Tkinter

Tkinter is the standard GUI library for python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the tk GUI toolkit.

In GUI modules:

There are three types in GUI modules

Tkinter

PyQt

WxPython

By using Tkinter now I am going to write a GUI application

import tkinter

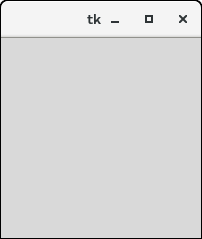
from tkinter import \*

root = tkinter.Tk()

root.title("tk")

root.mainloop()

**Output:**



firstly we need to import tkinter than we need to we need import\*from tkinter

import\* means the whole information in kinter will come to use

tkinter.Tk() to assign root variable.

If I run the above code it opens an application with tittle called demo and the application will shows in small size.

To change the small size of the application I need to run one more code which is below.

import tkinter

from tkinter import \*

root = tkinter.Tk()

root.title("demo")

root.geometry(“600x600”)

root.mainloop()

If I run the above code it will increase size of the application

After writing code for application and tittle and increasing the size of application now I am writing code for to create a label.

Labelcreation:

Import tkinter

from tkinter import \*

root = tkinter.Tk ()

root.title ("demo")

root.geometry(“600x600”)

label=tkinter.Label(root,text=”hii”).pack()

root.mainloop()

If I run the above code it will create a label of the aplication.

After create a label now create a button.

Button creation:

Import tkinter

from tkinter import \*

root = tkinter.Tk ()

root.title ("demo")

root.geometry(“600x600”)

label=tkinter.Label(root,text=”hii”).pack()

b =Button(root,text=”subscribe”,bg=”orange”, fg=”red”)

b.grid(column=1,row=0)

root.mainloop()

after b= must use start with capital “B”

bg = background colure

fg = front ground colure

I used a word called GRID in code because to place various button in various places in application where they are required

If I run the above code it will create a button of the application.

After create a button now lets go to create radio button

Import tkinter

from tkinter import \*

root = tkinter.Tk ()

root.title ("demo")

root.geometry(“600x600”)

label=tkinter.Label(root,text=”hii”).pack()

b =Button(root,text=”subscribe”,bg=”orange”, fg=”red”)

b.grid(column=1,row=0)

r =Radiobutton(root,text=”python”,value=1)

r.grid(column=2,row=1

root.mainloop()

If I run the above code it will create radio button of the application

Previously I created a single radio button now I gave other code to create multi radio buttons

Button – the button is used to add varies kinds of button to the python appplications

Import tkinter

from tkinter import \*

root = tkinter.Tk ()

root.title ("demo")

root.geometry(“600x600”)

label=tkinter.Label(root,text=”hii”).pack()

b =Button(root,text=”subscribe”,bg=”orange”, fg=”red”)

b.grid(column=1,row=0)

r =Radiobutton(root,text=”python”,value=1)

r.grid(column=2,row=1)

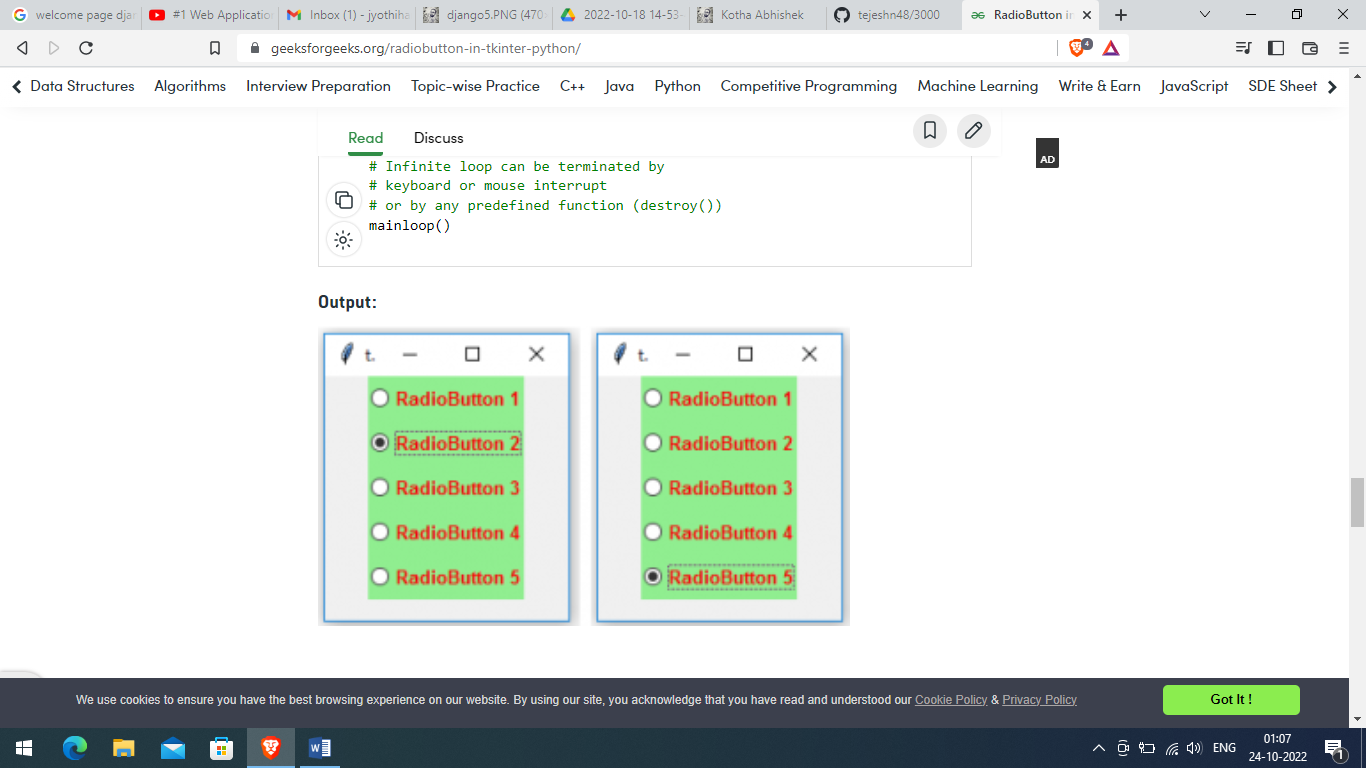
r1 =Radiobutton(root,text=”python”,value=1)

r1.grid(column=2,row=2)

r2 =Radiobutton(root,text=”python”,value=1)

r2.grid(column=2,row=3)

root.mainloop()



If I run the above code it will create multi radio buttons of the application

I used a word called GRID in code because to place various button in various places in application where they are required

Previously I created multi radio button now I gave code to create entry

entry

t =Entry(root,width=10)

t.grid(column=3,row=0)

If I run the above code it will create entry application

To create a message box I used to

Previously I created entry button on this application now I gave code to create a messagebox.these function

Import tkinter

from tkinter import \*

from tkinter import messagebox

def button1():

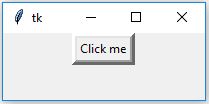
messagebox.showinfo(“status”,”plzsubscribe”)

b=button(root,text=”python life”,command=Buttons)

b.pack()

I used a function called pack(). which will pack the information and keep it .

after creating botton box on this application like this below picture



Previously I created message box now I gave code to create a combo box

Combo box creation:

import tkinter as tk

from tkinter import ttk

root = tk.Tk()

root.title("combobox")

root.geometry("600x600")

ttk.Label(root,text="python life",background="blue" ,foreground="white",

font=("Times new roman",15)).grid(row=0, =1)

combo box

n = tk.StringVar()column

course=ttk.Combobox(root,width=27,textvariable=n)

course["values"]=("python",

"django",

"machine learning")

course.grid(column=1,row=5)

course.current()

root.mainloop()

if I run above the code it will create a combo box.

Previously I created combo box now I gave code to create a scroll test

scroll test creation:

import tkinter as tk

from tkinter import ttk

from tkinter import scrolledtext

root = tk.Tk()

root.title("scrolledtext")

root.geometry("600x600")

ttk.Label(root,text="python life",background="blue" ,foreground="white",

font=("Times new roman",15)).grid(row=0,column=1)

text1=scrolledtext.ScrolledText(root,wrap=tk.WORD,width=40,height=10)

text1.grid(column=0,pady=10,padx=10)

text1.focus()

root.mainloop()

BY using Tkinter I prepared a small project which as below.

project:

from tkinter imort\*

from tkinter import messagebox

def ok():

uname=el.get()

password =e2.get()

if(uname=”” and password=””):

messagebox.showinfo(“”,”Blank not allowed”)

elif(uname==”admin”and password==”123”):

messagebox.showinfo(“”,”login success”)

root.destroy()

else:

messagebox.showinfo(“”,”incorrect user name and password”)

root=Tk()

root.tittle(“login”)

root.geometry(“300x200”)

global e1

global e2

label(root,text=”username”).place(x=10,y=10)

label(roo,text=”password”).place(x=10,y=40)

e1=Entry(root)

e1.place(x=140,y=10)

e2=Entry(root)ss

e2.place(x=140,y=40)

e2.config(show=””)

button(root,text”login”,command=ok,height=3,width=13).place(x=10,y=100)

root.mainloop()

Scipy

What is scipy

Scipy is a scientific computation library scipy uses under Numpy.

Scipy stands for scientific python

Like numpy ,scipy open source so we can use freely

Scipy was created Numpy creator’s travis olliphant

Which language is scipy written In

Scipy is primarily written in python.but few segments are written in C

Installation of scipy

If you have python and pip already installed on a system,then installation of scipy is very easy.

If we can install this scipy using this command

C:\user\your name\pip install scipy

Import scipy

Once install scipy then use the import scipy module

You went to use in your application by adding “fromscipy import module”:

Syntax: from scipy import constance

If you have import constance from scipy, the application will ready to use it.

For example:

How many cubic meters are in one liter

From scipy import constance

Print(constants.liter)

o\p: 1 liter=0.0001

Firstly import module from scipy with constant than print the constants.liter. It will show the cubic meters in one liter

Constants: scipy offers set of mathematical constants,on is “liter” which return 1 liter as cubic meters

How to check scipy version in python

The scipy version is string to store under the \_version\_attribute.

Example: version of scipy

Import scipy

Print(scipy.\_version\_)

o\p: it will shown the latest version of scipy

firstly we can import scipy module than print the scipe.\_version\_ .it will shows the the latest version of scipy

Scipy constants:

Scipy is more focused in scientific implementation ,it also built in scientific

constants

These constants can be useful when you are working with data science

Example: print the constant value of PI

From scipy import constants

Print(constants.PI)

o\p:3.141492….

Firstly import module scipy with constant. than print constant.PI otherwise it will return the constant value of PI

Constant unit :

A list of all units under the constant module can be using the dir() function

Example:

list of all constants

From scipy import constants

Print(dir(constants)

Firstly import module scipy with constants .than print dir,constants . it return the list of all constants

Scipy sparse data

What is sparse data:

Sparse data is data that has mostly unused elements.

Unused elements means that elements don’t carry any information

It can be an array like this one:

Example: [1, 0, 2, 4, 0, 0, 0]

Sparse data is a data in which values are zero

Dense array: a data in which values not equal to zero. This is totally opposite sparse data.

How to use sparse:

Scipy has module ,scipy.sparse that provides functions to deal with sparse data

There are two types of sparse matrices:

CSC

CSR

CSC: csc stands for compressed sparse column. Csc efficiently arithmetic ,fast column slices.

CSR: CSR stands for compressed sparse row.

Scipy is a python library used to solve scientific and mathematical problems

Built on Numpy

Allows manipulation and visualizing

What is scipy:

A very popular library in python

Scipy is a free and open source python library used for scientific computing and technical computing

It is a collection of mathematical algorithms and convenience functions buit on the Numpy extension of python.

It adds significant power to the interactive python session by providing the user with high level commands and classes for manipulating and visualizing data.

Installing scipy:

Install scipy using pip

We can install the scipy library by using the pip command

Pip is basically a recuirsive a cronym which stands for “pip installs packages “.

It is standard package manger which be installed in most of the operating system

It is standard package manager which can be installed in most of the operating systems.

To install ,run the following command in the terminal:

Pip install scipy

Sub packages in scipy

Scipy.cluster: cluster algorithms are used to vector quantization /k means

Scipy.constants:it represents physical and mathematical constants

Scipy.integrate:integration rotines

Scipy.linolg: it is used for linear algebra routine

Scipy.io:it is used for data input and output

Scipy.ndinge:it is used for the n-dimesion image

Scipy.ord:orthogonal distance regression

Scipy.optimized:it is used for optimized

Scipy.signal:it is used in signal processing

Scipy.sparse:sparse matrices and associated routines

Scipy.spatial:spatial data structures and algorithums

Scipy.stars: statistics.

Scipy.waves:it is a tool for writing

Here we will see how to implement the K-means clustering algorithm which is one of the popular clustering algorithms.

The k-means algorithm adjusts the classification of the observations into clusters and updates the cluster centroids until the position of the centroids is stable over successive iterations.

SymPy is a symbolic mathematics library while SciPy is a numeric mathematics library.

SciPy does not understand anything to do with SymPy's symbols and it will only work with numeric values such as floats.Ssympy is a Python library for symbolic mathematics. It aims to become a full-featured computer algebra system (CAS) while keeping the code as simple as use

Django

To understand the Django before you know python

Django is a web framework.

Frame work: frame works are software that is developed. Frame works are used by developers to build application.

Best frame works in python:

Django

Bottle

Cherry py

Falcon

Pylons

Web frame works:

web frame works is a software framework.that is designed to support development of web appplications.

Two web frame works available in python

Django

Flask

Django: Django is a free open source web application framework written python.

Django is invented by Adrian holovaty and simon willison .

Adrian holovaty and simon willison used to like famous guitarist django hainhardt such that they named this web frame work as django

Created in 2003 open sourced in 2005.

Versions: present version in django was 4.1

Features of django:

Stability

Excellent documentation

Resolve security issues

Highly scalable

Utilizes SEO(search engine organisation)

Huge library of packages

Below Top companies are using Django:

Instagram.

National Geographic

Mozilla

Spotify

Pinterest

Disqus

Bitbucket

Eventbrite

These 9 global companies are using Django

How to install Django: To install Django ,you must have python installed, and a package manager like PIP.

Django Requires Python

To check if your system has Python installed, run this command in the command prompt:

Python—version

If Python is installed, you will get a result with the version number, like this

Python 3.9.2

Pip:

To install Django ,you must use pip, which is included in Python from version 3.4.

To check if your system has PIP installed, run this command in the command prompt:

Pip—version

If PIP is installed, you will get a result with the version number.

For me, on a windows machine, the result looks like this:

Pip 20.2.3

Lets create virtual environment

Firstly we created virtual environment for every Django project.

Run this command in the command prompt:

Py –m venv myproject

This will set up a virtual environment, and create a folder named "myproject" with subfolders and files, like this:

Myproject

Include

Lib

Scrips

Pyvenv.cfg

Then you have to activate the environment, by typing this command:

Myproject\scripts\activate.bat

prompt Once the environment is activated, you will see this result in the command:

(myproject)c:\users\your name

Install Django

Finally, we can install Django.

Django is installed using pip,with this command:

py –m pip install Django

Check Django Version

You can check if Django is installed by asking for its version number like this:

Django-admin –version

Now you are ready to create a Django project in a virtual environment on your computer.

Project creation:

Once you have come up with a suitable name for your Django project, like mine:

New project\ navigate to where in the file system you want to store the code (in the virtual environment), and run this command in the command prompt:

Django-admin startproject new project

An app is a web application that has a specific meaning in your project ,like a homepage

Django works on MVT architecture.

M – Model



Models: in Django ,amodel is a class which used to cantain essential fields and methods.each field of the model class maps to a single in the database field

Model is defined in Models.py file. This file can contain multiple models.

Let's see an example here, we are creating a model Employee which has two fields first name and last name.

For example:

From Django.db import modules

Class employee(models.model):

First-name=models.charField(max-length=50)

Last-name=models.charfield(max-length=40)

The first name and last name fields are specified as class attributes and each attribute maps to a database column.

Django views:

Django views are python functions that takes http requests and return http response like HTML documents.

Views are usually put in a file called views.py located on your app's folder.

There is views.py in your folder look like these

All the view function are created inside the views.py file of the Django app.

Django view example:

Import datetime

 Create your views here.

from django.http import HttpResponse

def index(request):

 now = datetime.datetime.now()

    html =”<html><body><h3>nowtimeis%s.</h3></body></html>” % now

Return HttpResponse(html)    # rendering the template in HttpResponse

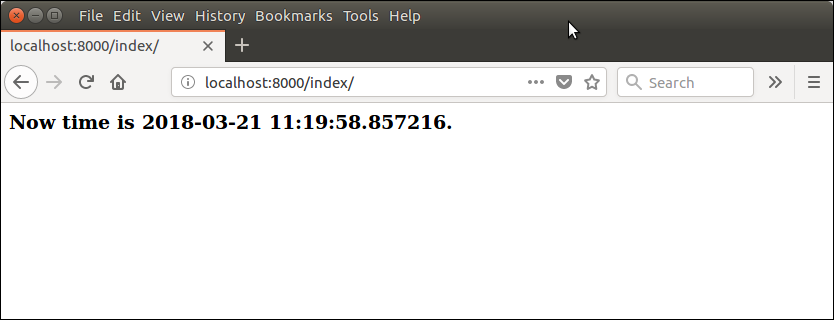
First,we will import datetime library that provides a method to get current data and time and http response.

Next we defined a wave function index that takes HTTP request respond back

View calls when gets mapped with URL in urls.py for example

Path(“index\”views.index),

Output:



Django Returning Errors:

Django provides various built in errors classes that are the sub class of Httpresponse and used to show error massage as HTTP response.some clases are list is below

class HttpResponseNotModified: It is used to designate that a page hasn't been modified since the user's last request (status code 304).

Class HttpBadRequest:It acts just like HttpResponce but a 400 status code

class HttpResponseNotFound: It acts just like HttpResponse but uses a 404 status code.

Class HttpResponseNotAllowed:it acts just like HttpResponse but uses a 410 status code.

HttpResponseServerError: It acts just like HttpResponse but uses a 500 status code.

Django Templets:

Django provides a convenient way to generic dynamic HTML pages by using template system

Why Django Template?

In HTML file, we can't write python code because the code is only interpreted by python interpreter not the browser.

We know that HTML is a static markup language, while Python is a dynamic programming language.

Django template engine is used to separate the design from the python code and allows us to build dynamic web pages.

Django project:

If we want to create a Django project, we have to use some commands.

django-admin startproject projectName

A New Folder with name projectName will be created. In that folder we have manage.

Django create a new project.than run the above command display like this:

New project

Manage.py

New project\

--init--.py

Asgi.py

Settings.py

url.py

wsgi.py

App creation:

In these previous to learn how to create a new project and now let’s go with app creation:

Django application consists of project and app.the difference between project and app is , a project is collection of insert files. and apps web application which is written to perform business logic.

To create an app we can use this command

Py .\manage.py startapp appname

For example I am taken a appname “pen” lets go with to create an app we can use this command.

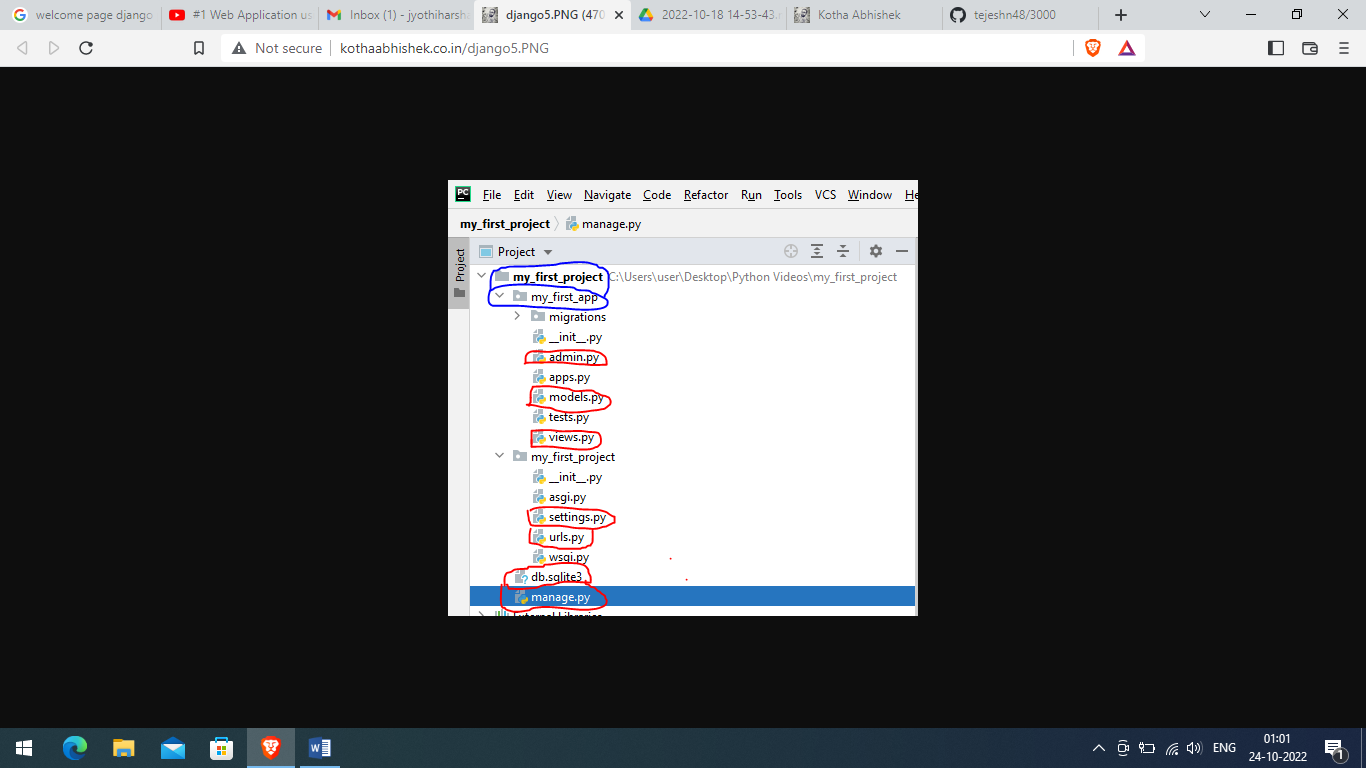
Py .\manage.py startapp pen

Run this command to created a app

Now let’s create app , we have to use this command

Python manage.py startapp appname

Manage.py is like web server



App is created

Now let’s open the terminal .go to setting open the newprojectname than select it.now open the new page.

First we need models to write class .before we go with settings

Open settings.py it will show some installed app now let’s go and add the appname

Now lets model.open model.py it show create your model here then start write a class

For example to create an employee class now write the employee class

Class employee(models.Model):

eno = models.IntegerField()

ename =models.CharField(max-length=30)

esal = models.FloateField()

eaddr=models.CharField(max-length=20)

* Model.Model is inheritance
* charField have deffenetly max-length

convert python to database we need to sql.so we need go to terminal

Now we have interpreter let’s go to interpreter settings.enter the virtualenv and scripts and pythonex

Convert python to database we need these commands

To check the shell use these command

Py \manage.py\shell

Use the above command we enter the shell

* Next command – from Django.db import connection
* C=connection.cursar()
* Exit() these function use exit the shell.

Check the shell next we want the makemigration use these command

* Py manage.py makemigration

Above command use to convert python file into database file in sql.

Now lets create the table we need these command

* Py \mange.py migrate

To enter the above command tables are created.

Run the runservar before we need the create superuser

Create a superuser we use these command

* Py \manage.py createsuperuser

Ask the some basic questions lets answer these questions

Name= your name

Password = create a password

Mail = mail is not mandatory

We enter the name and password .we have superuser

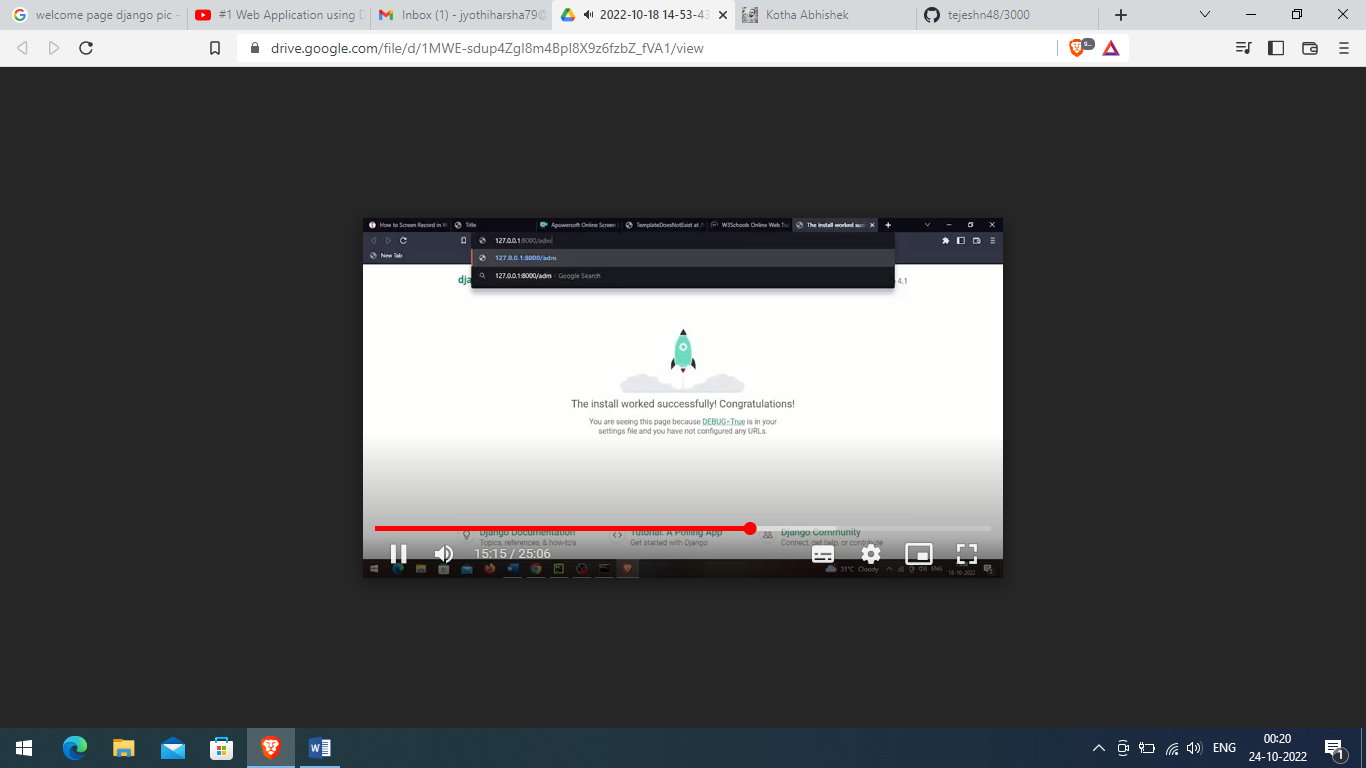
Than create a superuser after we will go run the runservar

Run the runservar we want to these command

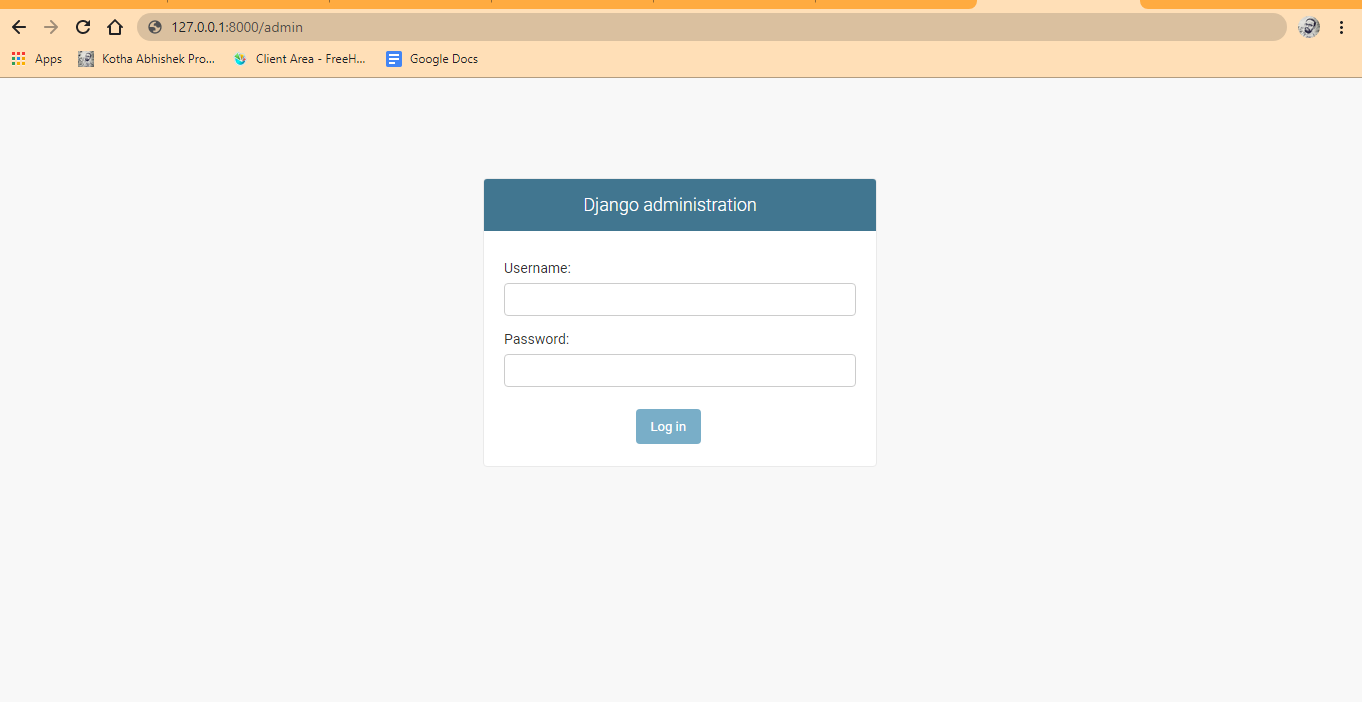
* Py \manage.py runservar

Enter the above code then open small url .

Double click the url code we entered the welcome page like this:



Enter the admin it return like this



Previously we are already create a username and password it will add the Django administration page

We go for registration your project lets open the admin.py can write the below command

Open the Django administration we can add some another persons details also.

You can see the all persons details now let’s go models .py to write a function called dander method.

For example:

def –str—(self):

self.name

Use these function we can see the all employees names.

We wont to all information about employees we can go admin.py .to write a class

For example

Class EmployeeAdmin(admin.ModelAdmin):

List-display = [‘Id’,’ename’,’esal’,’eaddr’]

Admin.site.register(Employee,EmployeeAdmin)

We can run the class we have URL and double click the URL we entered the URL welcome page and add admin we see the employee option than click the option we have all information about all employees.