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# An E-Commerce Web Application Using Maven Software Libraries with a Limited Number of Co Labeling Strategies and Version Control DevOps Tools GitHub and Git

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**ABSTRACT:** According to recent research, the Maven ecosystem contains over 2 million library assets, which include source code, byte code, and documentation. Several websites offer configurable views of the ecosystem to help developers deal with this information. Views that categorize related libraries, for example, or views that display all libraries tagged with tags matching coarse-grained library features. The MVN Repository overlay website offers both category-based and tag-based views. Unfortunately, some libraries have not been categorized or have tags that are missing. Some preliminary Maven library classification efforts. Agile and DevOps have the potential to increase the ability of the IT industry to satisfy business objectives. Agile is evolutionary, allowing teams to properly prioritize work and features while also creating a prototype that increases the visibility of the software development process.

**KEYWORDS:-** Classification, Labeling Libraries, and the software ecosystem Agile; E-Commerce; DevOps Version control tools Git and GitHub.

## I.INTRODUCTION

A software ecosystem is made up of software products that coexist and evolve in the same environment. Maven<sup>1</sup>, NPM<sup>2</sup>, and CTAN<sup>3</sup> are just a few examples of co-evolving software libraries intended for reuse. The Maven ecosystem, which is built for JVM-based libraries, has around 2 million software packages. It can be challenging to discover an appropriate library for reuse in such a vast environment. To aid Maven ecosystem users, indexing solutions such as Sonatype and MVNRepository have been developed. You can search for libraries in Sonatype by GroupID, ArtifactID, or Version. You may also search for books on MVNRepository using library categories and tags. Collections groups together similar libraries from the same domain. In contrast, the coarse-grained tags on MVNRepository are intended to correspond with the coarse-grained tags.

as well as maybe one-of-a-kind library features The Apache library Commons-CLI<sup>5</sup> has been tagged with command-line, CLI, and parser. The library contains reusable code for reading command-line parameters. Unfortunately, not all of the MVNRepository-indexed libraries have been properly categorized and tagged. This is often the case for libraries that have just been added to the ecosystem or for underutilized libraries. This problem could be handled by utilizing an automated method to suggest domain categories or feature tags for a software library, making ecosystem search more convenient.

A web application is used in the java e-commerce shop project. A web commerce project based on Java that contains source code and a report. This e-commerce project makes use of JSP, servlet, MySQL, eclipse built on Maven, and MVC design. Let's have a look at an in-depth description of a Java E-commerce project.

E-Commerce is a browser application that runs on localhost on the Tomcat server. It includes all of the characteristics of an online shopping web application. Where a user can browse and buy a product. Users can search for and filter products to meet their specific requirements. The administrator is really important in the program. Admins can create new products and maintain track of all transactions and products in the database. The primary purpose of the java e-commerce project is to provide an internet platform for people to sell their goods.



But Cloud is a technology that creates a challenge for the person who is investigating and finding out the forensic evidences that may help in the forensic analysis as data stored on cloud can be accessed from anywhere and from any system and very little amount of traces are left behind.

## II.LITERATURE REVIEW

Customers that are actively engaged in the marketplace and have developed expertise in the marketplace as a whole rather than in individual product categories were referred to as "market mavens" (Feick and Price 1987). In reality, because they are active consumers, these people are knowledgeable about a wide range of products (Chelminski and Coulter 2007; Clark and Goldsmith 2005; Feick and Price 1987; Walsh, Gwinner, and Swanson 2004). They want to purchase and learn about products, with a particular interest in analyzing information in commercials (Feick and Price 1987, Richins 1983). Market mavens are of interest to Clark and Goldsmith (2005), Feick and Price (1987), Goldsmith et al (2006), and Williams and Slama (1995).

As a result of their role in consumer communication — as a gatherer and disseminator of market data — market mavens are appealing. The phrase "market maven" is attracting considerable debate. Finding individuals with market maven attributes across all product categories, according to some studies, would be difficult (Goldsmith et al 2006, Stokburger-Sauer and Hoyer 2009).

Git is a distributed version control system used to track changes to source code when developing software. It is intended to help programmers coordinate their work, but it may also be used to track changes in any set of files. Speed, data integrity, and support for dispersed, non-linear workflows are among its objectives. And GitHub is a web-based Git repository hosting service that provides all of Git's distributed revision control and source code management (SCM) functionalities while also introducing its own.

**Camilo Velázquez-Rodríguez, Coen De Rover MUTAMA: An Automated Multi-label Tagging Approach for Software Libraries on Maven[1].** In this study we evaluated 4088 libraries chosen at random from the maven software ecosystem mutama trains and installs five multi-label classifiers based on feature vectors obtained from the tagged libraries class and method names our findings suggest that ensemble-based classifiers perform the best in the end. For our method, a multi-label classifier is sufficient. There have been several multi-label classifiers proposed. The multi-label classifiers that scored best in a large survey and empirical comparison conducted by Madjarov et al. are discussed below. It should be noted that multi-label classifiers must be instantiated with a base classifier. That is, a multi-label classifier cannot produce predictions without the assistance of a base classifier. For example, the Support Vector Machine technique has been utilised as a basic classifier for multi-label classifiers. SMO (Sequential Minimal Optimization) can be used to accelerate the training of SVMs employed for this purpose.

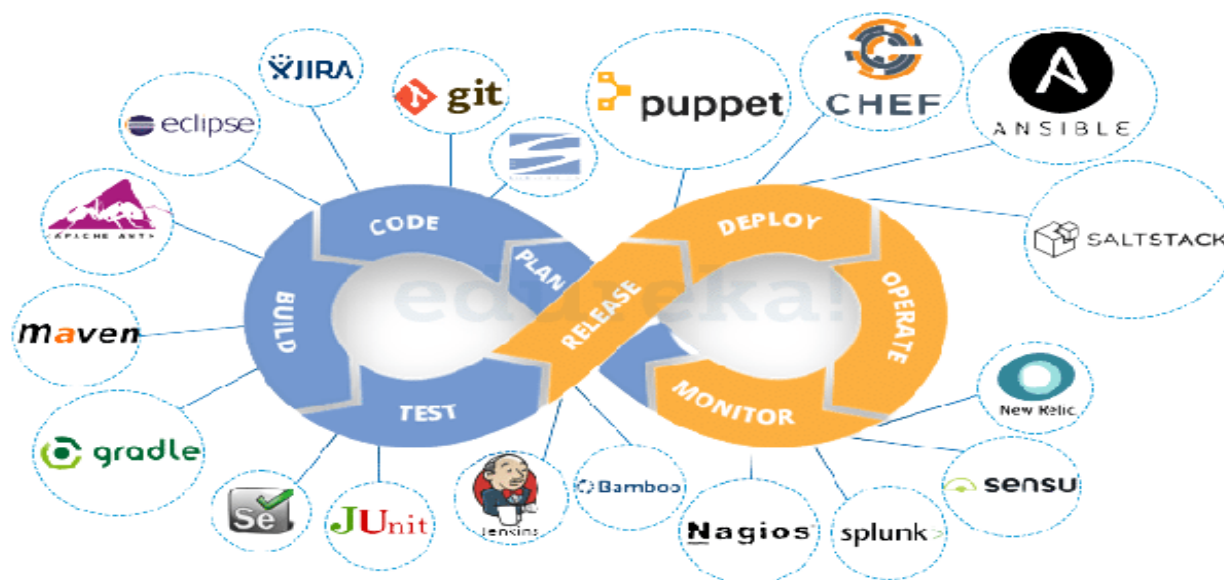
**Amine Benelallam, Nicolas Harrandy, César Soto Valero, Benoit Baudry, Olivier Barais The Maven Dependency Graph: a Temporal Graph-based Representation of Maven Central [2]** The Maven Central Repository is a fantastic source of information for understanding complicated architecture and evolution events in Java programmers. As of September 6, 2018, this repository had 2.8M artifacts (compiled pieces of code written in a JVM-based language), each of which was labelled with metadata such as the precise version, date of upload, and list of dependencies to other artifacts. The Maven Dependency Graph is designed to answer high-level research questions about artifact releases, evolution, and usage trends across time. It also provides a solid foundation for selecting relevant subsets of artifacts for assessing specific software engineering difficulties. The searches over the Maven Dependency Graph can range from pattern matching approaches, such as 'How often do libraries release new versions?' to advanced big data analysis, such as 'What are the most influential assets in the Maven Central?' or even prediction models utilizing machine learning.

**Prof. Monika Rokade<sup>1</sup> Mr. Pandurang R. Shinde<sup>2</sup> Prof. Sunil Khatal<sup>3</sup> An E-Commerce Web Application Using Maven Software Libraries with Just an Autonomous Number of Co Labeling Strategy: Overview[3]** In general, three types of datasets can be used to train classifiers. The first type of dataset is known as a binary dataset since there are just two classes to predict. This explains why classifiers trained on binary datasets are so effective. A multi-class dataset, on the other hand, is more difficult to anticipate because it contains more than two classes. On multi-class datasets, trained classifiers can still produce good results. In both types of datasets, classifiers only need to predict one class per dataset instance. Multi-label datasets are the third and most complex type of dataset since they use more than one class to forecast each data occurrence.



**.III.METHODOLOGY**

Development automation is more crucial in IT firms these days, thus in this project I considered and applied DevOps technique to create a small e-commerce web application using DevOps technologies MAVEN, GIT, and GitHub.



**Fig1.** Devops Architecture

DevOps is a method for improving software development work throughout the lifecycle. A DevOps process can be considered as an infinite loop: plan, code, build, test, release, deploy, run, monitor, and re-plan based on feedback.

**Git :-**

It has an unnamed repository as a default value, and developers should fill in the project name and description in this file. It is the default way for determining the name of a repository in Git. GitWeb takes advantage of it. GitHub and GitLab, on the other hand, don't seem to care. GitWeb is a web-based interface for managing git projects. It can be used to build a web application with search, RSS feeds, and other capabilities. It's a native competitor to third-party services like GitHub.

**GitHub:-**

on the web-based architecture of GitHub It makes sharing and collaborating on projects with anybody, at any time, a breeze. GitHub allows more users to engage in open-source projects by providing a secure way to modify files in another user's repository. Microsoft bought Github, a DevOps solution with many of the same features, in 2018. So, what's up with that? Microsoft purchased GitHub in order to boost its focus on open-source development and to expand the reach of its developer tools to new audiences, and now they have two mature and popular DevOps solutions



```

MINGW64~/ME_Project/project/mycart
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git status -s
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git add --all
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git commit -m"working checkout page and validation proper"
[master 3012216219] working checkout page and validation proper
nothing to commit, working tree clean
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git pull origin master
From https://github.com/pandurangshinde190/project
* branch                master       -> FETCH_HEAD
Already up to date.
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git push origin master
Everything up-to-date
pandurang@DESKTOP-3640FFE MINGW64 ~/ME_Project/project/mycart (master)
$ git status -s
Refresh index: 100% (4838/4838), done.
..../.metadata/.log
..../.metadata/.plugins/org.eclipse.core.resources/.projects/.org.eclipse.egit.core.cmp/.markers.snap
..../.metadata/.plugins/org.eclipse.core.resources/.projects/.org.eclipse.egit.core.cmp/.syncinfo.snap
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..../.metadata/.plugins/org.eclipse.wst.server.core/tmp/validation/dep.index
src/main/java/com/learn/helper/Helper.java
src/main/webapp/admin.jsp
target/classes/com/learn/helper/Helper.class
..../.metadata/.plugins/org.eclipse.core.resources/.history/11/7045060962cc001c1402d27d2dcd2485
..../.metadata/.plugins/org.eclipse.core.resources/.history/15/30bd43562cc001c1402d27d2dcd2485
..../.metadata/.plugins/org.eclipse.core.resources/.history/24/
    
```

Fig2. Git Version Control Tools Command

DevOps is a collaborative approach to software development in which development, IT operations, and security teams work together to build, test, and provide continuous feedback throughout the software development lifecycle (SDLC) Git repositories can be hosted by users.

**Maven:-**

Maven is a build automation tool that is specialised to Java. Maven means "information gatherer" in Yiddish. Maven focuses on two aspects of software development: the first is how software is built, and the second is how software is reliant. Maven is a popular open-source project management tool created by the Apache Group that allows you to build, publish, and deploy several projects at once. The tool can be used to construct and document a lifecycle framework by developers. Maven's purpose is to give a complete, maintainable, reusable, and simple project model to developers. A variety of tools and plug-ins are available to interact with the declarative model.

Maven includes a slew of fantastic and useful features, which is why it's so popular. Here are a few of Maven's most significant features: A vast, ever-expanding repository of user libraries The ability to quickly and efficiently construct projects while adhering to best practises Management of dependencies and automatic updates Versions prior to this one are backwards compatible.

Honesty and strong reporting on errors All projects use the same version thanks to automatic parent versioning. Plug-ins created in scripting languages like Java can easily be added.

**The following processes require the build tool:**

1. Generation of source code
2. Generated documentation from source code
3. Compilation of source code
4. The compiled code is packaged in JAR files.
5. Installing packaged code locally, on a server, or in a central repository



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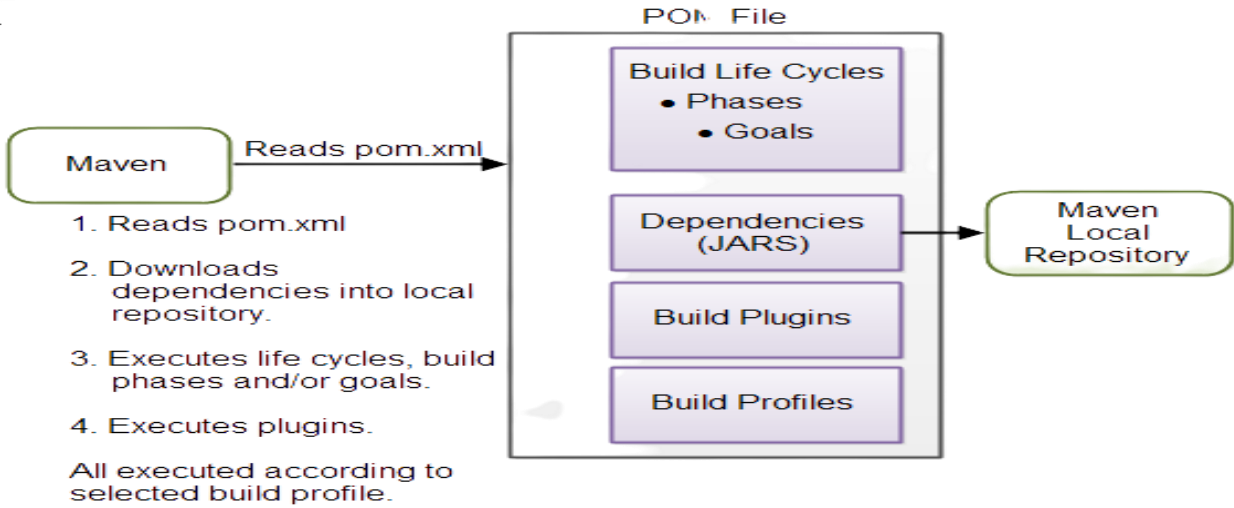


Fig3.Maven Architecture

The Project Object Model (POM), which is an XML file that holds all project and configuration information, is a huge advantage of Maven. The project's description, versioning information, and configuration management information are all contained in the POM.Log Model:

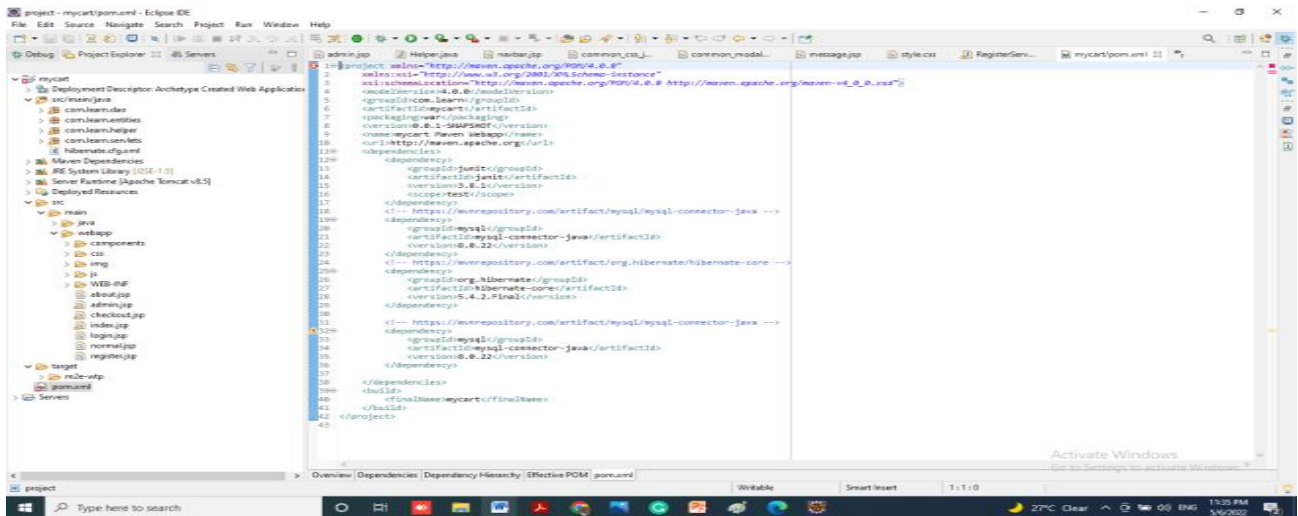


Fig4. POM.xml file Our project

The XML file is located in the project's home directory. When you launch a task, Maven looks for the POM in the current directory.

#### IV. RESULT ANALYSIS

The goal of this project is to develop a simple e-commerce Java web application. It's straightforward to build projects and design web apps using DevOps Software Maven, as well as Git and GitHub for version control. Maven employs just a pom.xml file to inject dependencies and automatically download libraries, so developers don't have to download jar files or setup paths manually.

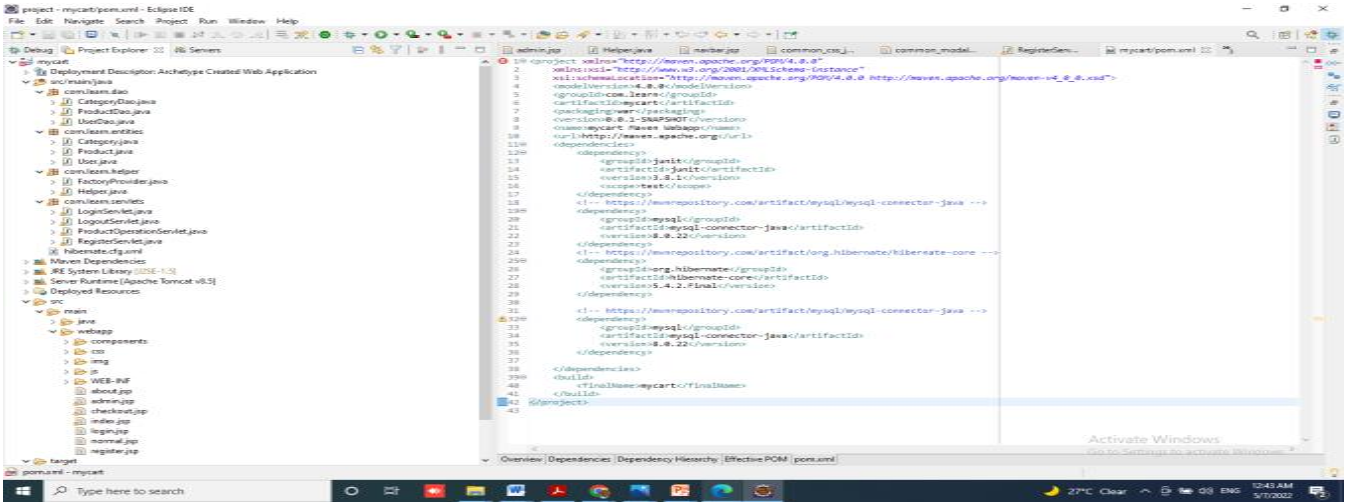


Fig5. Project Structure

First, in the Eclipse IDE, create a project structure and a Maven project. after that create a hibernate.cfg.xml file to create and connect to the Mysql database by using java code.

MySQL is the most popular database management system for Java online applications due to its speed, stability, and variety. All of the data generated by this application is stored in the MySQL database system. Entity Relationship Diagram of the Application Database.

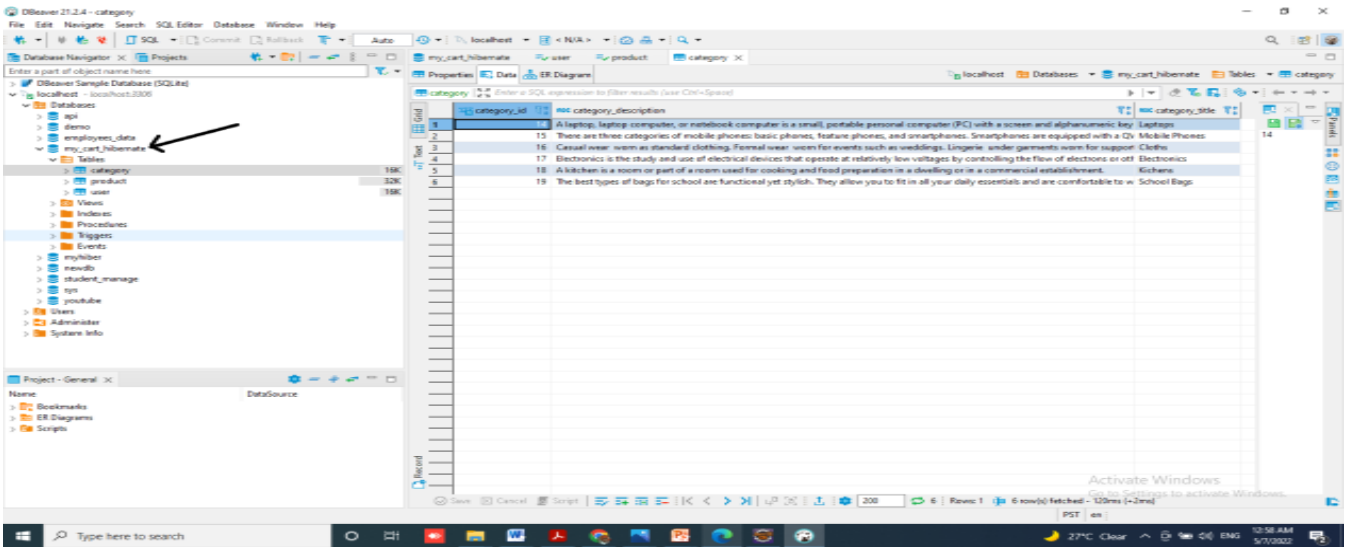


Fig6.Database Structure

**Home Page:-**

The home page of the app is depicted. It's the app's home page, where you can see all of the products that have a quantity larger than zero. Customers and visitors to the e-commerce website can also search by category for products. Customers can add items to their shopping cart on this page, and there's a link to see what they've added. Also included is a link.

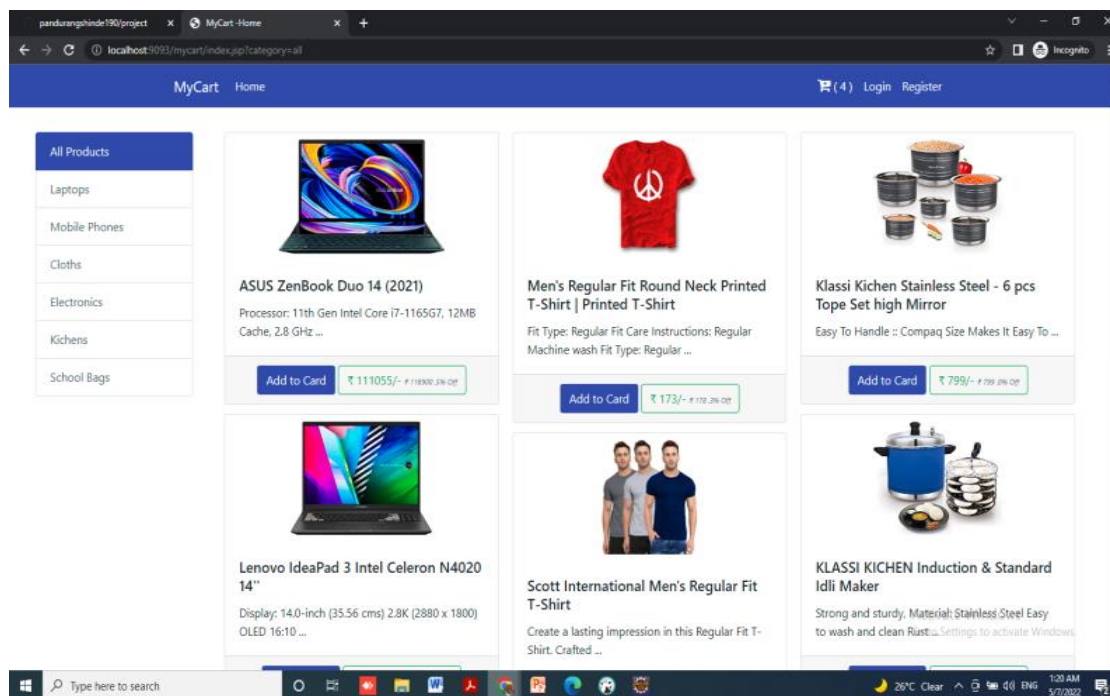


Fig7.Home page

## V.CONCLUSION AND FUTURE WORK

The purpose of this thesis is to develop a simple e-commerce Java web application. It's straightforward to build projects and design web apps using DevOps Software Maven, as well as Git and GitHub for version control. Maven employs just a pom.xml file to inject dependencies and automatically download libraries, so developers don't have to download jar files or setup paths manually.

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