

Candidate number: 246743

(Configurations may need to be edited, use the specified interpreter in the venv folder)

Workthrough video link:

One Drive:

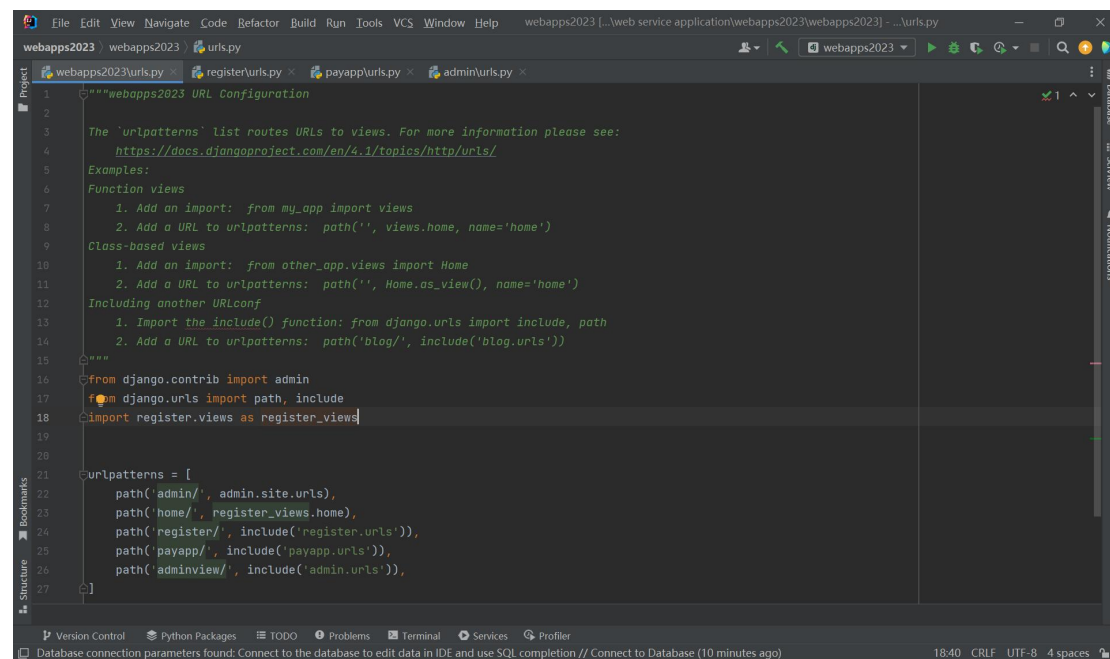
https://universityofsussex-my.sharepoint.com/:f/g/personal/yf216_sussex_ac_uk/Eq2refwLI-JNkq6BsVhksy4Br6ibb-atk8KH0m1nNbip6oA?e=WoddWj

Google Drive:

<https://drive.google.com/drive/folders/18c3-Or4RY0qaahA49aY2XtKXqpxVvrF5?usp=sharing>

Presentation:

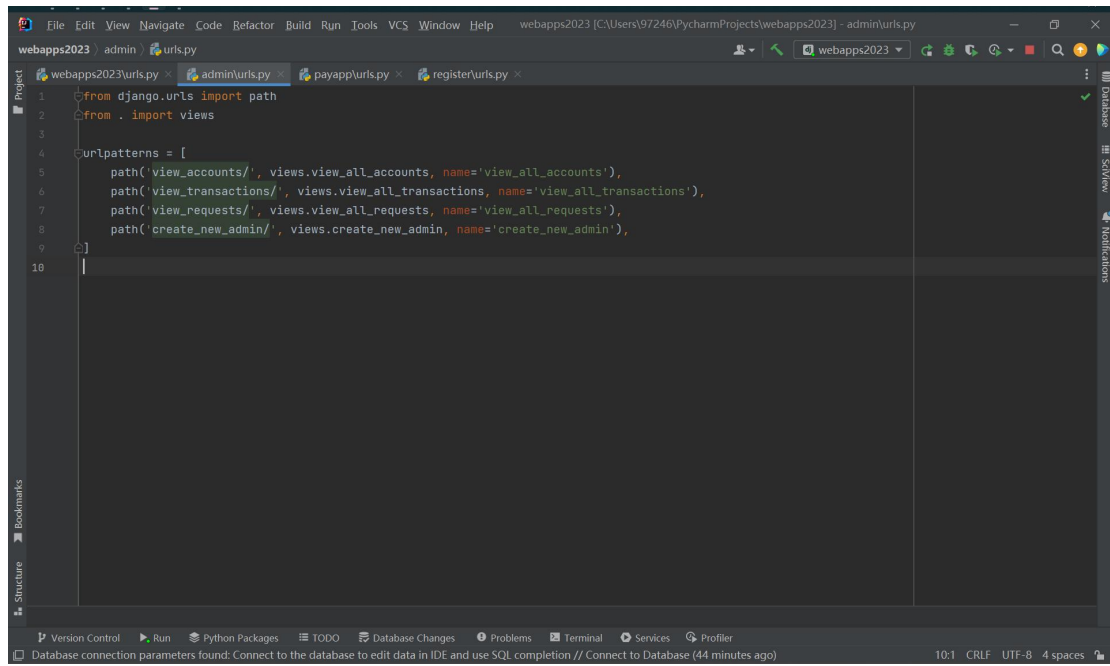
- All required are given templates are written properly and connected with the views functions correctly
- URLConf is used for the navigation.
- Crispy forms and bootstrap are used for the web page apperance.



```
1  """webapps2023 URL Configuration
2
3  The 'urlpatterns' list routes URLs to views. For more information please see:
4      https://docs.djangoproject.com/en/4.1/topics/http/urls/
5  Examples:
6  Function views
7      1. Add an import: from my_app import views
8      2. Add a URL to urlpatterns: path('', views.home, name='home')
9  Class-based views
10     1. Add an import: from other_app.views import Home
11     2. Add a URL to urlpatterns: path('', Home.as_view(), name='home')
12  Including another URLconf
13     1. Import the include() function: from django.urls import include, path
14     2. Add a URL to urlpatterns: path('blog/', include('blog.urls'))
15
16  """
17  from django.contrib import admin
18  from django.urls import path, include
19  import register_views as register_views
20
21  urlpatterns = [
22      path('admin/', admin.site.urls),
23      path('home/', register_views.home),
24      path('register/', include('register.urls')),
25      path('payapp/', include('payapp.urls')),
26      path('adminview/', include('admin.urls')),
27  ]
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help webapps2023 [C:\Users\97246\PycharmProjects\webapps2023] - register/urls.py
webapps2023 | register | urls.py
Project webapps2023\urls.py x admin\urls.py x payapp\urls.py x register\urls.py x
1 from django.urls import path
2 from . import views
3
4 urlpatterns = [
5     path('home/', views.home, name='home'),
6     path('register_user/', views.register_user, name='register_user'),
7     path('login_user/', views.login_user, name='login_user'),
8     path('logout_user/', views.logout_user, name='logout_user'),
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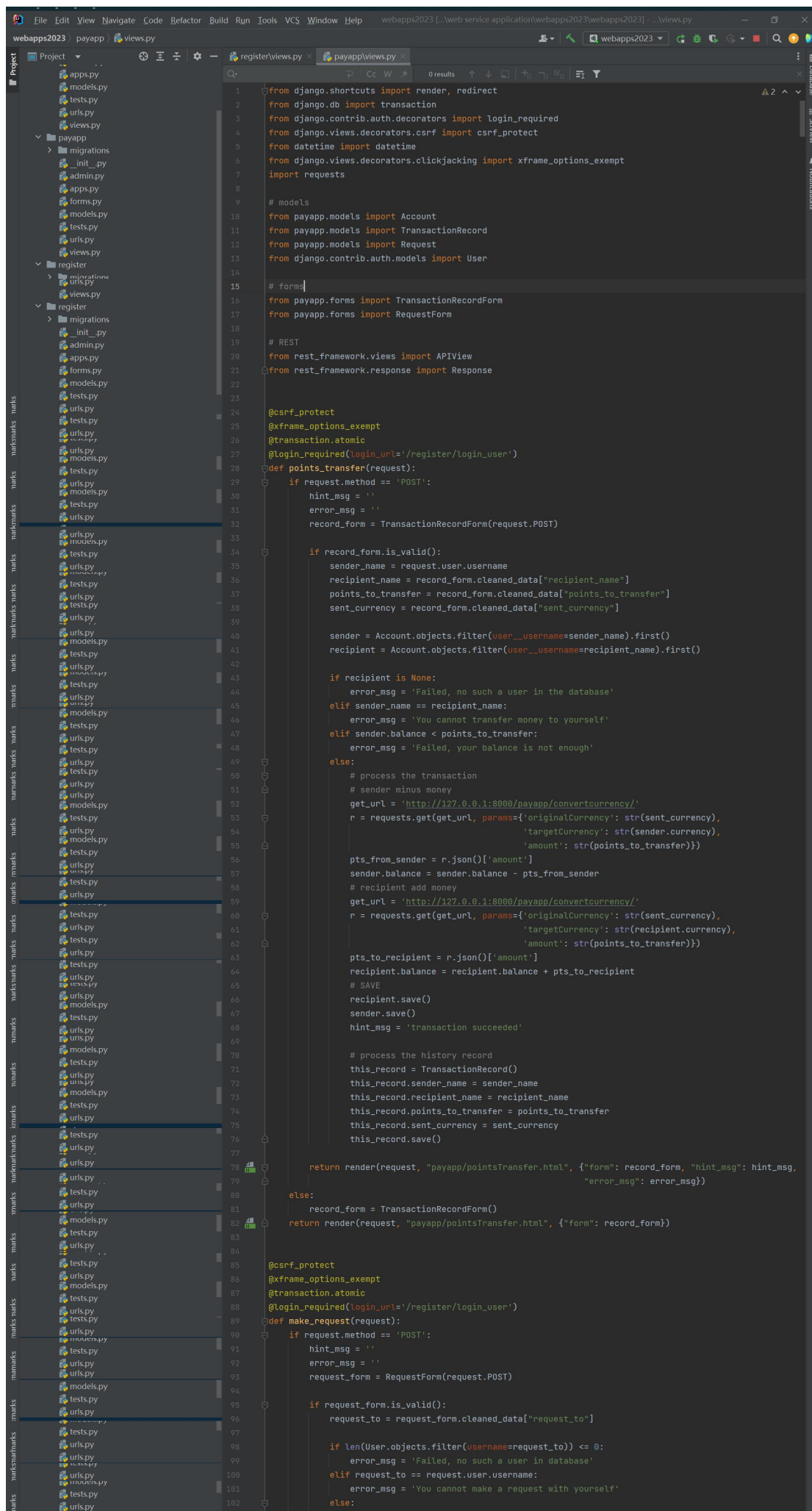
Business Logic Layer:

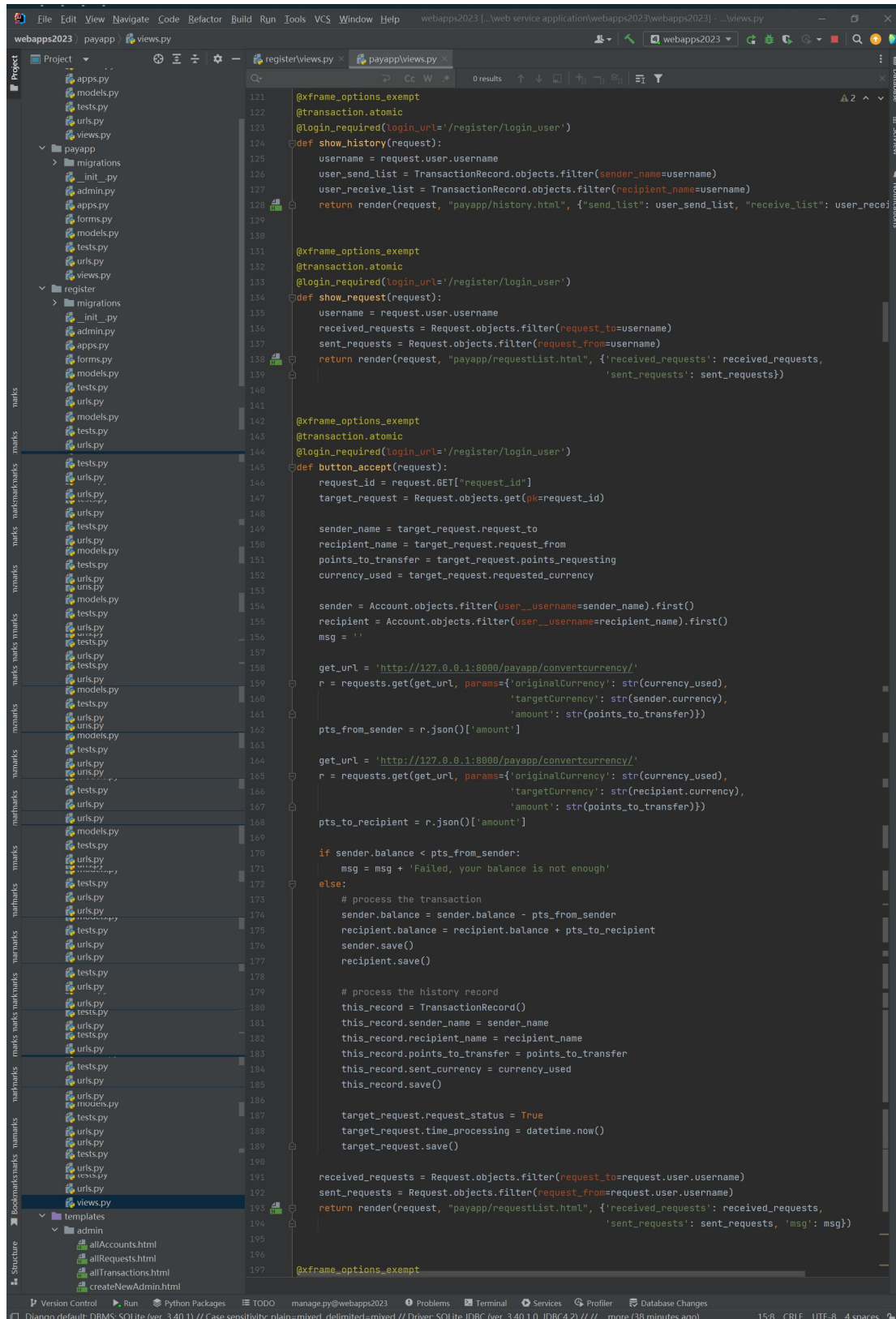
- All the required functionalities in views.py is implemented.

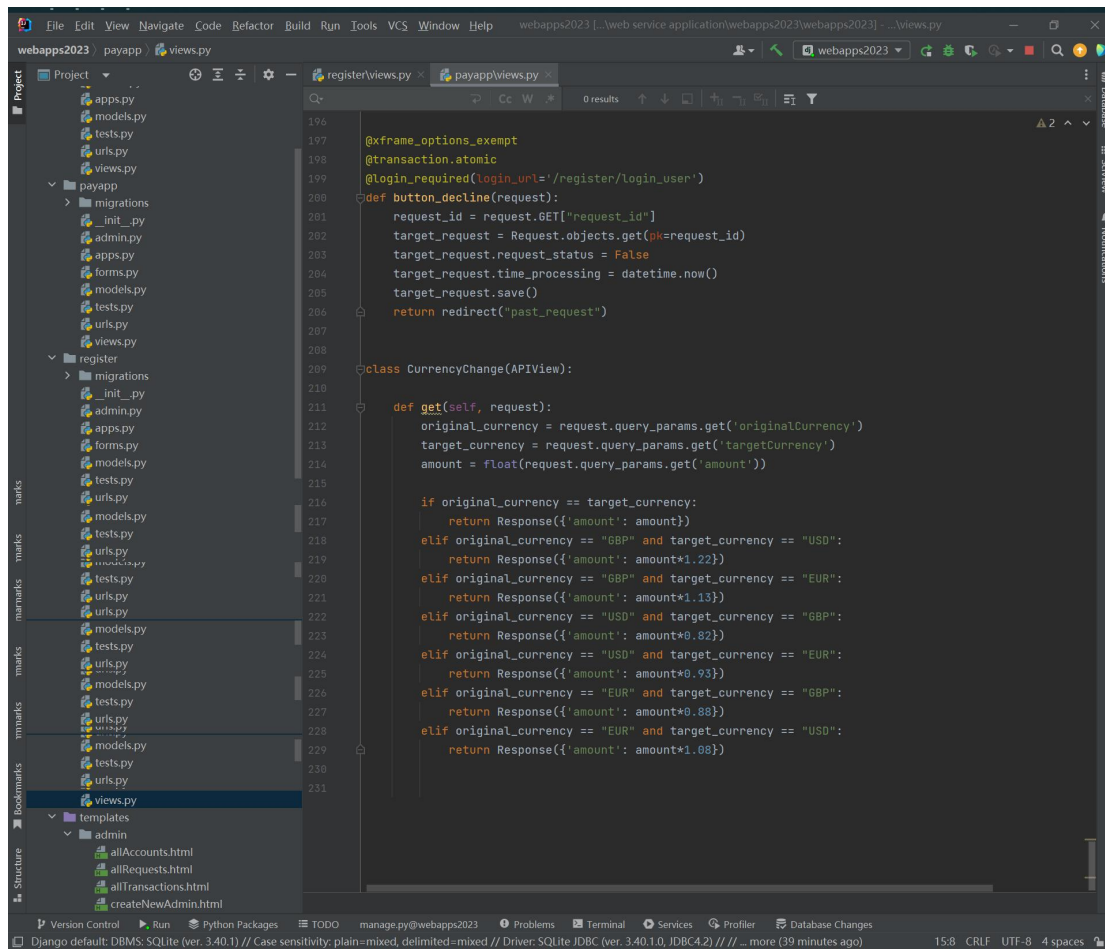
```

1  from django.contrib.auth import login, authenticate, logout
2  from django.contrib.auth.forms import AuthenticationForm
3  from django.contrib.auth.models import User
4  from django.contrib.auth.decorators import login_required
5  from django.views.decorators.csrf import csrf_protect
6  from django.shortcuts import render, redirect
7  from django.db import transaction
8  from django.views.decorators.clickjacking import xframe_options_exempt
9  import requests
10
11 # models
12 import payapp.models as payapp_models
13 from payapp.models import Account
14
15 # forms
16 from register.forms import RegisterForm
17 from payapp.forms import AccountForm
18
19 @xframe_options_exempt
20 @login_required(login_url='/register/login_user')
21 def home(request):
22     if request.user.is_superuser:
23         return render(request, 'register/home.html')
24     this_user = Account.objects.filter(user__username=request.user.username).first()
25     balance = this_user.balance
26     currency = this_user.currency
27     return render(request, 'register/home.html', {'user_balance': balance, 'user_currency': currency})
28
29 @csrf_protect
30 @xframe_options_exempt
31 @transaction.atomic
32 def register_user(request):
33     if request.method == "POST":
34         account_form = AccountForm(request.POST)
35         register_form = RegisterForm(request.POST)
36         if register_form.is_valid() and account_form.is_valid():
37             account = account_form.save(commit=False)
38             user = register_form.save()
39             account.user = user
40             # initialize the balance
41             get_url = 'http://127.0.0.1:8000/payapp/convertcurrency/'
42             r = requests.get(get_url, params={'originalCurrency': 'GBP', 'targetCurrency': str(account.currency), 'amount': 1000})
43             print('!!!!!!!!!!!!!!!!!!!!!!!!!!!!')
44             print(r)
45             print(r.json())
46             account.balance = r.json()['amount']
47             account.save()
48             logout(request)
49             login(request, user)
50             return redirect("home")
51         else:
52             return render(request, 'register/register.html', {'failed_signup': True, 'register_user': register_form,
53                                                                 'account_user': account_form})
54     return render(request, "register/register.html", {"register_user": RegisterForm, "account_user": AccountForm})
55
56 @csrf_protect
57 @xframe_options_exempt
58 def login_user(request):
59     if request.method == "POST":
60         form = AuthenticationForm(request, request.POST)
61         if form.is_valid():
62             username = form.cleaned_data.get('username')
63             password = form.cleaned_data.get('password')
64             user = authenticate(request, username=username, password=password)
65             if user is not None:
66                 logout(request)
67                 login(request, user)
68                 return redirect('home')
69             else:
70                 return render(request, 'register/login.html', {'failed_login': True, 'login_user': form})
71         form = AuthenticationForm()
72     return render(request, "register/login.html", {"login_user": form})
73
74 @xframe_options_exempt
75 @login_required(login_url='/register/login_user')
76 def logout_user(request):
77     logout(request)
78     return redirect("login_user")

```



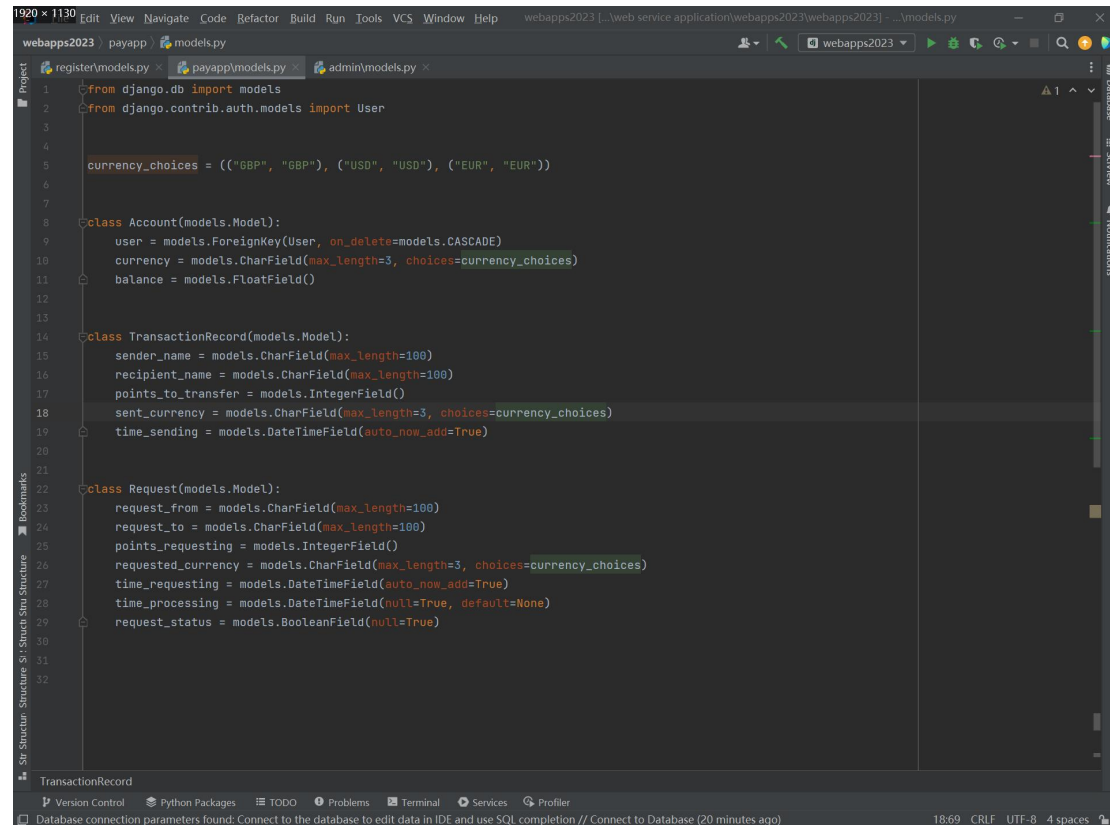




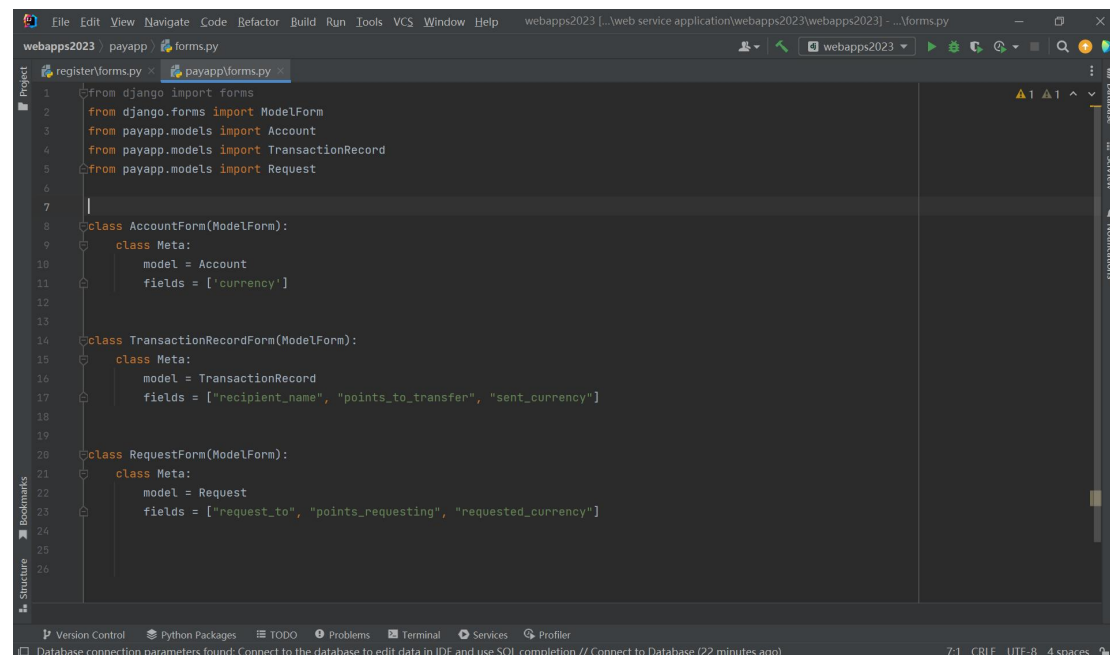
```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help webapps2023 [...Web Application\COURSEWORK\webapps2023\webapps2023] - ...views.py
webapps2023 / admin > views.py
Project
  register/views.py
  payroll/views.py
  admin/views.py
1  import ...
15
16
17  @xframe_options_exempt
18  @transaction.atomic
19  @login_required(login_url='/register/login_user')
20  def view_all_accounts(request):
21      user_list = User.objects.all()
22      account_list = Account.objects.all()
23      return render(request, "admin/allAccounts.html", {"user_list": user_list,
24                                                         "account_list": account_list})
25
26
27  @xframe_options_exempt
28  @transaction.atomic
29  @login_required(login_url='/register/login_user')
30  def view_all_transactions(request):
31      transaction_list = TransactionRecord.objects.all()
32      return render(request, "admin/allTransactions.html", {"transaction_list": transaction_list})
33
34
35  @xframe_options_exempt
36  @transaction.atomic
37  @login_required(login_url='/register/login_user')
38  def view_all_requests(request):
39      request_list = Request.objects.all()
40      return render(request, "admin/allRequests.html", {"request_list": request_list})
41
42
43  @csrf_protect
44  @xframe_options_exempt
45  @transaction.atomic
46  @login_required(login_url='/register/login_user')
47  def create_new_admin(request):
48      msg = ''
49      if request.method == "POST":
50          msg = ''
51          register_form = RegisterForm(request.POST)
52          try:
53              if register_form.is_valid():
54                  admin = register_form.save(commit=False)
55                  admin.is_superuser = True
56                  admin.save()
57                  msg = msg + 'Successfully create admin user ' + admin.username
58              else:
59                  msg = 'form not valid'
60                  return render(request, 'admin/createNewAdmin.html', {'register_user': register_form, 'error_msg': msg})
61          except SystemError:
62              msg = msg + 'something wrong happened in the register form'
63              return render(request, "admin/createNewAdmin.html", {"register_user": register_form, 'error_msg': msg})
64      else:
65          register_form = RegisterForm(request.POST)
66      return render(request, 'admin/createNewAdmin.html', {'register_user': register_form, 'hint_msg': msg})
67
68
Version Control Python Packages TODO Problems Terminal Services Profiler Database Changes Build
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Data Access Layer:

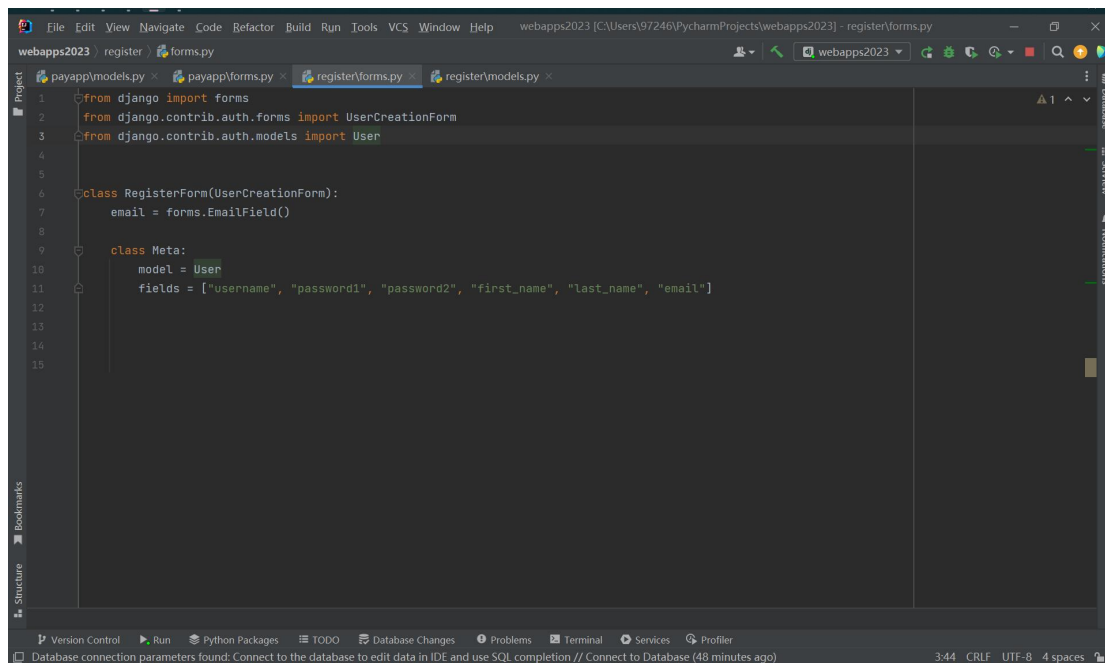
- All application data is handled through models, and relating tables to each other.



```
1 from django.db import models
2 from django.contrib.auth.models import User
3
4
5 currency_choices = (("GBP", "GBP"), ("USD", "USD"), ("EUR", "EUR"))
6
7
8 class Account(models.Model):
9     user = models.ForeignKey(User, on_delete=models.CASCADE)
10    currency = models.CharField(max_length=3, choices=currency_choices)
11    balance = models.FloatField()
12
13
14 class TransactionRecord(models.Model):
15    sender_name = models.CharField(max_length=100)
16    recipient_name = models.CharField(max_length=100)
17    points_to_transfer = models.IntegerField()
18    sent_currency = models.CharField(max_length=3, choices=currency_choices)
19    time_sending = models.DateTimeField(auto_now_add=True)
20
21
22 class Request(models.Model):
23    request_from = models.CharField(max_length=100)
24    request_to = models.CharField(max_length=100)
25    points_requesting = models.IntegerField()
26    requested_currency = models.CharField(max_length=3, choices=currency_choices)
27    time_requesting = models.DateTimeField(auto_now_add=True)
28    time_processing = models.DateTimeField(null=True, default=None)
29    request_status = models.BooleanField(null=True)
```



```
1 from django import forms
2 from django.forms import ModelForm
3 from payapp.models import Account
4 from payapp.models import TransactionRecord
5 from payapp.models import Request
6
7
8 class AccountForm(ModelForm):
9     class Meta:
10        model = Account
11        fields = ['currency']
12
13
14 class TransactionRecordForm(ModelForm):
15     class Meta:
16        model = TransactionRecord
17        fields = ["recipient_name", "points_to_transfer", "sent_currency"]
18
19
20 class RequestForm(ModelForm):
21     class Meta:
22        model = Request
23        fields = ["request_to", "points_requesting", "requested_currency"]
24
25
26
```



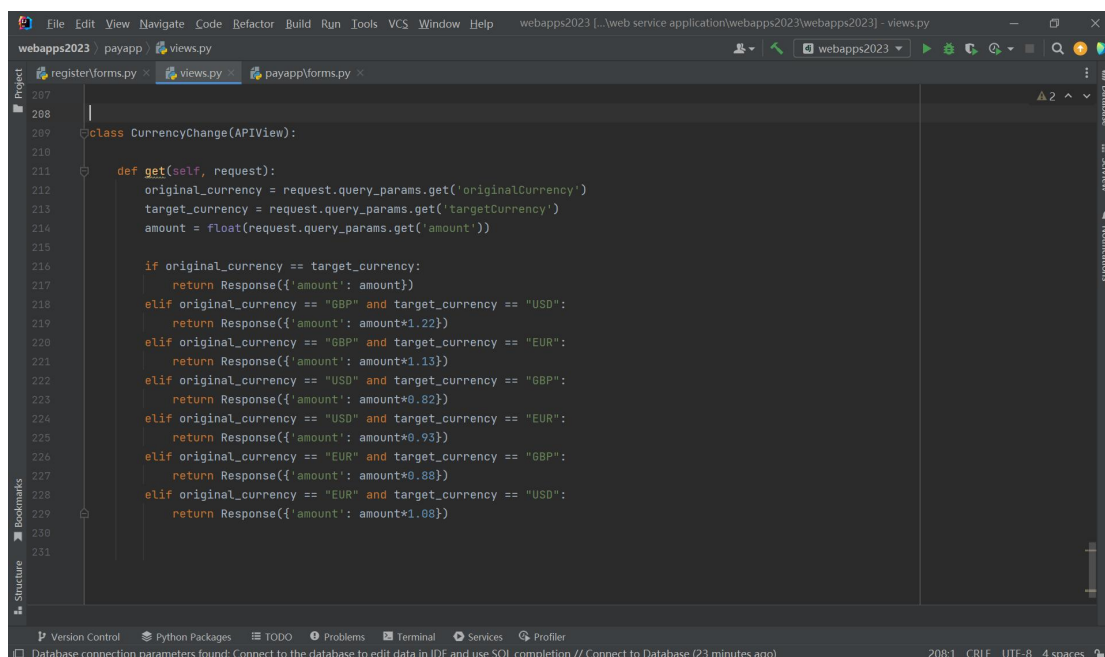
```
1 from django import forms
2 from django.contrib.auth.forms import UserCreationForm
3 from django.contrib.auth.models import User
4
5
6 class RegisterForm(UserCreationForm):
7     email = forms.EmailField()
8
9     class Meta:
10         model = User
11         fields = ["username", "password1", "password2", "first_name", "last_name", "email"]
12
13
14
15
```

Security Layer:

- User can register, login and logout without problems
- Authorised actors are distinguished when accessing the templates
- It is using HTTPS to communicate with the web application
- For preventing CSRF and Clickjacking attacks, decorations are implemented in every place has an enter risk, SQL prevention is implemented when receiving the data from input or database. XSS is not implemented.
- An administrator is initialised (username: **admin1**, password: **admin1**)

Web Services:

- REST framework for convert the currency is implemented.



```
207
208
209 class CurrencyChange(APIView):
210
211     def get(self, request):
212         original_currency = request.query_params.get('originalCurrency')
213         target_currency = request.query_params.get('targetCurrency')
214         amount = float(request.query_params.get('amount'))
215
216         if original_currency == target_currency:
217             return Response({'amount': amount})
218         elif original_currency == "GBP" and target_currency == "USD":
219             return Response({'amount': amount*1.22})
220         elif original_currency == "GBP" and target_currency == "EUR":
221             return Response({'amount': amount*1.13})
222         elif original_currency == "USD" and target_currency == "GBP":
223             return Response({'amount': amount*0.82})
224         elif original_currency == "USD" and target_currency == "EUR":
225             return Response({'amount': amount*0.93})
226         elif original_currency == "EUR" and target_currency == "GBP":
227             return Response({'amount': amount*0.88})
228         elif original_currency == "EUR" and target_currency == "USD":
229             return Response({'amount': amount*1.08})
230
231
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help webapps2023 [...web service application]webapps2023webapps2023 - urls.py
webapps2023 | payapp | urls.py
Project | register/forms.py | urls.py | views.py | payapp/forms.py
1 from django.urls import path
2 from . import views
3
4 urlpatterns = [
5     path('', views.points_transfer, name='points_transfer'),
6     path('history/', views.show_history, name='payments_history'),
7     path('makerequest/', views.make_request, name='make_request'),
8     path('showrequest/', views.show_request, name='past_request'),
9     path('showrequestaccepted/', views.button_accept, name='button_accept'),
10    path('showrequestdeclined/', views.button_decline, name='button_decline'),
11    path('convertcurrency/', views.CurrencyChange.as_view(), name='convert_currency'),
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webapps2023 | payapp | views.py
Project | register/forms.py | urls.py | payapp/views.py | register/views.py | payapp/forms.py
46 error_msg = 'You cannot transfer money to yourself'
47 elif sender.balance < points_to_transfer:
48     error_msg = 'Failed, your balance is not enough'
49 else:
50     # process the transaction
51     # sender minus money
52     get_url = 'http://127.0.0.1:8080/payapp/convertcurrency/'
53     r = requests.get(get_url, params={'originalCurrency': str(sent_currency),
54                                     'targetCurrency': str(sender.currency),
55                                     'amount': str(points_to_transfer)})
56     pts_from_sender = r.json()['amount']
57     sender.balance = sender.balance - pts_from_sender
58     # recipient add money
59     get_url = 'http://127.0.0.1:8080/payapp/convertcurrency/'
60     r = requests.get(get_url, params={'originalCurrency': str(sent_currency),
61                                     'targetCurrency': str(recipient.currency),
62                                     'amount': str(points_to_transfer)})
63     pts_to_recipient = r.json()['amount']
64     recipient.balance = recipient.balance + pts_to_recipient
65     # SAVE
66     recipient.save()
67     sender.save()
68     hint_msg = 'transaction succeeded'
69
70 # process the history record
71 this_record = TransactionRecord()
72 this_record.sender_name = sender_name
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help webapps2023 [...\web service application\webapps2023\webapps2023] - ...views.py
webapps2023 | payapp | views.py
Project | register/forms.py | urls.py | payapp/views.py | register/views.py | payapp/forms.py
151 points_to_transfer = target_request.points_requesting
152 currency_used = target_request.requested_currency
153
154 sender = Account.objects.filter(user__username=sender_name).first()
155 recipient = Account.objects.filter(user__username=recipient_name).first()
156 msg = ''
157
158 get_url = 'http://127.0.0.1:8080/payapp/convertcurrency/'
159 r = requests.get(get_url, params={'originalCurrency': str(currency_used),
160                                 'targetCurrency': str(sender.currency),
161                                 'amount': str(points_to_transfer)})
162 pts_from_sender = r.json()['amount']
163
164 get_url = 'http://127.0.0.1:8080/payapp/convertcurrency/'
165 r = requests.get(get_url, params={'originalCurrency': str(currency_used),
166                                 'targetCurrency': str(recipient.currency),
167                                 'amount': str(points_to_transfer)})
168 pts_to_recipient = r.json()['amount']
169
170 if sender.balance < pts_from_sender:
171     msg = msg + 'Failed, your balance is not enough'
172 else:
173     # process the transaction
174     sender.balance = sender.balance - pts_from_sender
175     recipient.balance = recipient.balance + pts_to_recipient
176     sender.save()
177     recipient.save()
```