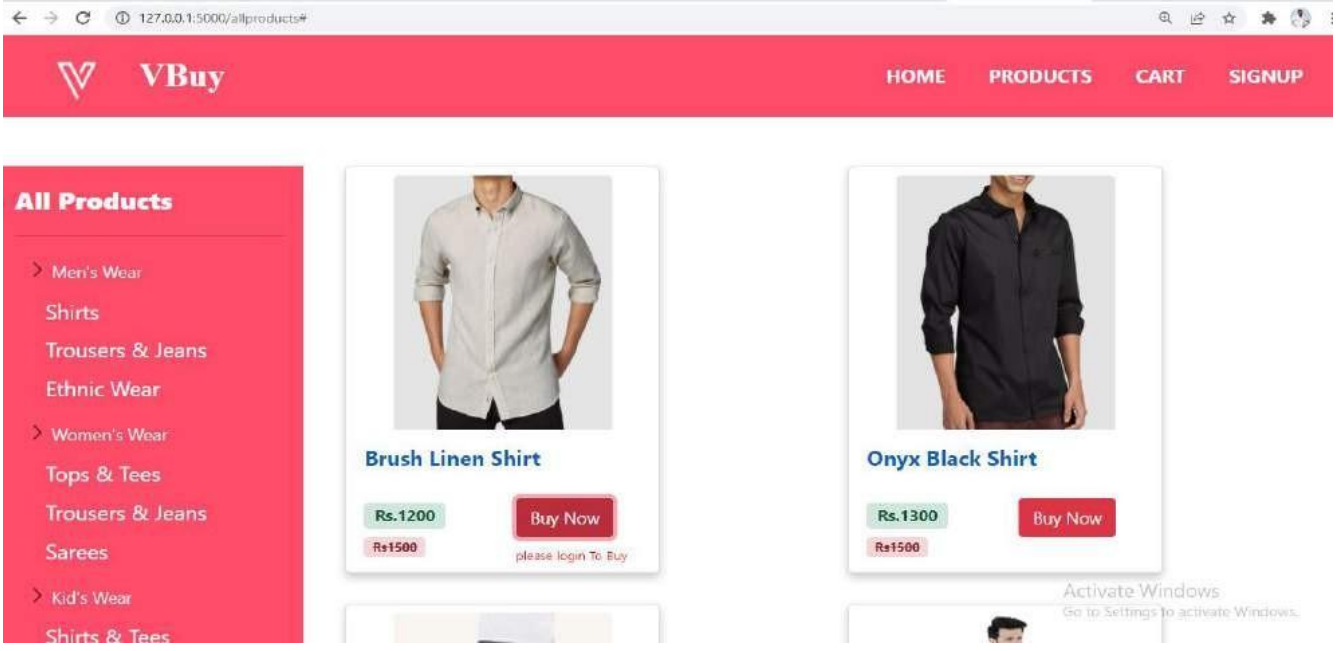

Fig 4.2.2: Products page of proposed website

5. Conclusion

The main aim of our project is to create an e-commerce website with the python language using the flask web framework. The flask is the new language used for web development which provides more secured cookies and with the lesser code compared to the traditional

languages. This website consists of chatbot, where users can use it as service. The chatbots gives quicker responses than the customer care service and will be available 24/7. The customers can buy the products by selecting them and making the payment in the online mode or cash on delivery method.

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