Python Expense Tracker Project with Source Code

Inflow and Outflow record of money can be easily kept with the help of expense tracker. It helps to manage finances. In this project, we will develop an expense tracker that will track our expenses. Let's start developing the project.

Python Expense Tracker Project

In this python django project, we will create an expense tracker that will take details of our expenses. While filling the signup form a person will also need to fill in the details about the income and the amount he/she wants to save. Some people earn on a daily basis, so their income can also be added on a regular basis. Details of expenses will be shown in the form of a pie chart on a weekly, monthly, and yearly basis. Installation of django is a must to start with the Expense Tracker project.

Project Prerequisites

Sound knowledge of django framework, html, css, javascript and python is required before starting this Expense Tracker project of Python.

Project File Structure

1. Install django framework
2. Create a project and an app
3. Models.py
4. Admin.py
5. Urls.py
6. Views.py

1. Install django framework:

To begin with the project, you need to install django on your system. To install django, write the following command on cmd or terminal window.

```
Pip install django
```

2. Create a project and an app:

We will create a new project named ExpenseTracker and an app to start the project. Write the following command on the terminal window.

```
django-admin startproject ExpenseTracker
```

```
python mange.py startapp home
```

Create a template and static folder to store your files. Template folder will contain all the html files. Static folder will contain all the css files ,images and javascript files.

3. Models.py

Database connectivity is done with the help of models.py. Create the following models in models.py file in the app of your project.

```
from django.db import models

from django.utils.timezone import now

from django.contrib.auth.models import User

from django.conf import settings

from django.db.models.signals import post_save

from django.dispatch import receiver

from django.db.models import Sum

#Create your models here.

SELECT_CATEGORY_CHOICES = [

   ("Food","Food"),

   ("Travel","Travel"),

   ("Shopping","Shopping"),

   ("Necessities","Necessities"),

   ("Entertainment","Entertainment"),

   ("Other","Other")

]

ADD_EXPENSE_CHOICES = [

    ("Expense","Expense"),

    ("Income","Income")

]

PROFESSION_CHOICES =[

   ("Employee","Employee"),
```

```
    ("Business","Business"),
    ("Student","Student"),
    ("Other","Other")
]
class Addmoney_info(models.Model):
    user = models.ForeignKey(User,default = 1, on_delete=models.CASCADE)
    add_money = models.CharField(max_length = 10 , choices = ADD_EXPENSE_CHOICES
)
    quantity = models.BigIntegerField()
    Date = models.DateField(default = now)
    Category = models.CharField( max_length = 20, choices =
SELECT_CATEGORY_CHOICES , default ='Food')
    class Meta:
        db_table:'addmoney'

class UserProfile(models.Model):
    user = models.OneToOneField(User,on_delete=models.CASCADE)
    profession = models.CharField(max_length = 10, choices=PROFESSION_CHOICES)
    Savings = models.IntegerField( null=True, blank=True)
    income = models.BigIntegerField(null=True, blank=True)
    image = models.ImageField(upload_to='profile_image',blank=True)
    def __str__(self):
       return self.user.username
```

Code Explanation:

SELECT_CATEGORY_CHOICES , EXPENSE_CHOICES , PROFESSION_CHOICES contain the list of options that will be given while filling the expense form.

a. Foreign key: It establishes many to one relationship.

b. Charfield():It stores small and large size strings in the database.

c. BigIntegerField():It can store numbers from -9223372036854775808 to 9223372036854775807 in the database.

d. Datefield(): It accepts date as input.

e. Integerfield():It stores integer numbers in a database.

f. Imagefield():It stores images in the database.

4. Admin.py

It will help register the tables in the database.

```
# Register your models here.

from .models import Addmoney_info

From django.contrib import admin

class Addmoney_infoAdmin(admin.ModelAdmin):

   list_display=("user","quantity","Date","Category","add_money")

admin.site.register(Addmoney_info,Addmoney_infoAdmin)
```

```
from django.contrib.sessions.models import Session

admin.site.register(Session)

from .models import UserProfile

admin.site.register(UserProfile)
```

Code Explanation:
Addmoney_info, UserProfile are the names of the models that we want to register in the database. list_display contains the name of the columns that will be displayed in the database.

To store these models in the database, run the following command:

```
python manage.py makemigrations

    python manage.py migrate
```

For accessing the database, create the superuser. To create a superuser run the following command on your terminal window.

python manage.py createsuperuser

5. Urls.py

```
from django.contrib import admin

from django.urls import path

from django.urls import include

from . import views

from django.contrib.auth import views as auth_views

urlpatterns = [
```

```
   path('', views.home, name='home'),

   path('index/', views.index, name='index'),

   path('register/',views.register,name='register'),

   path('handleSignup/',views.handleSignup,name='handleSignup'),

   path('handlelogin/',views.handlelogin,name='handlelogin'),

   path('handleLogout/',views.handleLogout,name='handleLogout'),

   path('reset_password/',auth_views.PasswordResetView.as_view(template_name =
"home/reset_password.html"),name='reset_password'),


path('reset_password_sent/',auth_views.PasswordResetDoneView.as_view(template_n
ame="home/reset_password_sent.html"),name='password_reset_done'),


path('reset/<uidb64>/<token>/',auth_views.PasswordResetConfirmView.as_view(temp
late_name ="home/password_reset_form.html"),name='password_reset_confirm'),


path('reset_password_complete/',auth_views.PasswordResetView.as_view(template_n
ame ="home/password_reset_done.html"),name='password_reset_complete'),

   path('addmoney/',views.addmoney,name='addmoney'),


path('addmoney_submission/',views.addmoney_submission,name='addmoney_submission
'),

   path('charts/',views.charts,name='charts'),

   path('tables/',views.tables,name='tables'),

   path('expense_edit/<int:id>',views.expense_edit,name='expense_edit'),

   path('<int:id>/addmoney_update/', views.addmoney_update,
name="addmoney_update") ,
```

```
    path('expense_delete/<int:id>',views.expense_delete,name='expense_delete'),
    path('profile/',views.profile,name = 'profile'),
    path('expense_month/',views.expense_month, name = 'expense_month'),
    path('stats/',views.stats, name = 'stats'),
    path('expense_week/',views.expense_week, name = 'expense_week'),
    path('weekly/',views.weekly, name = 'weekly'),
    path('check/',views.check,name="check"),
    path('search/',views.search,name="search"),
    path('<int:id>/profile_edit/',views.profile_edit,name="profile_edit"),
    path('<int:id>/profile_update/',views.profile_update,name="profile_update"),
    path('info/',views.info,name="info"),
    path('info_year/',views.info_year,name="info_year"),
]
```

Code Explanation:

These are the names of the urls that we can access. If we try to access urls other than these, it will give an error.

a. path(): It is used to route the url with the functions views in your app folder.

b. include(): An element is returned by it, to include that element in urlpatterns.

6. Views.py

a. Importing modules

```
from django.shortcuts import render,HttpResponse,redirect

from django.contrib import messages

from django.contrib.auth import authenticate ,logout

from django.contrib.auth import login as dj_login

from django.contrib.auth.models import User

from .models import Addmoney_info,UserProfile

from django.contrib.sessions.models import Session

from django.core.paginator import Paginator, EmptyPage , PageNotAnInteger

from django.db.models import Sum

from django.http import JsonResponse

import datetime

from django.utils import timezone
```

Code Explanation:

a. Render: It returns the Httpresponse object and combines the template with the dictionary that is mentioned in it.
b. HttpResponse: It displays a text response to the user.
c. Redirect: It redirects the user to the specified url.
d. Messages: It helps to store and display messages to the user on the screen.
e. Authenticate: It verifies the user.
f. User: This model handles authentication as well as authorization.
g. Session: It helps the user to access only their data. Without sessions, every

user's data will be displayed to the user.

h. Paginator: It is used to manage paginated data.

i. datetime:It is used to get the current date and time.

b. Login and Index function

```
def home(request):

   if request.session.has_key('is_logged'):

       return redirect('/index')

   return render(request,'home/login.html')

  # return HttpResponse('This is home')

def index(request):

   if request.session.has_key('is_logged'):

       user_id = request.session["user_id"]

       user = User.objects.get(id=user_id)

       addmoney_info =
Addmoney_info.objects.filter(user=user).order_by('-Date')

       paginator = Paginator(addmoney_info , 4)

       page_number = request.GET.get('page')

       page_obj = Paginator.get_page(paginator,page_number)

       context = {

           # 'add_info' : addmoney_info,

          'page_obj' : page_obj

       }
```

```
    #if request.session.has_key('is_logged'):
        return render(request,'home/index.html',context)
    return redirect('home')
```

Code Explanation:

home() is a function that allows the user to access the dashboard once the user is logged in. index() function contains the backend of the dashboard page.

a. filter(): Queryset is filtered by filter().

b. get(): Single unique object can be obtained with get().

c. order_by(): It orders the queryset.

c. Other Functions

```
def addmoney(request):
    return render(request,'home/addmoney.html')
def profile(request):
    if request.session.has_key('is_logged'):
        return render(request,'home/profile.html')
    return redirect('/home')
def profile_edit(request,id):
    if request.session.has_key('is_logged'):
        add = User.objects.get(id=id)
        return render(request,'home/profile_edit.html',{'add':add})
```

```
    return redirect("/home")
```

Code Explanation:

The first function redirects the user to the page where we can enter our expenses and income. profile() function redirects the user to the profile page where information of the user is displayed. profile_edit() redirects to the page where information of the user can be edited. These pages can only be accessed if the user is logged in.

d. Updating Profile

```
def profile_update(request,id):
    if request.session.has_key('is_logged'):
        if request.method == "POST":
            user = User.objects.get(id=id)
            user.first_name = request.POST["fname"]
            user.last_name = request.POST["lname"]
            user.email = request.POST["email"]
            user.userprofile.Savings = request.POST["Savings"]
            user.userprofile.income = request.POST["income"]
            user.userprofile.profession = request.POST["profession"]
            user.userprofile.save()
            user.save()
            return redirect("/profile")
```

```
    return redirect("/home")
```

Code Explanation:

profile_update() function performs the backend of the edit profile form. User.objects.get() gets all the information of the user then all the updated information is saved again. This function is performed by save().

e. Signup, Login, and Logout backend:

```
def handleSignup(request):

    if request.method =='POST':

            # get the post parameters

            uname = request.POST["uname"]

            fname=request.POST["fname"]

            lname=request.POST["lname"]

            email = request.POST["email"]

            profession = request.POST['profession']

            Savings = request.POST['Savings']

            income = request.POST['income']

            pass1 = request.POST["pass1"]

            pass2 = request.POST["pass2"]

            profile = UserProfile(Savings =
Savings,profession=profession,income=income)

            # check for errors in input

            if request.method == 'POST':
```

```
                try:
                    user_exists = User.objects.get(username=request.POST['uname'])
                    messages.error(request," Username already taken, Try something else!!!")
                    return redirect("/register")
                except User.DoesNotExist:
                    if len(uname)>15:
                        messages.error(request," Username must be max 15 characters, Please try again")
                        return redirect("/register")

                    if not uname.isalnum():
                        messages.error(request," Username should only contain letters and numbers, Please try again")
                        return redirect("/register")

                    if pass1 != pass2:
                        messages.error(request," Password do not match, Please try again")
                        return redirect("/register")

            # create the user
            user = User.objects.create_user(uname, email, pass1)
```

```
            user.first_name=fname
            user.last_name=lname
            user.email = email
            # profile = UserProfile.objects.all()
            user.save()
            # p1=profile.save(commit=False)
            profile.user = user
            profile.save()
            messages.success(request," Your account has been successfully
created")
            return redirect("/")
    else:
        return HttpResponse('404 - NOT FOUND ')
    return redirect('/login')
def handlelogin(request):
    if request.method =='POST':
        # get the post parameters
        loginuname = request.POST["loginuname"]
        loginpassword1=request.POST["loginpassword1"]
        user = authenticate(username=loginuname, password=loginpassword1)
        if user is not None:
            dj_login(request, user)
```

```
            request.session['is_logged'] = True
            user = request.user.id
            request.session["user_id"] = user
            messages.success(request, " Successfully logged in")
            return redirect('/index')
        else:
            messages.error(request," Invalid Credentials, Please try again")
            return redirect("/")
    return HttpResponse('404-not found')
def handleLogout(request):
        del request.session['is_logged']
        del request.session["user_id"]
        logout(request)
        messages.success(request, " Successfully logged out")
        return redirect('home')
```

Code Explanation:

handlesignup() function handles the backend of signup form. Uname, fname, lname, email , pass1, pass2, income, savings and profession will store the information of the form in these variables.

Various conditions are there to sign up . The username should be unique, pass1 and pass 2 should be the same and also the length of the username should be maximum 15 characters. handlelogin() handles the backend of the

login page. If the information entered by the user is correct, the user will be redirected to the dashboard. handleLogout() handles the backend of logout.

a. error(): This function gives the error message on the screen if a condition is not satisfied.

b. len():This function returns the length of the string, array, dictionary etc.

c. success():If a condition is satisfied, it displays the message that is specified in the parentheses.

f. Add Money Form and Add Money Update Backend:

```
def addmoney_submission(request):

   if request.session.has_key('is_logged'):

       if request.method == "POST":

           user_id = request.session["user_id"]

           user1 = User.objects.get(id=user_id)

           addmoney_info1 =
Addmoney_info.objects.filter(user=user1).order_by('-Date')

           add_money = request.POST["add_money"]

           quantity = request.POST["quantity"]

           Date = request.POST["Date"]

           Category = request.POST["Category"]

           add = Addmoney_info(user =
user1,add_money=add_money,quantity=quantity,Date = Date,Category= Category)

           add.save()
```

```
            paginator = Paginator(addmoney_info1, 4)
            page_number = request.GET.get('page')
            page_obj = Paginator.get_page(paginator,page_number)
            context = {
                'page_obj' : page_obj
                }
            return render(request,'home/index.html',context)
    return redirect('/index')
def addmoney_update(request,id):
    if request.session.has_key('is_logged'):
        if request.method == "POST":
            add  = Addmoney_info.objects.get(id=id)
            add .add_money = request.POST["add_money"]
            add.quantity = request.POST["quantity"]
            add.Date = request.POST["Date"]
            add.Category = request.POST["Category"]
            add .save()
            return redirect("/index")
    return redirect("/home")
```

Code Explanation:

addmoney_submission() handles the backend of the form we filled for our daily expenses. addmoney_update() saves the information of the form after we have edited .

g. Expense Edit and Expense Delete Backend:

```
def expense_edit(request,id):
    if request.session.has_key('is_logged'):
        addmoney_info = Addmoney_info.objects.get(id=id)
        user_id = request.session["user_id"]
        user1 = User.objects.get(id=user_id)
        return
render(request,'home/expense_edit.html',{'addmoney_info':addmoney_info})
    return redirect("/home")
def expense_delete(request,id):
    if request.session.has_key('is_logged'):
        addmoney_info = Addmoney_info.objects.get(id=id)
        addmoney_info.delete()
        return redirect("/index")
    return redirect("/home")
```

Code Explanation:

expense_edit() form redirects the user to the edit form and also extracts the details of the user from the database and displays it on the screen. expense_delete() helps in deleting the expenses.

h. Monthly, weekly , yearly expense Backend

```
def expense_month(request):

    todays_date = datetime.date.today()

    one_month_ago = todays_date-datetime.timedelta(days=30)

    user_id = request.session["user_id"]

    user1 = User.objects.get(id=user_id)

    addmoney = Addmoney_info.objects.filter(user =
user1,Date__gte=one_month_ago,Date__lte=todays_date)

    finalrep ={}

    def get_Category(addmoney_info):

        # if addmoney_info.add_money=="Expense":

        return addmoney_info.Category

    Category_list = list(set(map(get_Category,addmoney)))

    def get_expense_category_amount(Category,add_money):

        quantity = 0

        filtered_by_category = addmoney.filter(Category =
Category,add_money="Expense")

        for item in filtered_by_category:

            quantity+=item.quantity

        return quantity

    for x in addmoney:

        for y in Category_list:
```

```
            finalrep[y]= get_expense_category_amount(y,"Expense")

    return JsonResponse({'expense_category_data': finalrep}, safe=False)

def stats(request):

    if request.session.has_key('is_logged') :

        todays_date = datetime.date.today()

        one_month_ago = todays_date-datetime.timedelta(days=30)

        user_id = request.session["user_id"]

        user1 = User.objects.get(id=user_id)

        addmoney_info = Addmoney_info.objects.filter(user =
user1,Date__gte=one_month_ago,Date__lte=todays_date)

        sum = 0

        for i in addmoney_info:

            if i.add_money == 'Expense':

                sum=sum+i.quantity

        addmoney_info.sum = sum

        sum1 = 0

        for i in addmoney_info:

            if i.add_money == 'Income':

                sum1 =sum1+i.quantity

        addmoney_info.sum1 = sum1

        x= user1.userprofile.Savings+addmoney_info.sum1 - addmoney_info.sum

        y= user1.userprofile.Savings+addmoney_info.sum1 - addmoney_info.sum
```

```
        if x<0:
            messages.warning(request,'Your expenses exceeded your savings')
            x = 0
        if x>0:
            y = 0
        addmoney_info.x = abs(x)
        addmoney_info.y = abs(y)
        return render(request,'home/stats.html',{'addmoney':addmoney_info})
def expense_week(request):
   todays_date = datetime.date.today()
   one_week_ago = todays_date-datetime.timedelta(days=7)
   user_id = request.session["user_id"]
   user1 = User.objects.get(id=user_id)
   addmoney = Addmoney_info.objects.filter(user =
user1,Date__gte=one_week_ago,Date__lte=todays_date)
   finalrep ={}
   def get_Category(addmoney_info):
        return addmoney_info.Category
   Category_list = list(set(map(get_Category,addmoney)))
   def get_expense_category_amount(Category,add_money):
        quantity = 0
        filtered_by_category = addmoney.filter(Category =
Category,add_money="Expense")
```

```
        for item in filtered_by_category:
            quantity+=item.quantity
        return quantity
    for x in addmoney:
        for y in Category_list:
            finalrep[y]= get_expense_category_amount(y,"Expense")
    return JsonResponse({'expense_category_data': finalrep}, safe=False)


def weekly(request):
    if request.session.has_key('is_logged') :
        todays_date = datetime.date.today()
        one_week_ago = todays_date-datetime.timedelta(days=7)
        user_id = request.session["user_id"]
        user1 = User.objects.get(id=user_id)
        addmoney_info = Addmoney_info.objects.filter(user =
user1,Date__gte=one_week_ago,Date__lte=todays_date)
        sum = 0
        for i in addmoney_info:
            if i.add_money == 'Expense':
                sum=sum+i.quantity
        addmoney_info.sum = sum
        sum1 = 0
```

```
        for i in addmoney_info:
            if i.add_money == 'Income':
                sum1 =sum1+i.quantity
        addmoney_info.sum1 = sum1
        x= user1.userprofile.Savings+addmoney_info.sum1 - addmoney_info.sum
        y= user1.userprofile.Savings+addmoney_info.sum1 - addmoney_info.sum
        if x<0:
            messages.warning(request,'Your expenses exceeded your savings')
            x = 0
        if x>0:
            y = 0
        addmoney_info.x = abs(x)
        addmoney_info.y = abs(y)
    return render(request,'home/weekly.html',{'addmoney_info':addmoney_info})
def check(request):
    if request.method == 'POST':
        user_exists = User.objects.filter(email=request.POST['email'])
        messages.error(request,"Email not registered, TRY AGAIN!!!")
        return redirect("/reset_password")
def info_year(request):
    todays_date = datetime.date.today()
    one_week_ago = todays_date-datetime.timedelta(days=30*12)
```

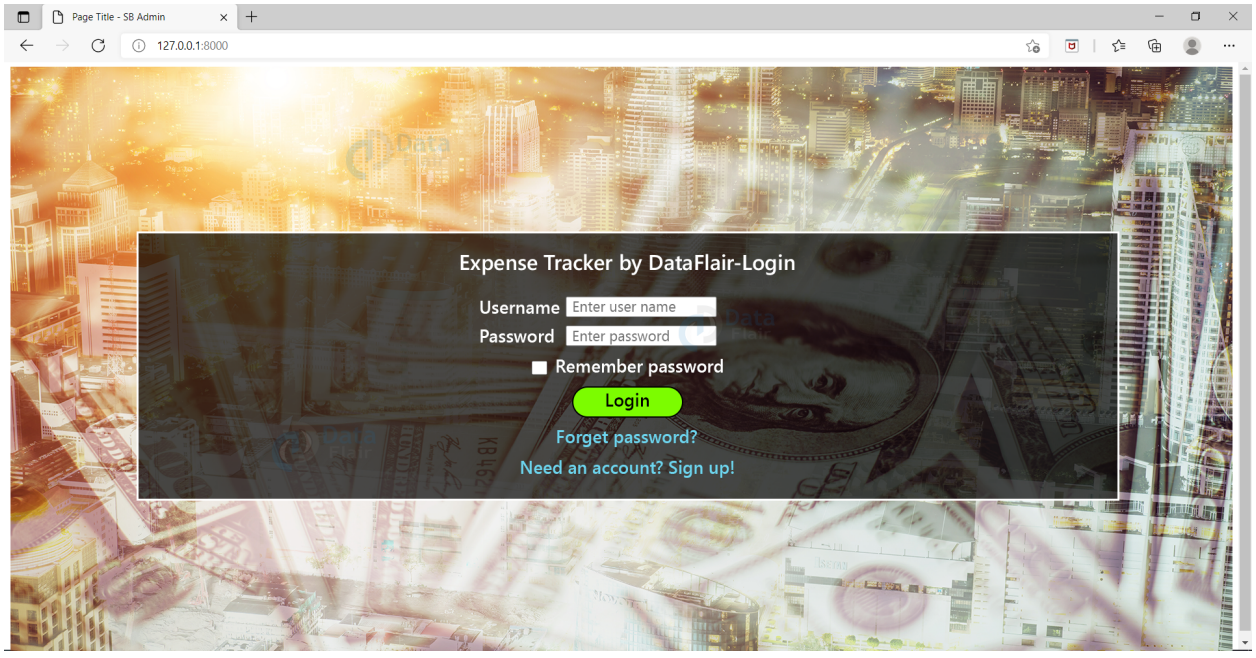
```
    user_id = request.session["user_id"]

    user1 = User.objects.get(id=user_id)

    addmoney = Addmoney_info.objects.filter(user =
user1,Date__gte=one_week_ago,Date__lte=todays_date)

    finalrep ={}

    def get_Category(addmoney_info):

        return addmoney_info.Category

    Category_list = list(set(map(get_Category,addmoney)))

    def get_expense_category_amount(Category,add_money):

        quantity = 0

        filtered_by_category = addmoney.filter(Category =
Category,add_money="Expense")

        for item in filtered_by_category:

            quantity+=item.quantity

        return quantity

    for x in addmoney:

        for y in Category_list:

            finalrep[y]= get_expense_category_amount(y,"Expense")

    return JsonResponse({'expense_category_data': finalrep}, safe=False)

def info(request):

    return render(request,'home/info.html')
```

Code Explanation:

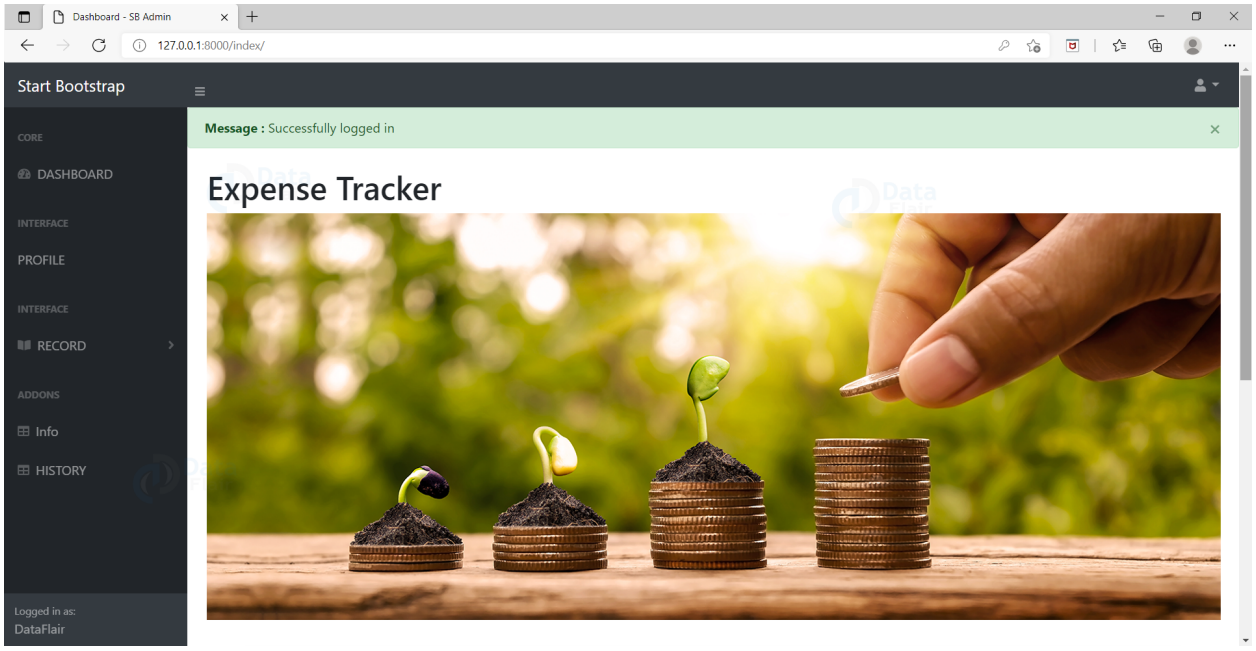
expense_month() function gets the data of the expenses of the current month. get_category() function gets the category (expense/income) from the database. get_expense_category_amount() fetches the amount from the database of the category(expense). stats() function calculates the overall expenses and savings made by the user in a month. expense_week() and info_year() performs the same function as expense_month() but on a weekly basis. weekly() gets the amount saved in a month and also the overall expenses of a user.

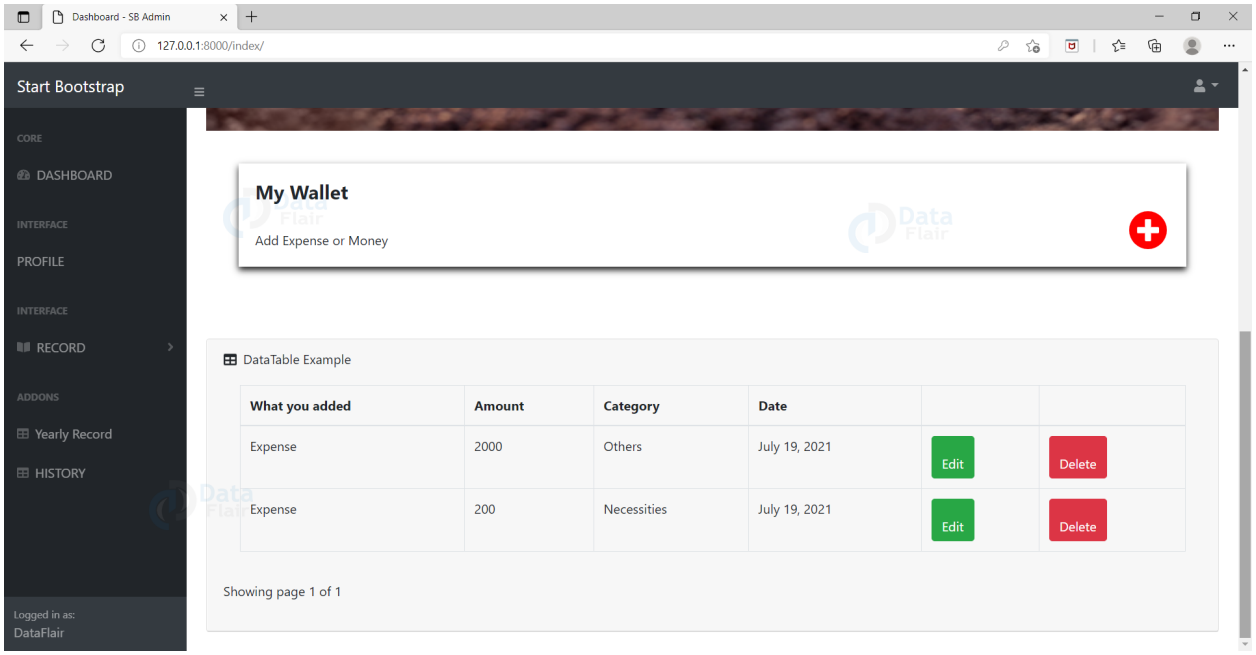
Python Expense Tracker Output:

Login Form:

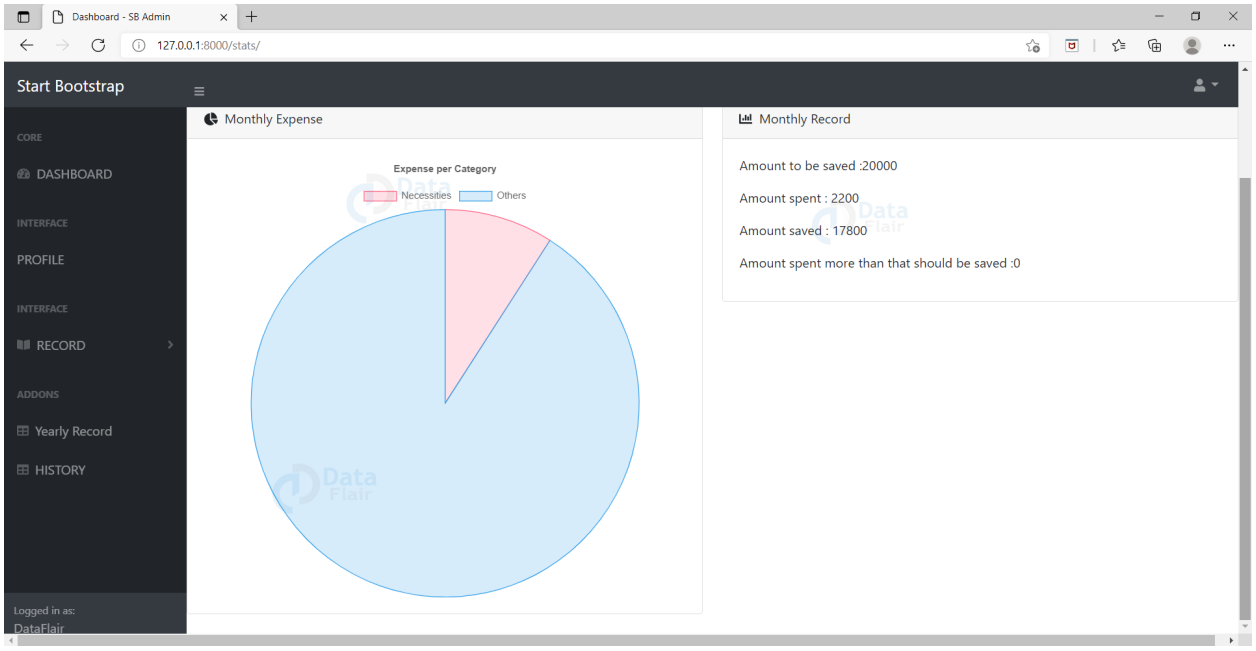


Dashboard:

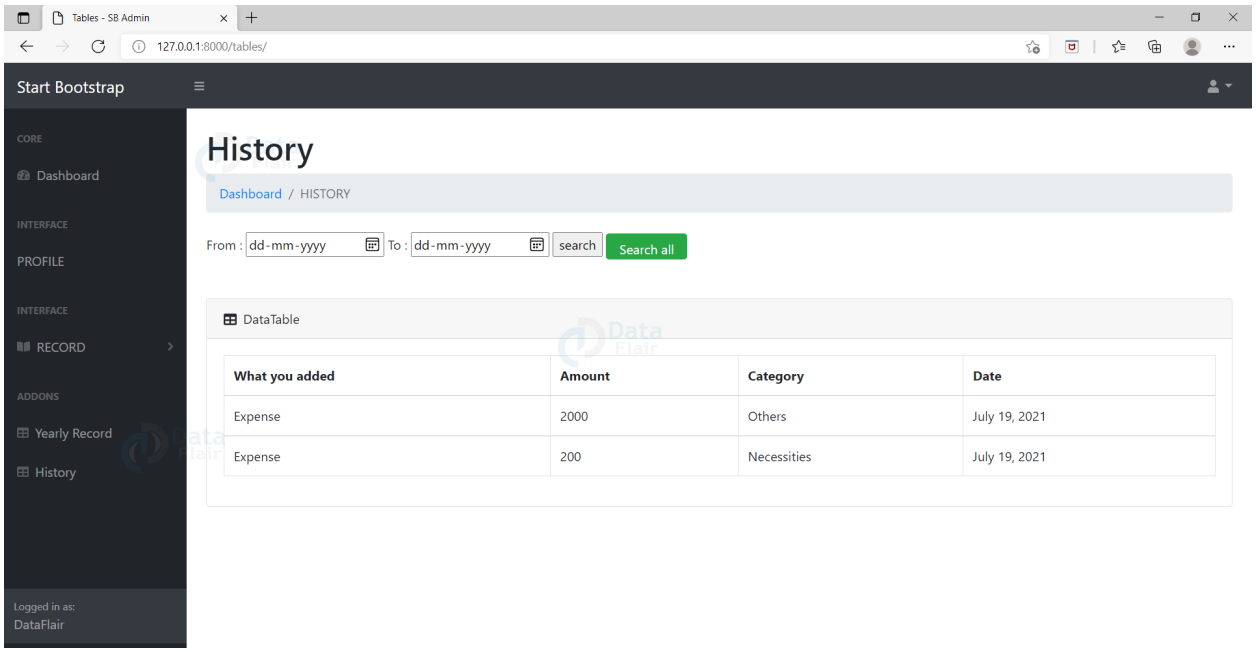




Monthly Expense Page:



History Page:



Summary

We have successfully created the expense tracker project in python. We learned a variety of concepts while making this project.