# imVEnv

## install

pip install virtualenv

## Create a virtual environment

virtualenv env

## activate

# Install Flask

pip intall flask

Check version flask –version

# First pgm

Create python file “market.py”

Check website

<https://flask.palletsprojects.com/en/2.1.x/quickstart/#a-minimal-application>

clear terminal with “clear” and add following commands

1. set FLASK\_APP=market.py
2. $env:FLASK\_APP = "market.py"
3. flask run

Text

Description automatically generated

127.0.0.1.5000 is home address

Should see the web page with hello world

Hit Ctrl+C to quit

Type flask run to run program again.

## Turn on debug mode to make easy

$env:FLASK\_ENV = "development"

Now no need to run and restart web server. Change python and refresh page.

# Adding another page

Add following code

@app.route("/about")  
def about\_page():  
 return "<h1>About page</h1>"

In browse add “/about”

Graphical user interface, text, application

Description automatically generated

# Cuastom about jpages

Change code as following

@app.route("/about/<username>")  
def about\_page(username):  
 return f"<h1>This is the about page of {username}</h1>"

Add about/Ranju to get the about page of user

Graphical user interface, text, application, Word

Description automatically generated

# Styling and templates

Create new directory called templates (name is important)

Graphical user interface, text, application

Description automatically generated

Create an html file in the template folder and call it home

Add h1 tag in body as following

<h1>Home Page</h1>

In market.py Import render template as following

from flask import Flask, render\_template

change market.py as following

from flask import Flask, render\_template  
  
app = Flask(\_\_name\_\_)  
  
@app.route("/")  
def home\_page():  
 return render\_template("home.html")

It will run the home page.

# Styling with bootstrap

Copy code from the following page

<https://getbootstrap.com/docs/4.5/getting-started/introduction/>

copy code to html file

Web page should be updated

Add @app.route(“/home”) so that when adderess has /home it takes to home jpage

@app.route("/")  
@app.route("/home")  
def home\_page():  
 return render\_template("home.html")

Copy following code at start in body tag

<nav class = "navbar navbar-expand-md navbar-dark bg-dark">  
 <a class = "navbar-brand" href="#">Flask Market</a>  
 <button class = "navbar-toggler" type="button" data-toggle="collapse" data-target = "#navbarNav"></button>  
 <div class = "collapse navbar-collapse" id = "navbarNav">  
  
 </div>  
</nav>

Add following code inside the div tag of nav bar

<ul class="navbar-nav mr-auto">  
 <li class="nav-item active">  
 <a class="nav-link" href="#">Home <span class="sr-only">(current)</span></a>  
 </li>  
 <li class="nav-item">  
 <a class="nav-link" href="#">Market</a>  
 </li>

</ul>

<ul class="navbar-nav">  
 <li class="nav-item">  
 <a class="nav-link" href="#">Login</a>  
 </li>  
 <li class="nav-item">  
 <a class="nav-link" href="#">Register</a>  
 </li>  
</ul>

We should get a nav bar on top

Graphical user interface, text, application

Description automatically generated

Below body tag add the following for grey bg

</body>  
 <style>  
 body {  
 background-color: #212121;  
 color: white;  
 }  
 </style>  
</html>

# Sending date to template

Create new template as following in py file

@app.route("/market")  
def market\_page():  
 return render\_template("market.html")

Create new html file called market in template folder

Graphical user interface, text, application, chat or text message

Description automatically generated

For ease copy code from home.html

Change title and h1 appropriately

In address bar <http://127.0.0.1:5000/market> add this to get new page.

You should get new jpage

Add phone to new route as following

@app.route("/market")  
def market\_page():  
 return render\_template("market.html", item\_name="Phone")

To access the new item in webpage add jinja code

In market.html add the following under list and h1

Text

Description automatically generated

Refresh market page to see the item.

A screenshot of a computer

Description automatically generated

Add following dictionary to the market route. Change return item\_name to items as following

@app.route("/market")  
def market\_page():  
 items = [  
 {'id': 1, 'name': 'Phone', 'barcode': '893212299897', 'price': 500},  
 {'id': 2, 'name': 'Laptop', 'barcode': '123985473165', 'price': 900},  
 {'id': 3, 'name': 'Keyboard', 'barcode': '231985128446', 'price': 150}  
 ]  
 return render\_template("market.html", items=items)

Change item name in market.html as following

Text

Description automatically generated

In market.html it looks like this

Text

Description automatically generated

We will add them in to a bootstrap table

Add the following code to market.html replacing <p> {{ items }} </p>

<table class="table table-hover table-dark">  
 <thead>  
 <tr>  
 <!-- Your Columns HERE -->  
 <th scope="col">ID</th>  
 </tr>  
 </thead>  
 <tbody>  
 <!-- Your rows inside the table HERE: -->  
 <tr>  
 <td>Value for Id</td>  
 </tr>  
 </tbody>  
</table>

In table head add the following

<th scope="col">ID</th>  
<th scope="col">Name</th>  
<th scope="col">Barcode</th>  
<th scope="col">Price</th>

In table body add the following

<td>Value for Id</td>  
<td>Value for Name</td>  
<td>Value for Barecode</td>  
<td>Value for Price</td>

When you refresh you should get as following

A screenshot of a computer

Description automatically generated

To display row in loop change ins side <tbody> as following and actual values

<tbody>  
 <!-- Your rows inside the table HERE: -->  
 {% for item in items %}  
 <tr>  
 <td>{{ item.id }}</td>  
 <td>{{ item.name }}</td>  
 <td>{{ item.barcode }}</td>  
 <td>${{ item.price }}</td>  
 </tr>  
 {% endfor %}  
</tbody>

Pjage will look like this

A screenshot of a computer

Description automatically generated

To add buttons as one more option

Add one more column in <thead>

<thead>  
 <tr>  
 <!-- Your Columns HERE -->  
 <th scope="col">ID</th>  
 <th scope="col">Name</th>  
 <th scope="col">Barcode</th>  
 <th scope="col">Price</th>  
 <th scope="col">Options</th>  
 </tr>  
</thead>

Add a column in <tbody> as following

<tbody>  
 <!-- Your rows inside the table HERE: -->  
 {% for item in items %}  
 <tr>  
 <td>{{ item.id }}</td>  
 <td>{{ item.name }}</td>  
 <td>{{ item.barcode }}</td>  
 <td>${{ item.price }}</td>  
 <td>  
 <button class="btn btn-outline btn-info">More Info</button>  
 <button class="btn btn-outline btn-success">Purchase This Item</button>  
 </td>  
 </tr>  
 {% endfor %}  
</tbody>

Web page should look like this

A screenshot of a computer

Description automatically generated

# Template inheritance

To create a base template to inherit from

Create a base.html file in template folder

A screenshot of a computer

Description automatically generated with medium confidence

Delete whats in it and add the following code to the base.html

<!doctype html>  
<html lang="en">  
 <head>  
 <!-- Required meta tags -->  
 <meta charset="utf-8">  
 <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">  
 <!-- Bootstrap CSS -->  
 <link rel="stylesheet" href="https://cdn.jsdelivr.net/npm/bootstrap@4.5.3/dist/css/bootstrap.min.css" integrity="sha384-TX8t27EcRE3e/ihU7zmQxVncDAy5uIKz4rEkgIXeMed4M0jlfIDPvg6uqKI2xXr2" crossorigin="anonymous">  
 <title>Base Title</title>  
 </head>  
 <body>  
 <!-- Navbar here -->  
 <!-- Future Content here -->  
  
  
  
 <!-- Optional JavaScript -->  
 <!-- jQuery first, then Popper.js, then Bootstrap JS -->  
 <script src='https://kit.fontawesome.com/a076d05399.js'></script>  
 <script src="https://code.jquery.com/jquery-3.5.1.slim.min.js" integrity="sha384-DfXdz2htPH0lsSSs5nCTpuj/zy4C+OGpamoFVy38MVBnE+IbbVYUew+OrCXaRkfj" crossorigin="anonymous"></script>  
 <script src="https://cdn.jsdelivr.net/npm/popper.js@1.16.1/dist/umd/popper.min.js" integrity="sha384-9/reFTGAW83EW2RDu2S0VKaIzap3H66lZH81PoYlFhbGU+6BZp6G7niu735Sk7lN" crossorigin="anonymous"></script>  
 <script src="https://stackpath.bootstrapcdn.com/bootstrap/4.5.2/js/bootstrap.min.js" integrity="sha384-B4gt1jrGC7Jh4AgTPSdUtOBvfO8shuf57BaghqFfPlYxofvL8/KUEfYiJOMMV+rV" crossorigin="anonymous"></script>  
 </body>  
 <style>  
 body {  
 background-color: #212121;  
 color: white  
 }  
 </style>  
</html>

Open home.html and delete everything

Add the following

{% extends "base.html" %}

Copy navigation bar from market.html to base in the same place.

Now home page will have navigation bar and grey bg colour

# To get page title.

Change title tag in base.html as following

<title>  
 {% block title %}  
  
 {% endblock %}  
</title>

In home.html add code as following

{% block title %}  
 Home Page  
{% endblock %}

This should give the title home page to home.html

Graphical user interface, text, application

Description automatically generated

## Changing contents

In base.html add the following under nav

{% block content %}  
  
{% endblock %}

In home.html add the following

{% block content %}  
 Home page contents to appear soon...  
{% endblock %}

Now home jpage will have that text.

In market.html add the following to the start of the file before all html tags

{% extends "base.html" %}  
{% block title %}  
 Home Page  
{% endblock %}  
  
{% block content %}  
  
{% endblock %}

Copy the table tag and all its contents into the **block content**

Delete all of the html

Final market.html file will look like this

{% extends "base.html" %}  
  
{% block title %}  
 Market Page  
{% endblock %}  
  
{% block content %}  
<table class="table table-hover table-dark">  
 <thead>  
 <tr>  
 <!-- Your Columns HERE -->  
 <th scope="col">ID</th>  
 <th scope="col">Name</th>  
 <th scope="col">Barcode</th>  
 <th scope="col">Price</th>  
 <th scope="col">Options</th>  
 </tr>  
 </thead>  
 <tbody>  
 <!-- Your rows inside the table HERE: -->  
 {% for item in items %}  
 <tr>  
 <td>{{ item.id }}</td>  
 <td>{{ item.name }}</td>  
 <td>{{ item.barcode }}</td>  
 <td>${{ item.price }}</td>  
 <td>  
 <button class="btn btn-outline btn-info">More Info</button>  
 <button class="btn btn-outline btn-success">Purchase This Item</button>  
 </td>  
 </tr>  
 {% endfor %}  
 </tbody>  
</table>  
{% endblock %}

No change to the pages as we are inheriting and showing the same layout and display

# Connecting Market and Home buttons

In base.html add /home inside href in the a tag of base.html will work

But its not efficient.

To work by calling the route in market.py add the following to base.html

<li class="nav-item active">  
 <a class="nav-link" href="{{ url\_for("home\_page") }} ">Home <span class="sr-only">(current)</span></a>  
</li>

Make same changes for market page

<li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("market\_page")}}">Market</a>  
</li>

# Model and Database

Use database instead of passing values.

Store in a file.

Using SQLite to store data.

## Install flask tool

1. Hit Ctrl+C to stop website
2. Type - pip install flask-sqlalchemy

In market.py

from flask\_sqlalchemy import SQLAlchemy

add following line

Text

Description automatically generated

Add db columns as following just above the @app.route(“/”)

class Item(db.Model):  
 id = db.Column(db.Integer(), primary\_key=True)  
 name = db.Column(db.String(length=30), nullable=False, unique=True)  
 price = db.Column(db.Integer(), nullable=False)  
 barcode = db.Column(db.String(length=12), nullable=False, unique=True)  
 description = db.Column(db.String(length=1024),j nullable=False, unique=True)

Add following code just above db = SQLAlchemy(app)

app.config["SQLALCHEMY\_DATABASE\_URI"]= "sqlite:///market.db"

Now we can run the from program to create the db file

Type python in terminal to get the python command

Text

Description automatically generated

Type “from market import db”

Text

Description automatically generated

Now run “db.create\_all()” command

Text

Description automatically generated with medium confidence

This will create a db file in project directory

Graphical user interface, text, application, chat or text message

Description automatically generated

## Adding items to database

To add items add the following

Graphical user interface, text

Description automatically generated

To check if item is added add following command

A picture containing text

Description automatically generated

Add one more item as following and check if added as show below

Query in python shell

Graphical user interface, text, application

Description automatically generated

## Query in python shell

Add following in markey.py

def \_\_repr\_\_(self):  
 return f'Item {self.name}'

add following code in terminal

Text

Description automatically generated

To get all elements in the db add the following in terminal

Text

Description automatically generated

To clear screen

Text

Description automatically generated

To show filtered itemText

Description automatically generated

There might be a list of items so we need to loop

Text

Description automatically generated

Now we will change the dummy database in market.py to the python code

Chart, line chart

Description automatically generated

Add Item.query.all() there as below

@app.route("/market")  
def market\_page():  
 items = Item.query.all()  
 return render\_template("market.html", items=items)

Now we can run the server and get db in the web page

Text

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

For a graphical representation of DB go to https://sqlitebrowser.org/

After installing or downloading you can file open the db and look at the tables

Graphical user interface, text, application, email

Description automatically generated

# Project Restructure

Need new file for model and routes

Create models.py file

Cut paste the following code to it from market.py

class Item(db.Model):  
 id = db.Column(db.Integer(), primary\_key=True)  
 name = db.Column(db.String(length=30), nullable=False, unique=True)  
 price = db.Column(db.Integer(), nullable=False)  
 barcode = db.Column(db.String(length=12), nullable=False, unique=True)  
 description = db.Column(db.String(length=1024), nullable=False, unique=True)  
  
 def \_\_repr\_\_(self):  
 return f'Item {self.name}'

create new routes.py file

Cut paste the following code from market.py to routes.py

@app.route("/")  
@app.route("/home")  
def home\_page():  
 return render\_template("home.html")  
  
@app.route("/market")  
def market\_page():  
 items = Item.query.all()  
 return render\_template("market.html", items=items)

To get all the imports we will create a package

Create run.py

Cut every thing from market.py to run.py

Run.py will look like this

from flask import Flask, render\_template  
from flask\_sqlalchemy import SQLAlchemy  
app = Flask(\_\_name\_\_)  
app.config["SQLALCHEMY\_DATABASE\_URI"] = "sqlite:///market.db"  
db = SQLAlchemy(app)

Can delete market.py

Create new folder called market and move everything except run.py to the new folder ‘market’

A screenshot of a computer

Description automatically generated with medium confidence

Create a new file called \_\_init\_\_.py in the folder “market”

Graphical user interface, text, application, chat or text message

Description automatically generated

Move everything (following code) from run.py to \_\_init\_\_.py

from flask import Flask, render\_template  
from flask\_sqlalchemy import SQLAlchemy  
app = Flask(\_\_name\_\_)  
app.config["SQLALCHEMY\_DATABASE\_URI"] = "sqlite:///market.db"  
db = SQLAlchemy(app)

Since we have\_\_init\_\_.py in the folder market we can import market as a package.

Add the following code to run.py

from market import app  
  
# checks if the run.py file has executed directly and not imported  
if \_\_name\_\_ == '\_\_main\_\_':  
 app.run(debug=True)

add the following code to \_\_init\_\_.py

from market import routes

add the following code to routes.py

from market import app  
from flask import render\_template  
from market.models import Item

in models.py add the following

from market import db

Now website should work fine

A screenshot of a computer

Description automatically generated with medium confidence

# Model Relationships

## Accepting users

## Use another model for users

Add the following model to models.py

class User(db.Model):  
 id = db.Column(db.Integer(), primary\_key=True)  
 username = db.Column(db.String(length=30), nullable=False, unique=True)  
 email\_address = db.Column(db.String(length=50), nullable=False, unique=True)  
 password\_hash = db.Column(db.String(length=60), nullable=False)  
 budget = db.Column(db.Integer(), nullable=False, default=1000)  
 items = db.relationship('Item', backref='owned\_user', lazy=True)

add the following line to the class Item to connect between user and item.

owner = db.Column(db.Integer(), db.ForeignKey('user.id'))

To delete the db

Text

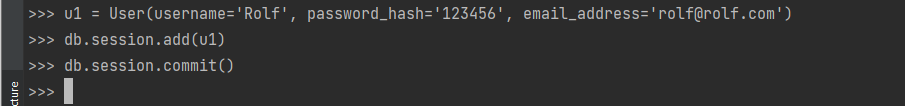
Description automatically generated

Create new db as below

A picture containing text

Description automatically generated

Add new user as below



Wwe can check if its added as below

Graphical user interface, application

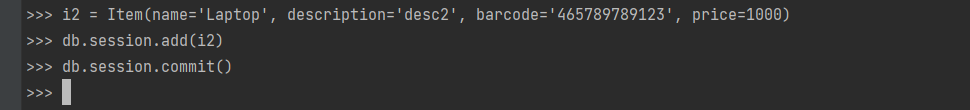
Description automatically generated

Add an item as below

Text

Description automatically generated

Add another item as below



We can check the items in db as below

Graphical user interface, text

Description automatically generated

Now lets try to assign ownership to iphone10

We can get the name if IPhone10 as below

Text

Description automatically generated

## Adding owner to an item

If you type item1.owner it returns nothing because no owner assigned

Shape

Description automatically generated with medium confidence

We can add owner as below

Text

Description automatically generated

To check if the user was added successfully type the following

Text

Description automatically generated

# Flask Forms

Using forms to enter data

## Install packages

Flask-wtforms



Wtforms should be installed with the earlier intall



Create a new file called forms.py

Add the following code

from flask\_wtf import FlaskForm  
from wtforms import StringField, PasswordField, SubmitField  
  
class RegisterForm(FlaskForm):  
 username = StringField(label='username')  
 email\_address = StringField(lable='email')  
 password1 = PasswordField(label='password1')  
 password2 = PasswordField(label='password2')  
 submit = SubmitField(label='submit')

In routes.py add the following import at start

from market.forms import RegisterForm

at the end add the following class

@app.route('/register')  
def register\_page():  
 form = RegisterForm()  
 return render\_template('register.html', form = form)

Create a new file in template folder called register.html

Add the following code

{% extends 'base.html' %}  
{% block title %}  
Register Page  
{% endblock %}  
  
{% block content %}  
<h1>Register Form</h1>  
{% endblock %}

We need to generate a secret key for the flask application to give one more security layer.

Can be generated in python from terminal

In terminal add the following

Text

Description automatically generated

Copy the generated key

Add it to the \_\_init\_\_py file as below

Text

Description automatically generated

Quit from thee python terminal

Text

Description automatically generated

Run the server as below

Text

Description automatically generated

Click on link to open the web page

Type register at the end of address to go to register page and we can see the register headline there

A picture containing graphical user interface

Description automatically generated

Connect link to register button on nav bar

Add the following code in the base.html file

<a class="nav-link" href="{{ url\_for("register\_page")}}">Register</a>



If we run the server again with the command “python run.py” or if window is refreshed we should have the link working on register button

## Adding fields

Add the following code to register.html

{% block content %}  
 <form method="POST" class ="form-register" style="color:white">  
 {{ form.username.label() }}  
 {{ form.username(class="form-control", placeholder="User Name") }}  
 </form>  
{% endblock %}

Check the page to see a field

A picture containing graphical user interface

Description automatically generated

To make it look good make form inside a div as below

{% block content %}  
 <div class="container">  
 <form method="POST" class ="form-register" style="color:white">  
 {{ form.username.label() }}  
 {{ form.username(class="form-control", placeholder="User Name") }}  
 </form>  
 </div>  
{% endblock %}

Change the class RegisterForm in forms.py as following

Text

Description automatically generated

The result should be as following

Background pattern

Description automatically generated

Change the register.html as following

{% extends 'base.html' %}  
{% block title %}  
Register Page  
{% endblock %}  
  
{% block content %}

<body class="text-center">  
 <div class="container">  
 <form method="POST" class ="form-register" style="color:white">  
 <h1 class="h3 mb-3 font-weight-normal">  
 Please Create your Account  
 </h1>  
 <br>  
 {{ form.username.label() }}  
 {{ form.username(class="form-control", placeholder="User Name") }}  
  
 {{ form.email\_address.label() }}  
 {{ form.email\_address(class="form-control", placeholder="Email Address") }}  
  
 {{ form.password1.label() }}  
 {{ form.password1(class="form-control", placeholder="Password") }}  
  
 {{ form.password2.label() }}  
 {{ form.password2(class="form-control", placeholder="Confirm Password") }}  
  
 <br>  
  
 {{ form.submit(class="btn btn-lg btn-block btn-primary") }}  
 </form>  
 </div>

</body>  
{% endblock %}

Result should be as below

A screenshot of a computer

Description automatically generated

# Validations

Add user at the end of import market.models as below

*from* market.models *import* Item, User

import redirect as below

*from* flask *import* render\_template, redirect, url\_for

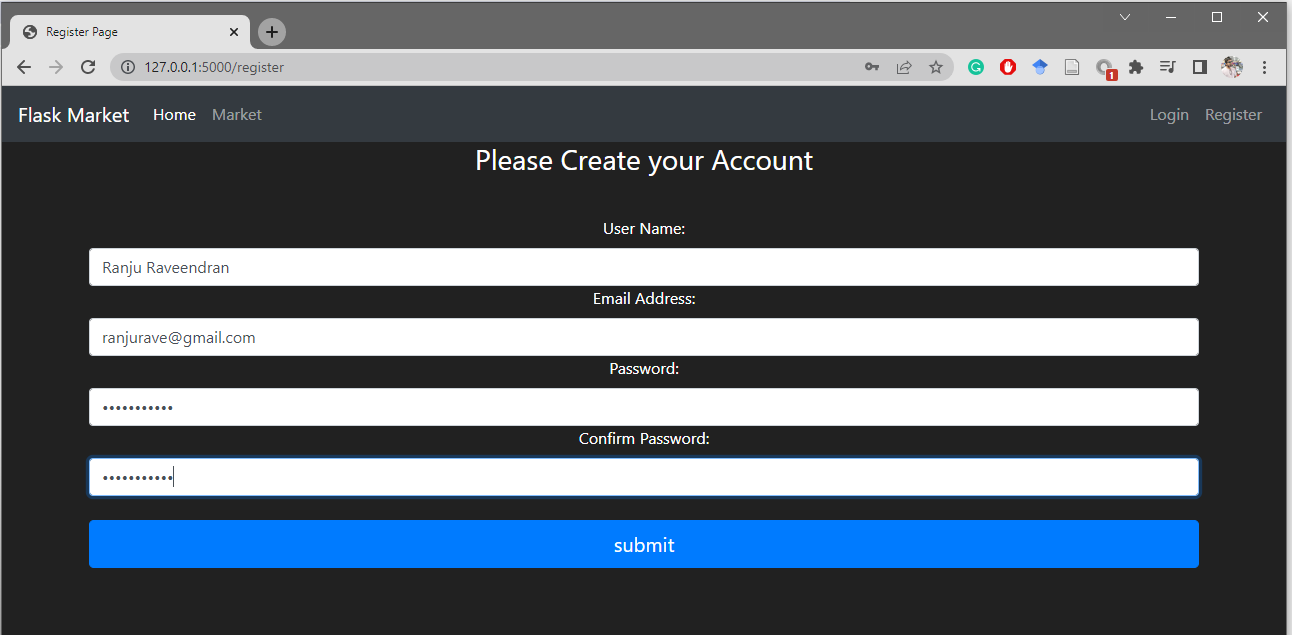
import db as below

*from* market *import* db

add following code to the register\_page method

@app.route('/register')  
*def* register\_page():  
 form = RegisterForm()  
 *if* form.validate\_on\_submit():  
 user\_to\_create = User(username=form.username.data, email\_address = form.email\_address.data, password\_hash= form.password1.data)  
 db.session.add(user\_to\_create)  
 db.session.commit()  
 *return* redirect(url\_for('market\_page'))  
 *return* render\_template('register.html', form=form)

Run the server and go to register page

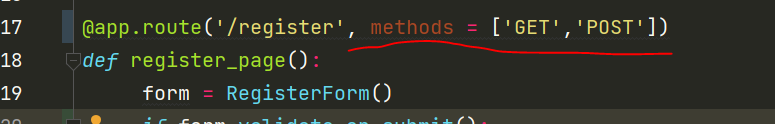


Add some data and hit submit button

There will be error.

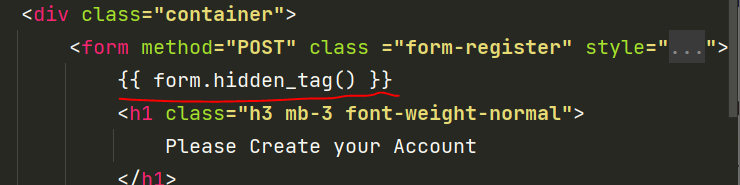
To fix this we need POST method

So change the method call in route.py as below



## Cross site Request Forgery (prevent this attack)

To prevent this add the following line in register.html



Now the account will be created and market page will be opened.

## Checking password

In forms.py add the following

*from* wtforms.validators *import* Length, EqualTo, Email

Now we can validation for all the forms

*class* RegisterForm(FlaskForm):  
 username = StringField(label='User Name: ', validators=Length(min=2,max=30))  
 email\_address = StringField(label='Email Address: ', validators=Email())  
 password1 = PasswordField(label='Password: ', validators=Lenght(min=6))  
 password2 = PasswordField(label='Confirm Password: ',validators=EqualTo('password1'))  
 submit = SubmitField(label='submit')

to add empty field validation, import one more class as below

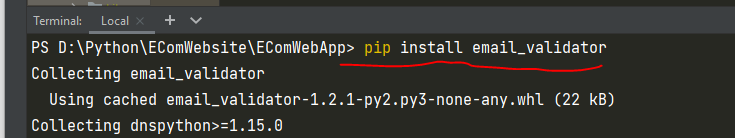
*from* wtforms.validators *import* Length, EqualTo, Email, DataRequired

change script as below

*class* RegisterForm(FlaskForm):  
 username = StringField(label='User Name: ', validators=[Length(min=2,max=30), DataRequired() ])  
 email\_address = StringField(label='Email Address: ', validators=[Email(), DataRequired()])  
 password1 = PasswordField(label='Password: ', validators=[Length(min=6), DataRequired()])  
 password2 = PasswordField(label='Confirm Password: ',validators=[EqualTo('password1'), DataRequired()])  
 submit = SubmitField(label='submit')

## Handling error from forms

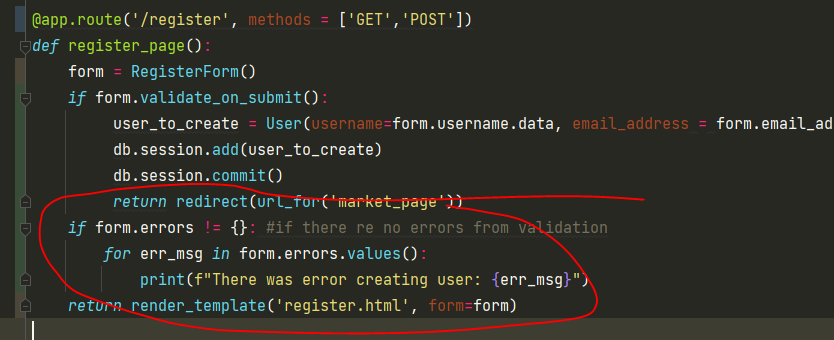
First we need to install email validator



Add the following code at the end of routes.py

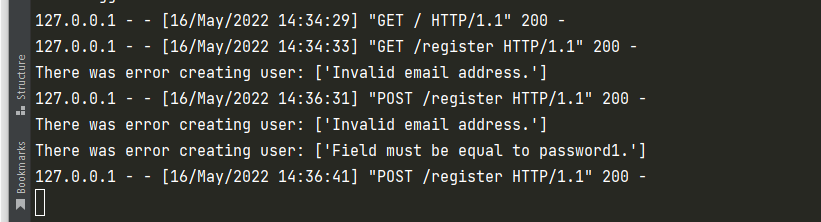
*if* form.errors != {}: #if there re no errors from validation  
 *for* err\_msg *in* form.errors.values():  
 print(f"There was error creating user: {err\_msg}")  
*return* render\_template('register.html', form=form)

like this



Open terminal and website side by side to see the error message

We can see the error message in the terminal



# Flash Messages and Adv validations

To get proper messages go to routes.py and make the changes

*from* flask *import* render\_template, redirect, url\_for, flash

change print to flash in the route.py

flash(f"There was error creating user: {err\_msg}")

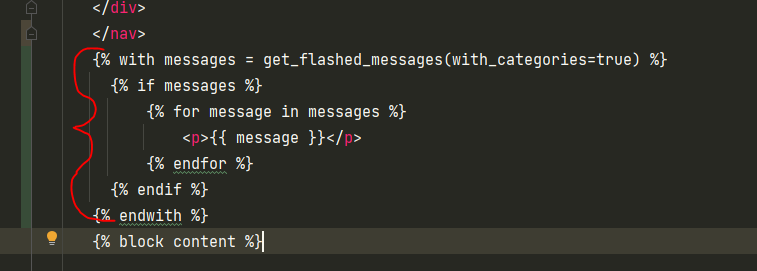
To make the flash message uniform in all forms in the application we create it in base.html

Open base.html

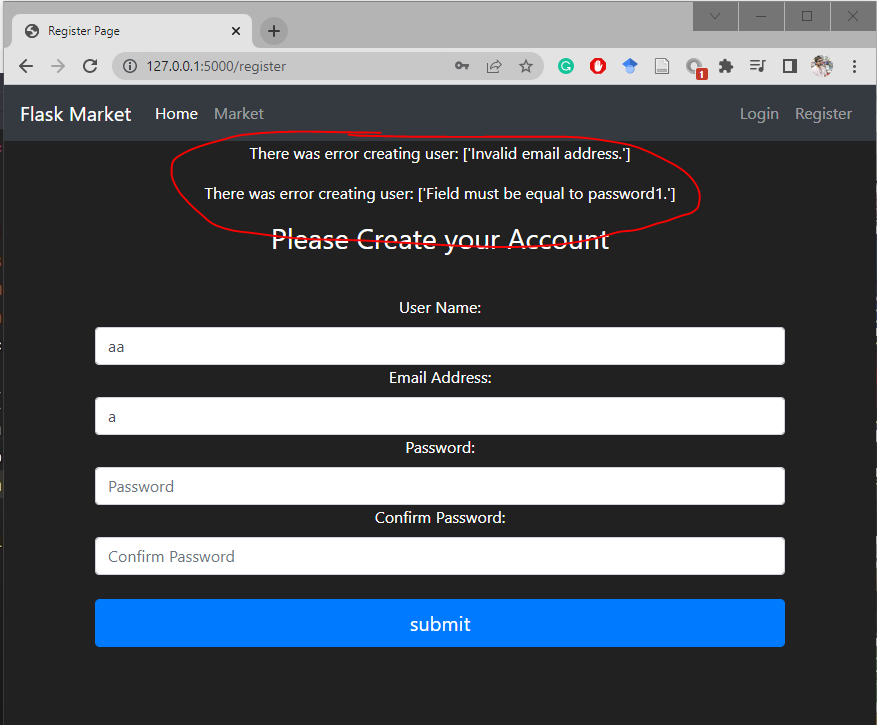
Add the following just under the closing nav tag

{% with messages = get\_flashed\_messages(with\_categories=true) %}  
 {% if messages %}  
 {% for message in messages %}  
 <p>{{ message }}</p>  
 {% endfor %}  
 {% endif %}  
{% endwith %}

Just like below

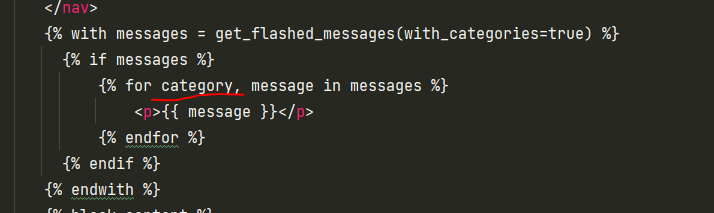


Now you should get message as below when entered wrong inputs



Messages are in tuples

We could add category as below in base.html to get rid of the brackets



To get a uniform better message

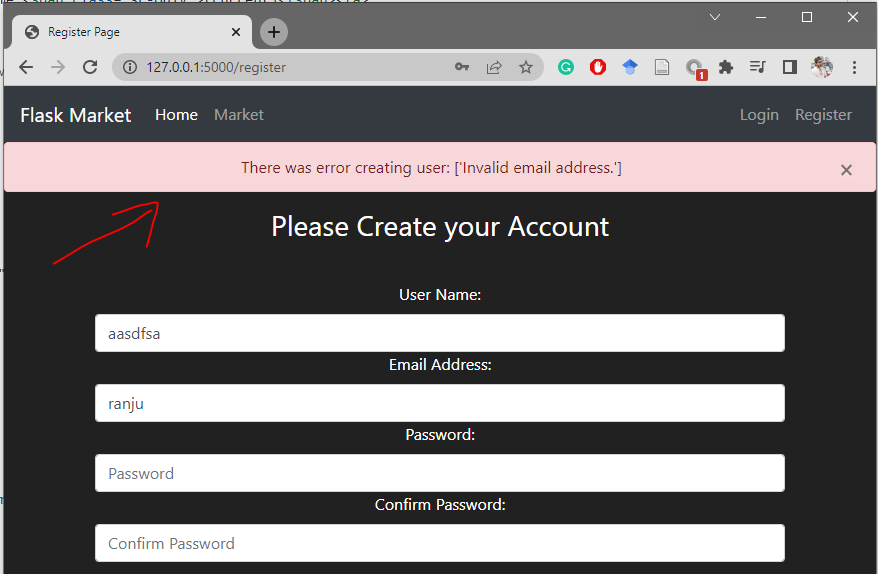
In route.py add the following

flash(f"There was error creating user: {err\_msg}", category='danger')

back in base.html add some html and bootstrap as below

{% with messages = get\_flashed\_messages(with\_categories=true) %}  
 {% if messages %}  
 {% for category, message in messages %}  
 <div class**="alert alert-{{ category }}"**>  
 <button type **= "button"** class **= "m1-2 mb-1 close"** date-dismiss**="alert"** aria-label**="Close"**>  
 <span aria-hidden**="true"**> **&times;**</span>  
 </button>  
 {{ message}}  
 </div>  
 {% endfor %}  
 {% endif %}  
{% endwith %}

We should get a message as below



## Preventing user register again

Do validation in forms.py

Add the following to forms.py

from market.models import User

add validationError to wtforms.validators as below

from wtforms.validators import Length, EqualTo, Email, DataRequired, ValidationError

add the following 2 methods to the start of the RegisterForm class in forms.py

def validate\_username(self, username\_to\_check):  
 user = User.query.filter\_by(username=username\_to\_check.data).first()  
 if user:  
 raise ValidationError("Username already exist!")  
  
def validate\_email\_address(self, email\_address\_to\_check):  
 email\_address = User.query.filter\_by(email\_address=email\_address\_to\_check.data).first()  
 if email\_address:  
 raise ValidationError("Email address already used")

## Hide password in DB

Will install a package called flask\_bcrypt

Text

Description automatically generated

In \_\_init\_\_.py file import the library as below

from flask\_bcrypt import Bcrypt

In \_\_init\_\_.py create an object at the end as below (above routes import)

bcrypt = Bcrypt(app)

in models.py import bcrypt as below

from market import bcrypt

In models.py add the following at the end of User class

@property  
def password(self):  
 return self.password  
  
@password.setter  
def password(self, plain\_text\_password):  
 self.password\_hash=bcrypt.generate\_password\_hash(plain\_text\_password).decode('utf-8')

Edit the password\_hash to password in routes.py.

user\_to\_create = User(username=form.username.data, email\_address = form.email\_address.data, password= form.password1.data)

new users will have password saved in coded format

Graphical user interface, application

Description automatically generated

# User Login

Create a login page

Create login.html and add thee following

{% extends 'base.html' %}  
{% block title %}  
Login Page  
{% endblock %}  
  
{% block content %}  
<body class="text-center">  
  
</body>  
{% endblock %}

Add the following in routes.py

@app.route('/login',methods=['GET', 'POST'])  
def login\_page():  
 return render\_template('login.html')

In base.html add the link in href to the login button as below

<a class="nav-link" href="{{ url\_for("login\_page")}}">Login</a>

Run the server

Now the page should load from clicking the login button

Graphical user interface, text, application

Description automatically generated

It will be blank

To start creating forms, add a new class in forms.py a below

class LoginForms(FlaskForm):  
 username = StringField(label='UserName:', validators=[DataRequired()])  
 username = PasswordField(label='Password:', validators=[DataRequired()])  
 submit = SubmitField(label='Sign in')

In routes.py add LoginForms to import as well

from market.forms import RegisterForm, LoginForms

in routes.py at the end in the new login\_page method change as following

@app.route('/login',methods=['GET', 'POST'])  
def login\_page():  
 form = LoginForms()  
 return render\_template('login.html', form=form)

Add the html tags for login page in login. Html inside the body tag

<div class="container">  
 <form method="POST" class="form-signin" style="color:white">  
 {{ form.hidden\_tag() }}  
 <h1 class="h3 mb-3 font-weight-normal">  
 Please Login  
 </h1>  
 <br>  
 {{ form.username.label() }}  
 {{ form.username(class="form-control", placeholder="User Name") }}  
  
 {{ form.password.label() }}  
 {{ form.password(class="form-control", placeholder="Password") }}  
  
 <br>  
  
  
 <div class="checkbox mb-3">  
 <h6>Do not have an account?</h6>  
 <a class="btn btn-sm btn-secondary" href="{{ url\_for('register\_page') }}">Register</a>  
 </div>  
  
 {{ form.submit(class="btn btn-lg btn-block btn-primary") }}  
  
 </form>  
</div>

You should see the login page as below

A screenshot of a computer

Description automatically generated

## Add link to login page in register page

Add the following code in register page link in the login page

Can copy from login page and change the links

<div class="checkbox mb-3">  
 <h6>Already have an account?</h6>  
 <a class="btn btn-sm btn-secondary" href="{{ url\_for('login\_page') }}">Login</a>  
</div>

We should get the button like this

A screenshot of a computer

Description automatically generated

# User authentication and login

Install flask\_login library

Text

Description automatically generated

It is a login manager library

Import flask\_login in \_\_init\_\_.py as following

from flask\_login import LoginManager

add the following at the end of \_\_init\_\_.py

login\_manager = LoginManager(app)

add a method in User class in model.py to check the users as following

def check\_password\_correction(self, attempted\_password):  
 if bcrypt.check\_password\_hash(self.password\_hash, attempted\_password):  
 return True

else:

return False

In routes.py

Import login\_user from flask\_login library as below

from flask\_login import login\_user

In routes.py change login\_page method as following

@app.route('/login',methods=['GET', 'POST'])  
def login\_page():  
 form = LoginForms()  
 if form.validate\_on\_submit():  
 attempted\_user = User.query.filter\_by(username=

form.username.data).first()  
 if attempted\_user and attempted\_user.check\_password\_correction(attempted\_password=form.password.data):  
 login\_user(attempted\_user)  
 flash(f'Success! You are logged in as :{attempted\_user.username}', category='success')  
 return redirect(url\_for('market\_page'))  
 else:  
 flash('User name and password dont match. Please try again', category='danger')  
 return render\_template('login.html', form=form)

When you run you should get error for exception handling

Graphical user interface, text, application, email

Description automatically generated

Add the following method to models.py from the provided link

@login\_manager.user\_loader  
def load\_user(user\_id):  
 return User.get(user\_id)

we need to change the return statement as following

@login\_manager.user\_loader  
def load\_user(user\_id):  
 return User.query.get(int(user\_id))

Need to import login\_manager in models.py

So add it as following

from market import db, login\_manager

we need to use more methods like **is\_authenticated is\_active is\_anonymous get\_id()** these are present in a class called UserMixin. We can add the class as following in models.py

from flask\_login import UserMixin

add UserMixin to the class definition of class User as following

class User(db.Model, UserMixin):

Ctrl+Shift+I to go to class definition in pycharm

Now we should be able to log in with a user credentials and go to the market page.

# User Logout pages

Need to display login or logout based on user login status

Make some changes in base.html

Add following just above the ul tag of login\_ page and register\_page

{% if current\_user.is\_authenticated %}  
{% else %}  
  
{% endif %}

We need to move the login and register page tags to the else part of jinja

Final code will look like this

{% if current\_user.is\_authenticated %}  
{% else %}  
<ul class="navbar-nav">  
 <li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("login\_page")}}">Login</a>  
 </li>  
 <li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("register\_page")}}">Register</a>  
 </li>  
</ul>  
{% endif %}

To display good welcome message

Add the following code to the if part as below

<li class="nav-item">  
 <a class="nav-link">Welcome, {{ current\_user.username}}</a>  
</li>  
<li class="nav-item">  
 <a class="nav-link" href="#">Logout</a>  
</li>

Final code for {% if current\_user.is\_authenticated%} will be as below

{% if current\_user.is\_authenticated %}  
<ul class="navbar-nav">  
 <li class="nav-item">  
 <a class="nav-link">Welcome, {{ current\_user.username}}</a>  
 </li>  
 <li class="nav-item">  
 <a class="nav-link" href="#">Logout</a>  
 </li>  
</ul>  
{% else %}  
<ul class="navbar-nav">  
 <li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("login\_page")}}">Login</a>  
 </li>  
 <li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("register\_page")}}">Register</a>  
 </li>  
</ul>  
{% endif %}

Now when you run the server and if you are loged in you should get this

A screenshot of a computer

Description automatically generated with medium confidence

## Adding Budget of user

Add another li tag to the {%if current\_user.is\_authenticated %} condition as below

<li class="nav-item">  
 <a class="nav-link" style="color:lawngreen; font-weight: bold">  
 <i class="fas fa-coins"></i>

{{current\_user.budget}}  
 </a>  
</li>

Should get the budget at top

A screenshot of a computer

Description automatically generated with medium confidence

Icon not displaying to be fixed.

## Display Budget with formatting

Add the following method to models.py in User Class

def prettier\_budget(self):  
 if len(str(self.budget)) >= 4:  
 return f'{str(self.budget)[:-3]},{str(self.budget)[-3:]}$'  
 else:  
 return f"{self.budget}$"

to call this function in base.html

replace {{current\_user.budget}} in the if part of the statement with below

{{current\_user.prettier\_budget}}

Budget should display as below

Graphical user interface, text, application

Description automatically generated

# Logout a user

In base.html add the following to the Logout <a> tag as below

<li class="nav-item">  
 <a class="nav-link" href="{{ url\_for("logout\_page")}}">Logout</a>  
</li>

## Create the logout page

import logout\_user function along with the other imports

from flask\_login import login\_user, logout\_user

add the following method to routes.py

@app.route('/logout')  
def logout\_page():  
 logout\_user()  
 flash('You have been logged out', category='info')  
 return redirect(url\_for("home\_page"))

You should get the message as below

Graphical user interface, text

Description automatically generated

# Home page

Add the following code to home.html

{% extends 'base.html' %}  
{% block title %}  
 Welcome to Jim Shaped Coding Market  
{% endblock %}  
{% block content %}  
 <div class="position-relative overflow-hidden p-3 p-md-5 m-md-3 text-center bg-dark" style="color:white">  
 <div class="col-md-5 p-lg-5 mx-auto my-5">  
 <h1 class="display-4 font-weight-normal">Python & Flask</h1>  
 <p class="lead font-weight-normal">Start purchasing products by clicking the link below</p>  
 <a class="btn btn-primary" href="{{ url\_for('market\_page') }}">Get Started</a>  
 </div>  
 <div class="product-device box-shadow d-none d-md-block"></div>  
 <div class="product-device product-device-2 box-shadow d-none d-md-block"></div>  
 </div>  
{% endblock %}

Home page should look like below

A screenshot of a computer

Description automatically generated

# Check User login to go to market

Import one more function called login\_required in routes.py

from flask\_login import login\_user, logout\_user, login\_required

Now add @login\_required decorator before the route to market\_page as below

@app.route("/market")  
@login\_required  
def market\_page():  
 items = Item.query.all()  
 return render\_template("market.html", items=items)

If getting started is clicked you should get this if not logged in

Graphical user interface, text, application, email

Description automatically generated

To redirect user to the login page add the following to \_\_init\_\_.py at end before the import

login\_manager.login\_view = "login\_page"

Now browser redirect to login page

Add following under the **login\_manager.login\_view = "login\_page"** to get proper flash message

login\_manager.login\_message\_category="info"

# New registered user login automatically

Add the following code to routes.py (copied from below)

Write following just after the line “db.session.commit()” in register\_page() method

login\_user(user\_to\_create)  
flash(f'Account created successfully. You are logged in as {user\_to\_create.username}' , category='success')

Create new user named “rrr” and we should be directed to market page logged in

A screenshot of a computer

Description automatically generated

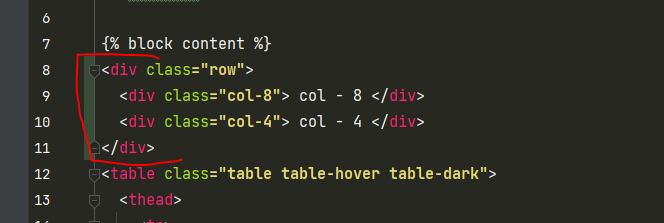
# Item Purchasing

Change the display in 2 pages in left and right pane

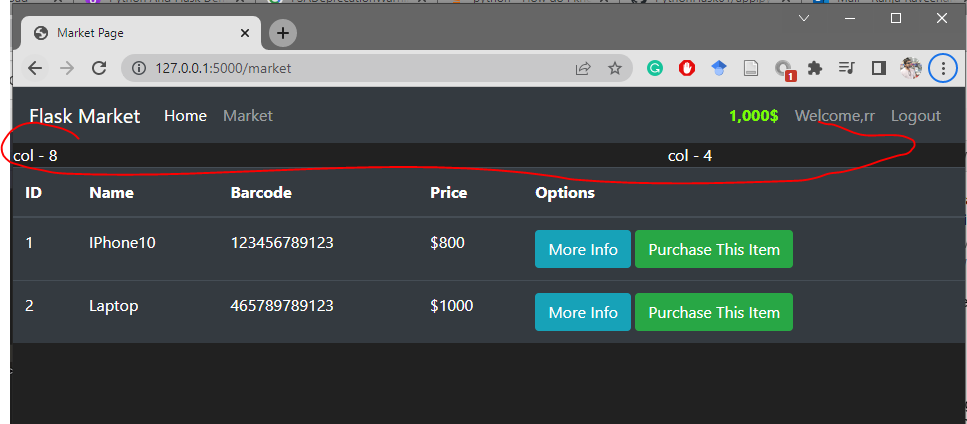
* Items on market
* Items purchased

Do with bootstrap

In market.html Add the following code to the start of {% block content %} as below

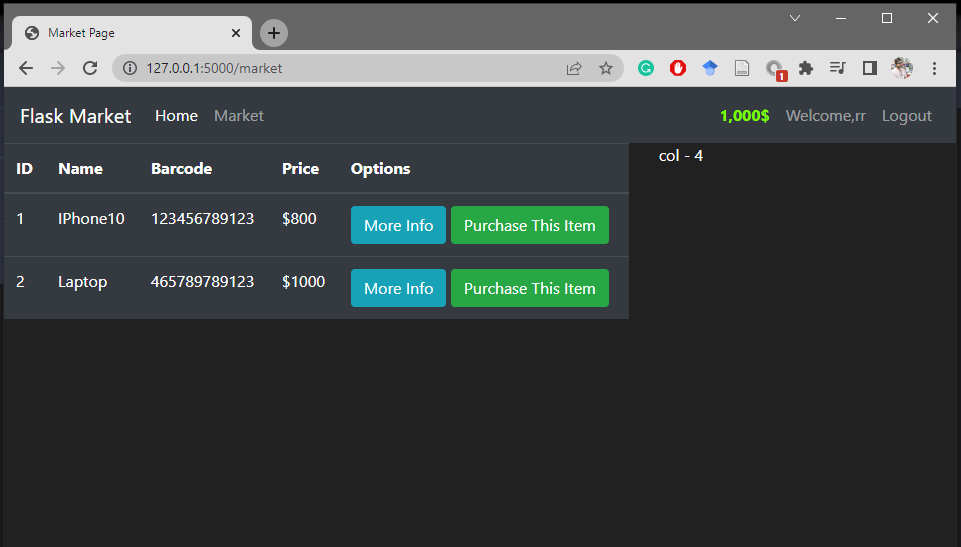


We can see the result as below



Cut paste the whole table below in to the first div (replacing column - 8 )

Result will be as following



Add margin to the div as below

style **= 'margin-top:20px; margine-left:20px'**

final div will look like this

{% block content %}  
<div class**="row"** style **= 'margin-top:20px; margine-left:20px'**>

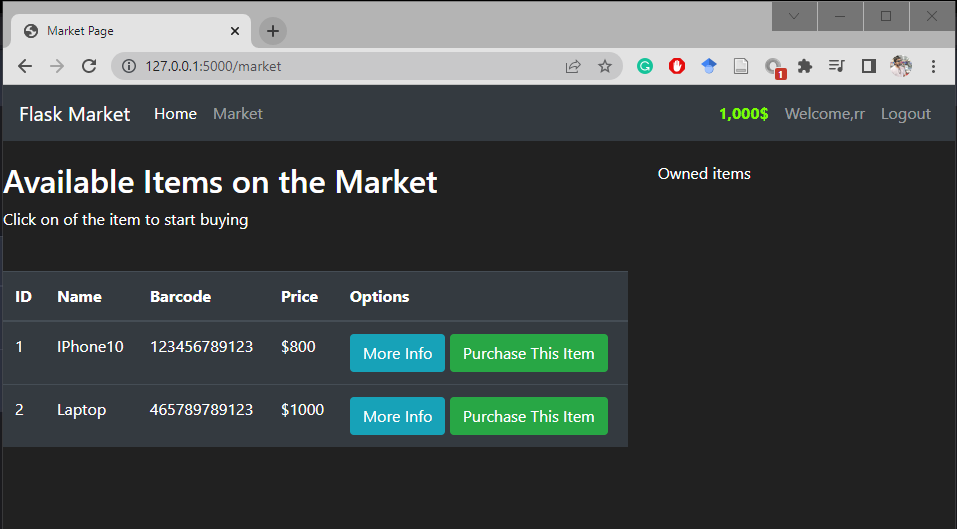
Can change the second div as following to remind to do it later

<div class**="col-4"**>   
 Owned items  
</div>

In first div Add the following tags to give a suggestion to the users

{% block content %}  
<div class**="row"** style **= 'margin-top:20px; margine-left:20px'**>  
 <div class**="col-8"**>  
 <h2>Available Items on the Market</h2>  
 <p> Click on of the item to start buying</p>  
 <br>

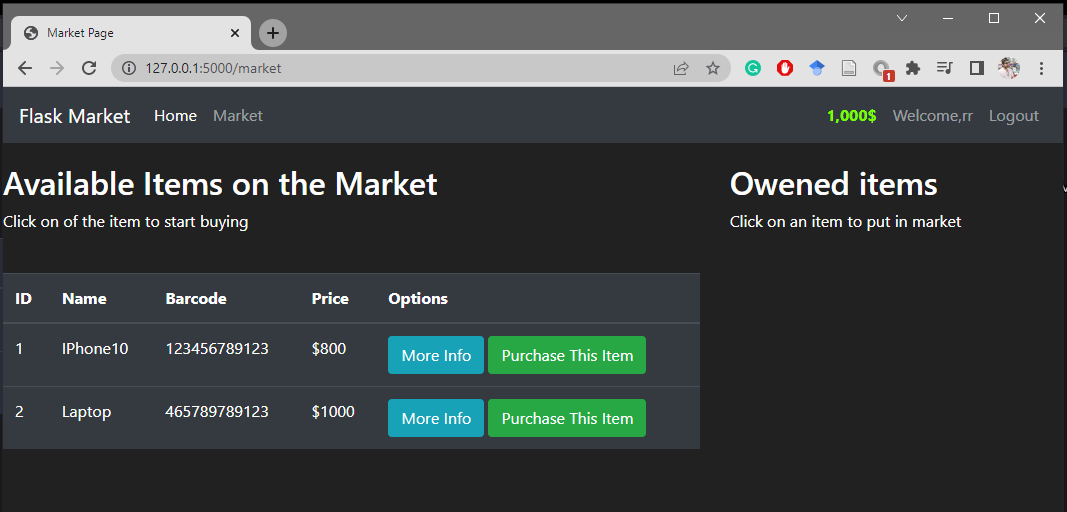
Result will be as following



Can change the second div to add heading as following

<div class**="col-4"**>  
 <h2>Owened items</h2>  
 <p> Click on an item to put in market</p>

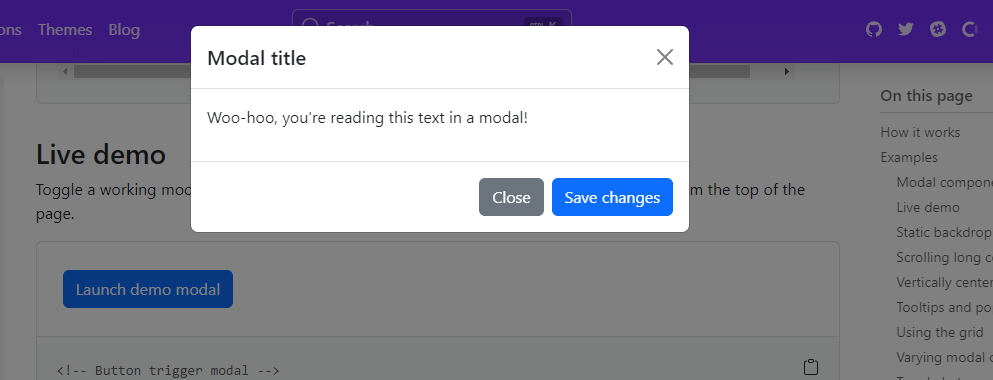
Should show like this



# Modal

<https://getbootstrap.com/docs/5.2/components/modal/>

trying to implement something like this

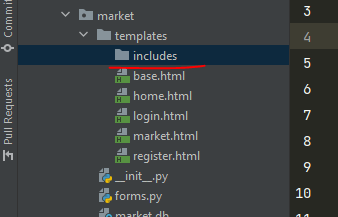


In market.html file

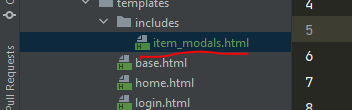
To avoid complex and long html page

Create new directory to place file and import it from

Create a new directory called includes in template folder



Create new file called items\_modals.html



Copy paste the following code in to the new html page

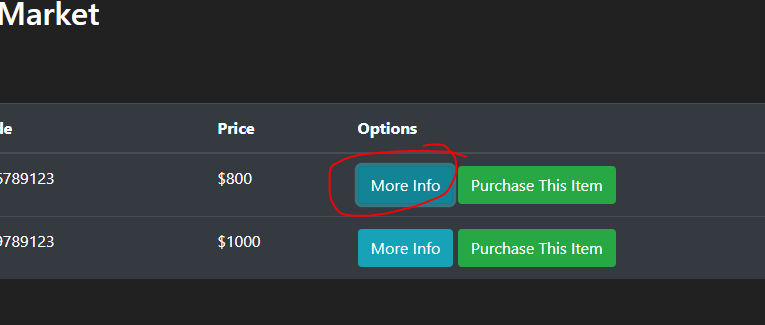
<!-- More Info -->  
<div class**="modal fade"** id**="Modal-MoreInfo** tabindex**="-1"** aria-labelledby**="exampleModalLabel"** aria-hidden**="true"**>  
 <div class**="modal-dialog"**>  
 <div class**="modal-content"**>  
 <div class**="modal-header"**>  
 <h5 class**="modal-title"** id**="ModalLabel"**>  
 <!-- -->  
  
 </h5>  
 <button type**="button"** class**="close"** data-dismiss**="modal"** aria-label**="Close"**>  
 <span aria-hidden**="true"**>**&times;**</span>  
 </button>  
 </div>  
 <div class**="modal-body"**>  
  
 </div>  
 <div class**="modal-footer"**>  
 <button type**="button"** class**="btn btn-secondary"** data-dismiss**="modal"**>Close  
 </button>  
 </div>  
 </div>  
 </div>  
</div>

In market.html add the following code as the first line in blockcontent the

{% include 'includes/item\_modals.html' %}



## Now to connect More Info button



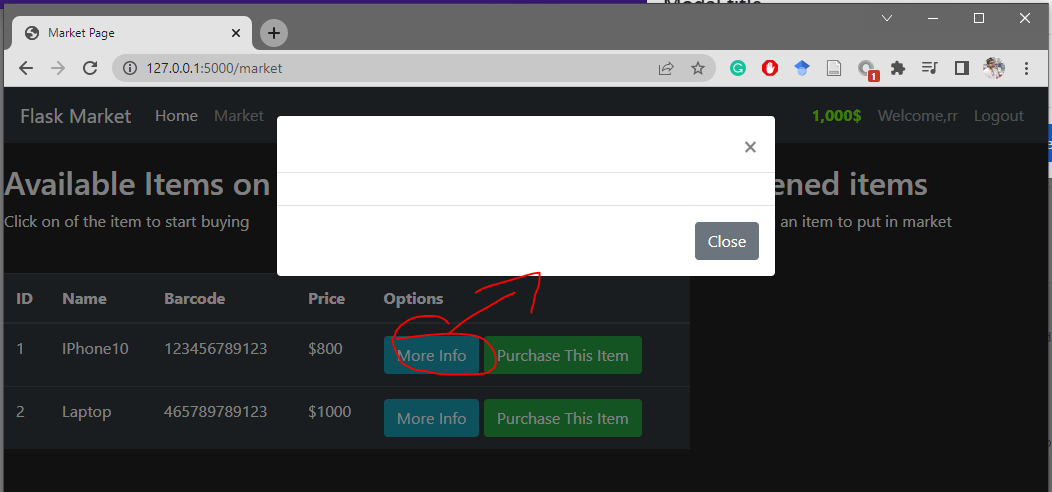
In market.py add the following code to the button tag for more info

data-toggle**='modal'** data-target**="#Modal-MoreInfo"**

final button tag will look like the following

<button class**="btn btn-outline btn-info"** data-toggle**='modal'** data-target**="#Modal-MoreInfo"**>More Info</button>

Now if we clickon the file it will show the popup window



## Make popup window match the theme

Add the following code to the very top of item\_modals.html

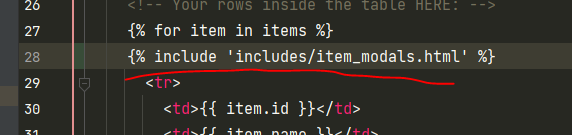
<style>  
 .modal-content{  
 background-color: #212121  
</style>

## Customise the popup window

Cut the following line from the top of market.html

{% include 'includes/item\_modals.html' %}

Paste it inside the for loop

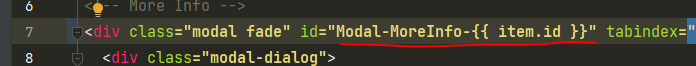


To iterate for each item

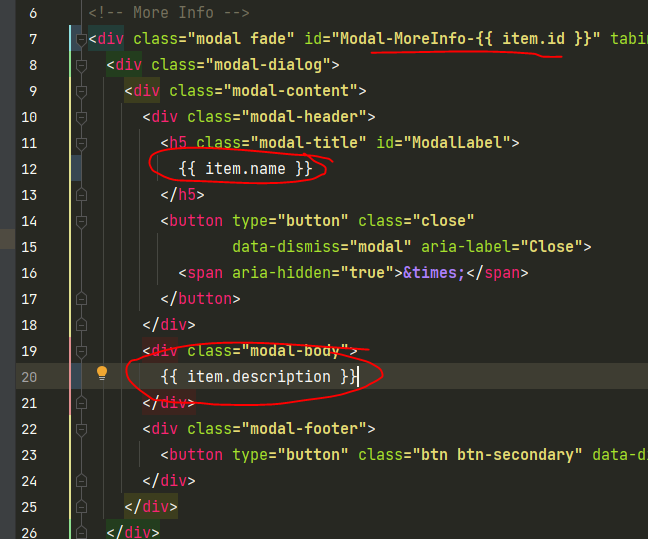
First in the items\_modals.html change the following



To this



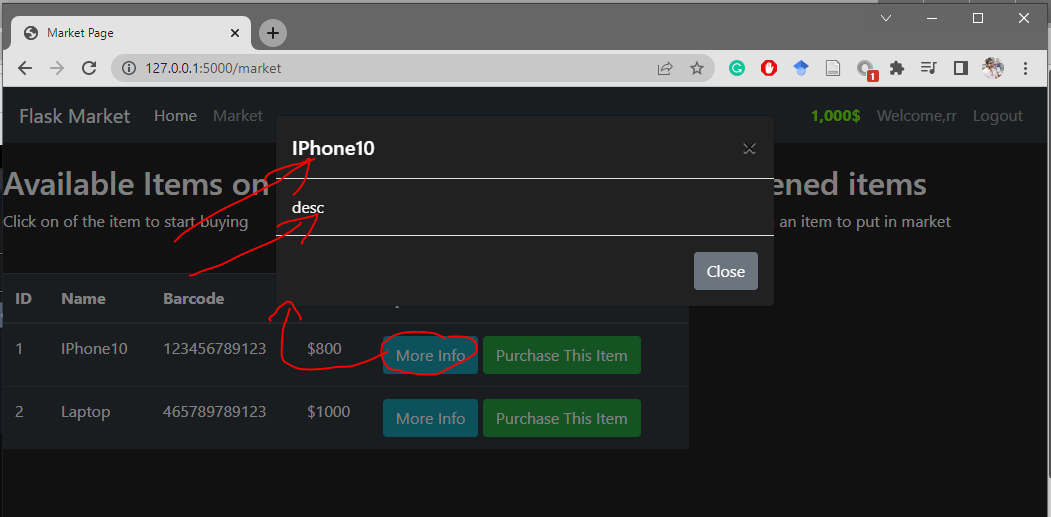
And item name and description in the body of the window as following



In market.html add the reference to item in button



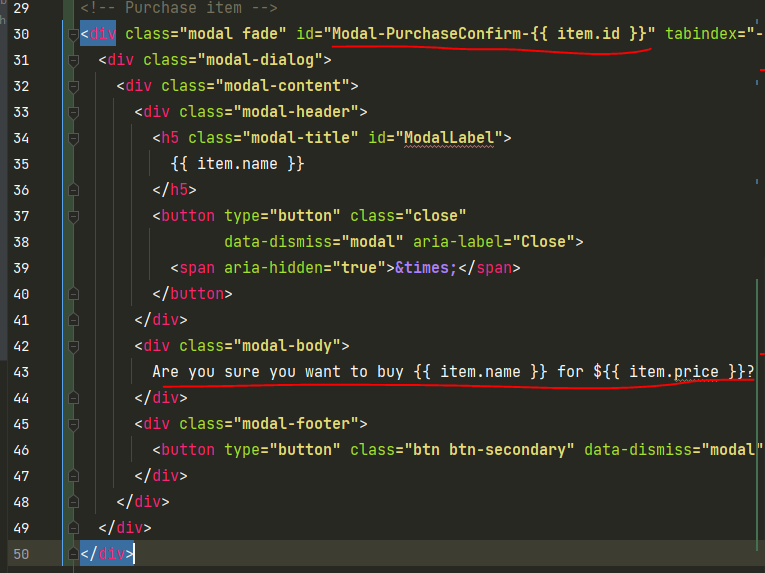
Now we should get the more info about each item in the db



# Purchase Item Button

In Items\_models.html copy whole div and paste it underneath it. (duplicate the div)

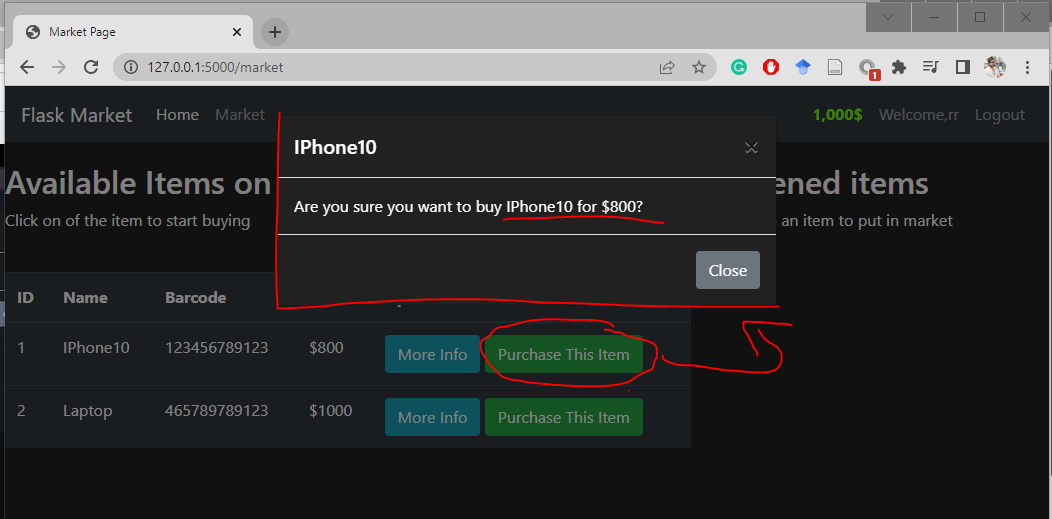
Make the following changes



In market.html change the purchase button tag as following



Now when you click purchase item button the pop up window with message should appear.



## Purchase button in Modal

In items\_modal.html, under-**Are you sure you want to buy {{ item.name }} for ${{ item.price }}?**

Add a form as below

<formmethod**="post"**>  
   
</form>

We will create the actual form in forms.py

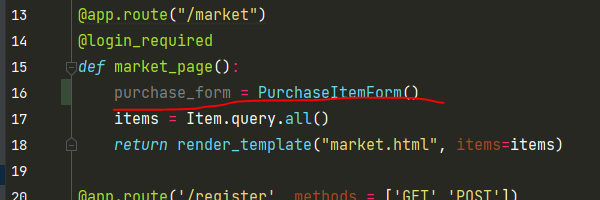
In forms.py add 2 classes as below

*class* PurchaseItemForm(FlaskForm):  
 submit= SubmitField(label='Purchase Item')  
  
*class* SellItemForm(FlaskForm):  
 submit= SubmitField(label='Sell Item')

In routes.py add the PurchaseItemForm in imports



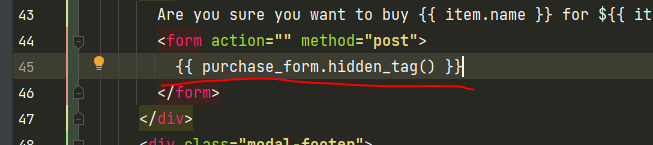
In market\_page() method create an instance of the form as following



Pass in the purchaseform in the return of the method

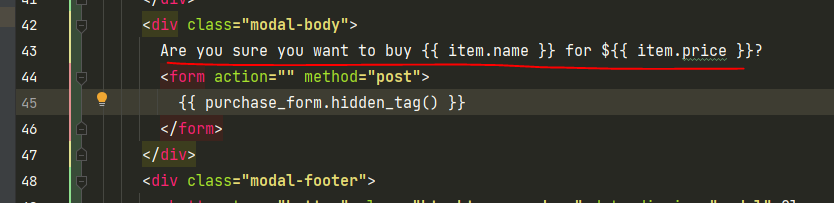


Back in the **items\_modal.html** inside the form add the following

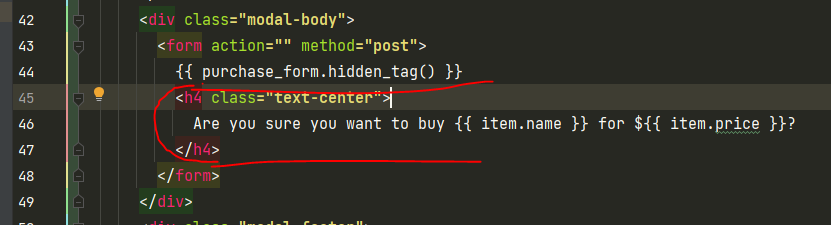


Move the “Are ou sure you wand to purchase….” From outside the form tag to inside the form tag in an h4 tag

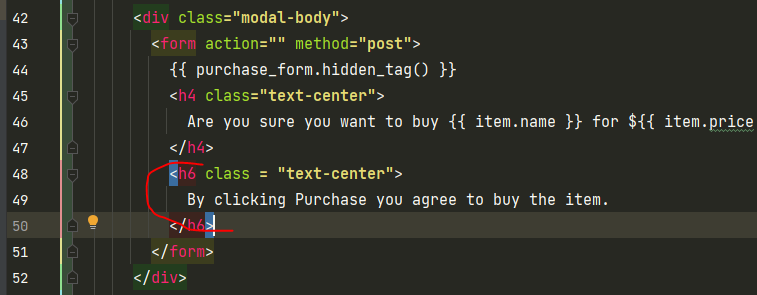
From this



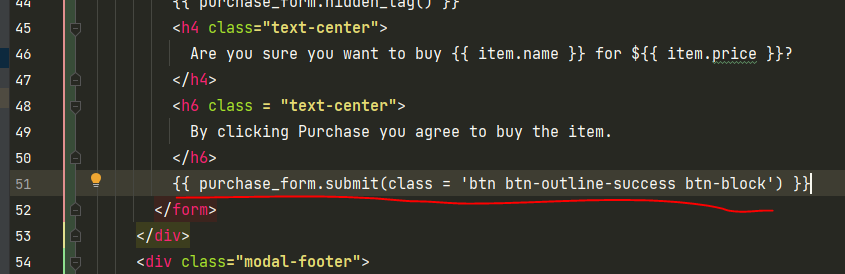
To this



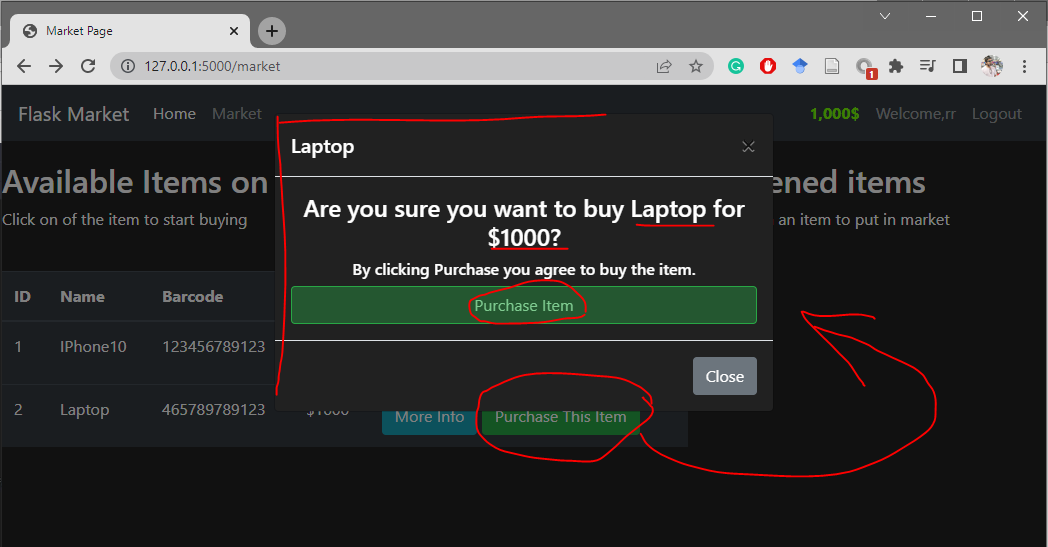
Add another h6 tag below it



Add submit button in jinja syntax after the h6 as below



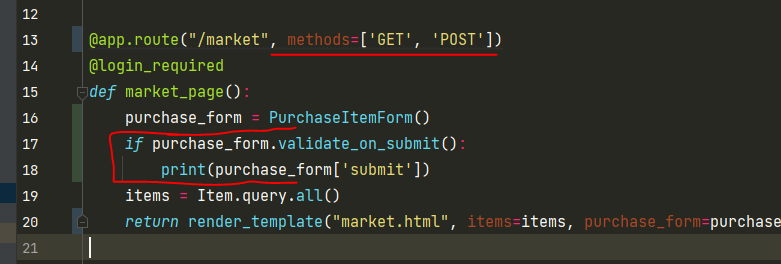
Now when you run the server and click purchase button you will get the following message



Can add <br> to space between the messages

## Purchase button click

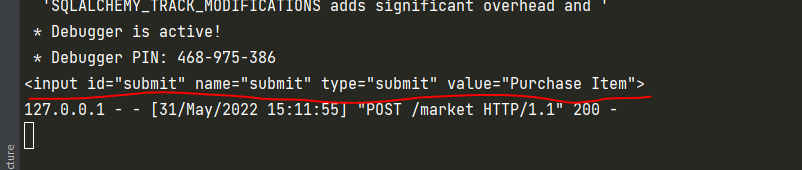
In routes.py in the market\_page() method make the following changes



print(purchase\_form['submit'])

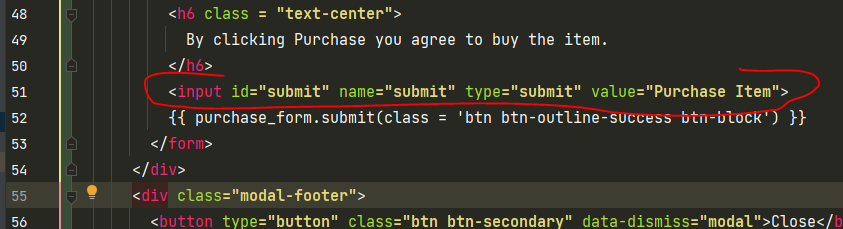
will submit as a dictionary

now when you run the application and purchase the item we should get an html code as following



Copy the code **<input id="submit" name="submit" type="submit" value="Purchase Item">**

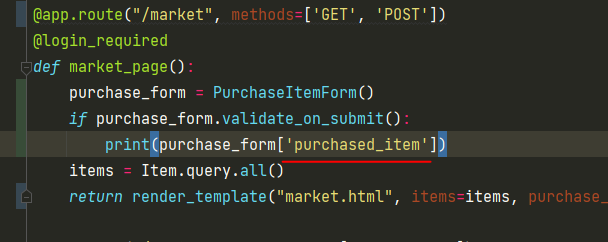
And paste it just about the purchase\_form jinja syntax



Change the new code as below

<input id**="purchased\_item"** name**="purchased\_item"** type**="hidden"** value**="{{ item.name }}"**>

In routes.py change the print statement in first method as following



To do from5:32 hrs