**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**

**“JNANA SANGAMA”, BELAGAVI – 590018.**

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**INTERNSHIP REPORT** **ON**

# **“E-COMMERCE WEB DEVELOPMENT USING DJANGO”**

# SUBMITTED IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**SUBMITTED BY**

**SYAMILI S N (1AH18CS101)**

**UNDER THE GUIDANCE OF**

**Ms. LAKSHMI PRIYA P**

**Assistant Professor, CSE Department, ACSCE.**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

## **ACS COLLEGE OF ENGINEERING**

## **KAMBIPURA, MYSORE ROAD, BENGALURU – 560074.**

**2021-2022**

**ACS COLLEGE OF ENGINEERING**

**KAMBIPURA, MYSORE ROAD, BENGALURU – 560074.**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

## **CERTIFICATE**

This is to certify that the internship entitled **“E-COMMERCE WEB DEVELOPMENT USING DJANGO”** carried out by, **SYAMILI S N (1AH18CS101),** bonafide student of **ACS COLLEGE OF ENGINEERING, BENGALURU,** in partial fulfilment for the award of degree in **BACHELOR OF COMPUTER SCIENCE AND ENGINEERING,** **Visvesvaraya Technological University, Belagavi** during the year **2021-2022.** It is certified that all corrections/ suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The internship report has been approved as it satisfies the academic requirements in respect of internship prescribed for the said degree.

|  |  |  |
| --- | --- | --- |
| **Guide Signature:** | **Co-ordinator Signature:** | **HOD Signature:** |
| Ms. Lakshmi Priya P, Assistant professor, CSE, ACSCE, Bengaluru. | Ms. Ganga B M, Assistant professor, CSE, ACSCE, Bengaluru. | Dr. V Mareeswari, Associate professor, CSE, ACSCE, Bengaluru. |

**Name of the Examiners Signature with Date**

**1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

INTERNSHIP CERTIFICATE

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**SYAMILI S N (1AH18CS101)**

abstract

The scope of this internship includes research and implementation of an E-commerce website using the python-based web framework called Django. The functionality of the website includes the creation of user accounts, viewing and adding products to the shopping e-cart. The website is not only limited to shopping but also includes a vendors feature where a customer can create his very own vendors account using which he can add his own products, which he is interested in selling on the FastEcommerce website. There is also the administrator site where the admin can monitor the products which are added to the website and is solely responsible for the modification and updating the database and migrations. Finally, after placing the order the consumer is able to checkout from the e-cart and make his payments by entering valid credit card information in a secure portal.

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ACRONYM TABLE

|  |  |
| --- | --- |
| **ABBREVIATION** | **FULL FORM** |
| PTC | Prabkrishna Techs Company |
| IT | Information technology |
| HTML | Hypertext Markup Language |
| Email | Electronic Mail |
| URL | Uniform Resource Relocator |
| ORM | Object-Relational Mapper |
| API | Application Programming Interface |
| CRM | Customer-Relationship Management |
| SQL | Structured Query Language |
| RAM | Random Access Memory |
| UI | User-Interface |
| CMS | Content Management System |
| MVC | Model View Controller Pattern |

CHAPTER 1

introduction

* 1. ABOUT THE COMPANY

Prabkrishna Techs Company (PTC) is a full-cycle IT solution provider specialising in bespoke site design, web development, mobile application development, SEO, hosting, and support. They provide progressive end-to-end solutions by combining substantial business domain experience, technological skills through an understanding of the current market trends, and a quality-driven delivery strategy.

They have a team of competent, professional product masters and design and development gurus to create high-quality, engaging, and constructive digital goods. Its most recent project is an all-encompassing E-commerce web development site that sells the most up-to-date stylish apparel, food, technology, and accessories at a fair price all over the world.



* 1. INTERN’S ROLE AND RESPONSIBILITIES

1. Working on the implementation of FastEcommerce.co, an online E-commerce website for the group company.

2. Conducting research about Django and its functionalities.

3. Creating workflow and learning about the Django Framework feature.

4. Creating a structured logic and schema for the website database.

5. Brainstorm new ideas when required.

6. Working on cross-linking functions.

7. Working on other IT-related responsibilities.

8. Having ample amount of web development skills and capable of building a functional web development site.

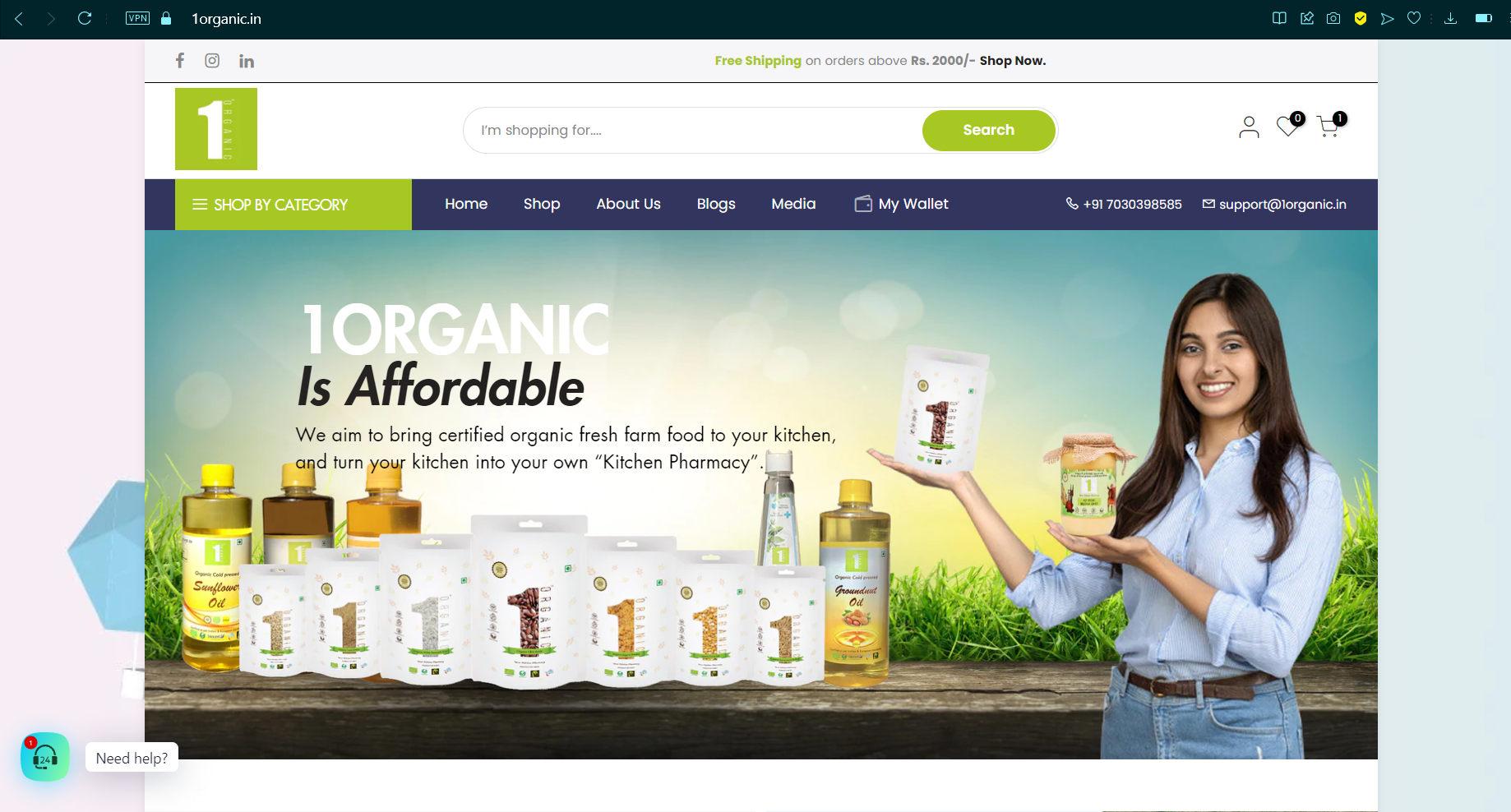
1.3 SCOPE OF THE INTERNSHIP

The scope of the internship includes researching the Django Web Development features as well as understanding the working of the local server to view its features in order to utilize it to enhance the functionality of the company’s e-commerce website [**https://FastEcommerce.co**](https://FastEcommerce.co)**.** It is a live website which accepts orders internationally for authentic organic foods, facial masks, cruelty-free clothing and jewellery.

There were many problems that had to be faced before the deployment of the website as per the client’s requirements. Many APIs are required to be connected in order to finally make the entire site automated along with an assistive chatbot, which is outside of the scope of the role of this internship.

As a first-time intern, I was trained for a period of two months. Graciously and forgivingly, taught how to use Django and various plugins that provided additional support to the site without coding for each feature such as floating cards for each category of items on the website.

As an intern employee, I was given access to the PTC organisation’s Customer Relationship Management (CRM), where the day-to-day tasks were posted. I was given the task of posting blogs on their main website [**https://basillia.in**](https://basillia.in). And as I was starting to get familiar with the way the website was built, I was given more complex tasks of setting up different views and functionalities of the FastEcommerce.co website.

**Fig 1.3: Live website hosted by PTC: 1organic.in**

CHAPTER 2

TECHNOLOGY and Methodology

2.1 TECHNOLOGY USED: DJANGO-PYTHON WEB FRAMEWORK

Django is a python-base, free, open-source web application framework written in Python. A web application framework is a collection of modules that make development easier. They are grouped together which allows us to create applications or websites from an existing source instead of creating them from scratch.

Using the Django framework an individual can create simple yet sophisticated web applications. Which can include advanced functionality like authentication support, management and admin panels, comment boxes, contact forms as well as support for uploading files.

For developing our FastEcommerce.co website we specifically went for Django because of its ease of implementation and time-saving pre-built modules which we were able to implement.

2.2 ADVANTAGES OF USING DJANGO

Originally, while developing a web application, every component is required to be coded manually. But with the genesis of these web frameworks, it is possible to instead, use these pre-built components and just configure them to match the site settings.

Django has a big collection of modules which can be implemented for the development of web applications. For example, the Django module comes with pre-built classes which take care of configuration files.

Other advantages include being easy to comprehend and use by new web developers, it has sufficient clarity and readability. It also has a versatile design which can be integrated with other software through APIs.

The most important advantage is that it is highly secure. It ensures that the developers do not commit any mistakes related to the security of the project, which includes SQL injection, cross-site request forgery, cross-site scripting and clickjacking.

It is highly scalable which ensures that the demand brought by the heaviest of web traffic is satisfied. It has efficient content management as well as scientific computing power.

2.3 LIMITATIONS OF USING DJANGO

There are certain limitations to what Django can do. Some of them include that the user’s routing pattern must specify its URL. The framework is too monolithic, that is even for smaller apps we must install the whole Django package which can be tedious.

Every part is based on Django Object-Relational Mapper which enables us to interact with the database, similar to how we interact with SQL. All components need to be implemented error-free in order to see the required result on the browser.

And most important of all, the developer must be knowledgeable in the python language as well as understand how to integrate various parts of the program.

2.4 METHODOLOGY

2.4.1 Creating a Virtual Environment

A virtual environment is a place on the computer system where packages can be installed and isolated from all other Python packages. For the scope of this project, I have used the python module **venv** tocreate a virtual environment called venv. The virtual environment needs to be activated in order to start the project.

Command to create a virtual environment: $ python -m venv venv

Command to activate the virtual environment: $ venv\Scripts\activate

2.4.2 Installing Django

The installation of Django can be done using a single pip command: $ pip install django

2.4.3 Starting the Django Project

To start the project the following command needs to be typed on the command prompt:

$ django-admin startproject simple­\_multivendor\_site .

2.4.4 Creating the first web app

Core is the first web app created which hosts the home and contact page URLs. The command to create the core app is: $ python manage.py startapp core

2.4.5 Creating the superuser/ admin

The superuser is the site’s administrator who has all the permissions to add and modify the application and it can be created using the simple command:

$ python manage.py createsuperuser

And the user is then prompted to enter his name, email, and password.

2.4.6 Run Project

To run the project the following command must be used in the command prompt. And the web application will be hosted on the 8000 port at the URL <http://localhost:8000>.

$ python manage.py runserver

CHAPTER 3

SYSTEM REQUIREMENTS AND SPECIFICATIONS

3.1 FUNCTIONAL REQUIREMENTS

* Description: The user should be able to log in as a vendor, add products to the site as well as add products to the cart and have his payments made in a secure way.
* Input: The user can provide product images, descriptions and product prices.
* Process: The user data is stored in the SQLite database which updates the total number of products displayed on the website. And once the user adds items to the cart, he can checkout.
* Output: The added products are stored in the database and displayed on the browser.

3.2 NON-FUNCTIONAL REQUIREMENTS

3.2.1 Hardware Specifications

|  |  |
| --- | --- |
| Processor | : Intel Core i3-2340UE |
| Processor Speed | : 1.3 GHz |
| RAM | : 1 GB |
| Memory | : 4 GB |
| GPU | : AMD Radeon R5 M230 |

3.2.2 Software Specifications

|  |  |
| --- | --- |
| Operating System | : Windows7, 10, 11 |
| Database | : SQLite |
| Scripting Language | : Python |
| Code Editor | : Visual Studio Code Editor |

CHAPTER 4

SYSTEM DESIGN

4.1 ER-DIAGRAM

The main database consists of three categories Products, Orders and Vendors. When the customer logs into the website and starts browsing the page, many products are presented on-screen. Since the number of products might seem overwhelming, he might start by first choosing the category.

The four main categories included in FastEcommerce.co are food, electronics, clothing and jewellery. If the consumer is interested in food then he might click on that category. Now if he wants to buy brown rice then, he will select brown rice as the product.

Since there is a one-to-many dependency between category and product where one category is linked to many products, the product, its price along with its category is added to the invoice.

Similarly, the consumers and orders share a many-to-many relationship, each customer might have one more orders from the website. Each item has an id and each order which consists of a set of items also has an id, which is associated with each consumer.

Diagram

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Fig 4.1: ER diagram of FastEcommerce Website Database

4.2 DATABASE SCHEMA MODEL

**PRODUCT MODELS**

Category

|  |  |  |
| --- | --- | --- |
| Title | Slug | Ordering |
| Char field | Slug field | Integer field |

Product

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Category | Vendor | Title | Slug | Description | Price | Added-date | Image | thumbnail |
| Foreign Key | Foreign Key | Char field | Slug field | Text field | Decimal field | Datetime field | Image field | Image field |

**ORDER MODELS**

Order

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| First-name | Last-name | Email | Address | Zipcode | Place | Phone | Created-at | Paid-amount | Vendors |
| Char field | Char field | Char field | Char field | Char field | Char field | Char field | Datetime field | Decimal field | Many-to-many field |

OrderItem

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Order | Product | Vendor | Vendor\_paid | Price | Quantity |
| Foreign key | Foreign key | Foreign key | Boolean field | Decimal field | Integer field |

**VENDOR MODELS**

Vendor

|  |  |  |
| --- | --- | --- |
| Name | Created\_at | Created\_by |
| Char field | Datetime field | One-to-one field |

4.3 CLASS DIAGRAM

Diagram

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**Fig 4.2: UML diagram of FastEcommerce Website Database**

4.4 DATABASE DESIGN

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**Fig 4.4.1 Django Administration Site**

Graphical user interface, text, application

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**Fig 4.4.2: Django Administration Site: Vendors Table**

Graphical user interface, application

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**Fig 4.4.3: Django Administration Site Orders: Orders Table**

**Graphical user interface, application

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**Fig 4.4.4: Django Administration Site Orders: Order Items Table**

**Graphical user interface

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**Fig 4.4.5: Django Administration Site Product: Products Table**

**Graphical user interface, application

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**Fig 4.4.6: Django Administration Site Product: Categories Table**

CHAPTER 5

IMPLEMENTATION

This section deals with the implementation of the system designed in the previous section. Implementation is the process of converting the design to code. The entities identified from the design are to be implemented considering the association between them and how they communicate with each other.

5.1 MODULE IMPLEMENTATION

5.1.1 Product

The Product Module consists of the Product class which has two tables. One is the Category table which is the list of all products set up for sale on the website. The second one is the Product table which is a combination of all products alongside their category.

It consists of product id, category, vendor, title, product description, date added and price along with image/ thumbnail.

5.1.2 Order

The Order Module consists of the Order class which has two tables. One is the Order table which is a list of all orders booked by new customers on the website. The second is the Order item table which is a combination of orders and the products selected per order.

It consists of the consumer’s first name, last name, email, address, zip code, place, phone, created at, the amount paid and vendor.

5.1.3 Vendor

The Vendor Module consists of the Vendor class which has one table. The table name is Vendor and it contains information such as vendor name, date of creation as well as vendor details.

5.2 FUNCTIONS AND VIEWS

5.2.1 Product\models.py

class Category(models.Model):

title = models.CharField(max\_length=50)

slug = models.SlugField(max\_length=55)

ordering = models.IntegerField(default=0)

class Meta:

ordering = ['ordering']

def \_\_str\_\_(self):

return self.title

class Product(models.Model):

category = models.ForeignKey(Category, related\_name='products', on\_delete=models.CASCADE)

vendor = models.ForeignKey(Vendor, related\_name="products", on\_delete=models.CASCADE)

title = models.CharField(max\_length=50)

slug = models.SlugField(max\_length=55)

description = models.TextField(blank=True, null=True)

price = models.DecimalField(max\_digits=6, decimal\_places=2)

added\_date = models.DateTimeField(auto\_now\_add=True)

image = models.ImageField(upload\_to='uploads/', blank=True, null=True)

thumbnail = models.ImageField(upload\_to='uploads/', blank=True, null=True) # Change uploads to thumbnails

class Meta:

ordering = ['-added\_date']

def \_\_str\_\_(self):

return self.title

def get\_thumbnail(self):

if self.thumbnail:

return self.thumbnail.url

else:

if self.image:

self.thumbnail = self.make\_thumbnail(self.image)

self.save()

return self.thumbnail.url

else:

# Default Image

return 'https://via.placeholder.com/240x180.jpg'

# Generating Thumbnail - Thumbnail is created when get\_thumbnail is called

def make\_thumbnail(self, image, size=(300, 200)):

img = Image.open(image)

img.convert('RGB')

img.thumbnail(size)

thumb\_io = BytesIO()

img.save(thumb\_io, 'JPEG', quality=85)

thumbnail = File(thumb\_io, name=image.name)

return thumbnail

5.2.2 Order\models.py

class Order(models.Model):

first\_name = models.CharField(max\_length=100)

last\_name = models.CharField(max\_length=100)

email = models.CharField(max\_length=100)

address = models.CharField(max\_length=100)

zipcode = models.CharField(max\_length=100)

place = models.CharField(max\_length=100)

phone = models.CharField(max\_length=100)

created\_at = models.DateTimeField(auto\_now\_add=True)

paid\_amount = models.DecimalField(max\_digits=8, decimal\_places=2)

vendors = models.ManyToManyField(Vendor, related\_name="orders")

class Meta:

ordering = ['-created\_at']

def \_\_str\_\_(self):

return self.first\_name

class OrderItem(models.Model):

order = models.ForeignKey(Order, related\_name="items", on\_delete=models.CASCADE)

product = models.ForeignKey(Product, related\_name="items", on\_delete=models.CASCADE)

vendor = models.ForeignKey(Vendor, related\_name="items", on\_delete=models.CASCADE)

vendor\_paid = models.BooleanField(default=False)

price = models.DecimalField(max\_digits=8, decimal\_places=2)

quantity = models.IntegerField(default=1)

def \_\_str\_\_(self):

return str(self.id)

def get\_total\_price(self):

return self.price \* self.quantity

5.2.3 Vendor\models.py

class Vendor(models.Model):

name = models.CharField(max\_length=255)

created\_at = models.DateTimeField(auto\_now\_add=True)

created\_by = models.OneToOneField(User, related\_name='vendor', on\_delete=models.CASCADE)

class Meta:

ordering = ['name']

def \_\_str\_\_(self):

return self.name

def get\_balance(self):

items = self.items.filter(vendor\_paid=False, order\_\_vendors\_\_in=[self.id])

return sum((item.product.price \* item.quantity) for item in items)

def get\_paid\_amount(self):

items = self.items.filter(vendor\_paid=True, order\_\_vendors\_\_in=[self.id])

return sum((item.product.price \* item.quantity) for item in items)

5.2.4 Product\views.py

def product(request, category\_slug, product\_slug):

# Create instance of Cart class

cart = Cart(request)

product = get\_object\_or\_404(Product, category\_\_slug=category\_slug, slug=product\_slug)

# Check whether the AddToCart button is clicked or not

if request.method == 'POST':

form = AddToCartForm(request.POST)

if form.is\_valid():

quantity = form.cleaned\_data['quantity']

cart.add(product\_id=product.id, quantity=quantity, update\_quantity=False)

messages.success(request, "The product was added to the cart.")

return redirect('product:product', category\_slug=category\_slug, product\_slug=product\_slug)

else:

form = AddToCartForm()

similar\_products = list(product.category.products.exclude(id=product.id))

# If more than 4 similar products, then get 4 random products

if len(similar\_products) >= 4:

similar\_products = random.sample(similar\_products, 4)

context = {

'product': product,

'similar\_products': similar\_products,

'form': form,

}

return render(request, 'product/product.html', context)

def category(request, category\_slug):

category = get\_object\_or\_404(Category, slug=category\_slug)

return render(request,'product/category.html', {'category': category})

def search(request):

query = request.GET.get('query', '') # second is default parameter which is empty

products = Product.objects.filter(Q(title\_\_icontains=query) | Q(description\_\_icontains=query))

return render(request, 'product/search.html', {'products':products, 'query': query})

5.2.5 Vendor\views.py

def vendors(request):

return render(request, 'vendor/vendors.html')

def become\_vendor(request):

if request.method == 'POST':

form = UserCreationForm(request.POST)

if form.is\_valid():

user = form.save()

login(request, user)

vendor = Vendor.objects.create(name=user.username, created\_by=user)

return redirect('core:home')

else:

form = UserCreationForm()

return render(request, 'vendor/become\_vendor.html', {'form': form})

@login\_required

def vendor\_admin(request):

vendor = request.user.vendor

products = vendor.products.all()

orders = vendor.orders.all()

for order in orders:

order.vendor\_amount = 0

order.vendor\_paid\_amount = 0

order.fully\_paid = True

for item in order.items.all():

if item.vendor == request.user.vendor:

if item.vendor\_paid:

order.vendor\_paid\_amount += item.get\_total\_price()

else:

order.vendor\_amount += item.get\_total\_price()

order.fully\_paid = False

return render(request, 'vendor/vendor\_admin.html', {'vendor': vendor, 'products': products, 'orders': orders})

@login\_required

def add\_product(request):

if request.method == 'POST':

form = ProductForm(request.POST, request.FILES)

if form.is\_valid():

product = form.save(commit=False) # Because we have not given vendor yet

product.vendor = request.user.vendor

product.slug = slugify(product.title)

product.save() #finally save

return redirect('vendor:vendor-admin')

else:

form = ProductForm

return render(request, 'vendor/add\_product.html', {'form': form})

@login\_required

def edit\_vendor(request):

vendor = request.user.vendor

if request.method == 'POST':

name = request.POST.get('name', '')

email = request.POST.get('email', '')

if name:

vendor.created\_by.email = email

vendor.created\_by.save()

vendor.name = name

vendor.save

return redirect('vendor:vendor-admin')

return render(request, 'vendor/edit\_vendor.html', {'vendor': vendor})

def vendors(request):

vendors = Vendor.objects.all()

return render(request, 'vendor/vendors.html', {'vendors': vendors})

def vendor(request, vendor\_id):

vendor = get\_object\_or\_404(Vendor, pk=vendor\_id)

return render(request, 'vendor/vendor.html', {'vendor': vendor})

CHAPTER 6

RESULTSGraphical user interface, application, website

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**Fig 6.1: FastEcommerce Home Page**

Graphical user interface, website

Description automatically generated

**Fig 6.2: FastEcommerce Electronics Page**

Graphical user interface, website

Description automatically generated

**Fig 6.3: FastEcommerce Shirt Page**

Graphical user interface

Description automatically generated

**Fig 6.4: FastEcommerce Jewelry Page**

Graphical user interface

Description automatically generated

**Fig 6.5: FastEcommerce Food Page**

Graphical user interface, application

Description automatically generated

**Fig 6.6: FastEcommerce Search Page**

Table

Description automatically generated with medium confidence

**Fig 6.7: FastEcommerce Cart Page Consumer Details**

A picture containing timeline

Description automatically generated**Fig 6.8: FastEcommerce Footer Details**

CONCLUSION

With the rise of a new scenario post-pandemic, many start-ups and online businesses have emerged, bringing along with them a new requirement for online websites where the consumer can order products online, on their mobile or computers.

This makes it easier for the vendors to manage their inventory as well as handle shipping safe and securely. The key to successfully attracting consumers is a well-built, visually appealing website, with fully functional features and easy to comprehend user interface.

The user can securely login onto the website and can order products or if he wishes he can be a vendor and sells his own products online.

The Django web development framework has made the process of creating web applications much easier than ever. The convince of just being able to install all the components pre-built which gives it the template effect is greatly efficient and time-saving. What used to be a team’s work is now just at the convenience of a single web developer.

The internship has thought me how to handle and work in a professional web development setting. I was able to attend the company meetings which discussed requirements and status updates periodically. This gave me insight into what kind of company PTC is and the concept of software engineering was refreshing to see live.

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