

Django DBMS Project Report

Software Engineering Team Project



Team members:
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Fall 2016

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1. Project Commitment

The target of Django DBMS project is to develop a web-based platform for small store owner or manager to manage resources and for the staffs to conduct their regular works.

This project is built on top of Django-based web service, therefore it only need to be deployed on specified server instead of to be deployed on different working environment. All the user need are just the internet and web browser.

Below figure shows the project commitment form:

**Prairie View A&M University
Department of Computer Science**

**COMP 5423 Software Engineering Project Commitment Form
FALL 2016**

This form should be filled by the students and signed by ALL the students. The completed form should be returned to Dr. A. Lodger by September 21, 2016.

Student Names: Chao Chen Saheed Adepoju Tihang Zhao

Project Title: Django DBMS

Title and Brief Description of the Project:
This project targets on delivering a django-based website for small store owner, manager and staff to manage resources and conducting regular works.

Commitment to the Project by Student:

Student Name	Student Signature	Date	Email	Phone
<u>Chao Chen</u>	<u>Chao Chen</u>	9/18/2016	cohen-rough@gmail.com	8329104612
<u>Zhao Tihang</u>	<u>Zhao Tihang</u>	9/20/2016	tony92320@gmail.com	8324741068
<u>Saheed Adepoju</u>	<u>Saheed Adepoju</u>	9/20/2016	sadebukola@gmail.com	7134729263

By signing above, we certify that we will do original work for the project and will do the best to complete the above project on time. Our individual failure to work on the project may result in a grade that may prevent us individually and our team members from getting a satisfactory grade for the class. We have indicated our team contact information (Email and phone) and we individually will use this as our primary communication channel, and respond immediately to the communication.

The Team leader for this team is : Chao Chen

2. User Stories

2.1 Use case card

Scenario 1: Account Creation.

Given that user doesn't exist

And can not use the System.

When the user tries to use the Application

The Application allows user to create
Account.(username and password)

The Application allows the user to log
onto the system.

Scenario 2: Logging out.

Given that a user has logged
onto the System.

When a user clicks log-out

The Application logs out the user.

Scenario 3: Account login.

Given that there is no current user logged in.

i7.8

Given that there already exist accounts in the system.

Given that the Username and Password are correctly entered into the Application.

When they are entered

The Application logs them into the system.

Scenario 4: Add New Stock to the Application.

Given that a user is logged in.

Select the workflow menu.

Select the expenditure sub-menu.

Select the Stock sub-menu.

Enter the Name, the Price, count and Payment.

Click Submit

The Application will outline that the process was successful.

Scenario 5: Add a new membership record.

Given that an admin user is already logged in.

Select the workflow menu.

Select the Membership sub-menu.

Select the New-membership sub-menu.

Enter the Name, Phone number, gender, Birthdate, balance amount, PinCode, Address.

Click Submit to submit the details.

The application should respond with that the record has been entered.

Scenario 6: Purchasing an item.

Given that an admin user has logged into the system.

Select the workflow menu.

Select the Purchasing sub-menu.

Select the Purchasing sub-menu.

Select the Stock from the drop-down-menu

Select the Quantity needed.

Enter the Quantity needed.

The application calculates the total amount due.

Enter the membership ID of the customer.

Select the Submit button to complete the transaction.

Scenario 7: @@@@ AND @@@@ Query a customer
Given that an admin user is logged onto the system.

Select the Query menu.
Select the Query and Edit sub-menu.
Select the Customer item from the class drop down menu.
Select the attribute you would like to use to search for a customer.
Click on Search.
The application displays all users who meet the criteria entered.

Scenario 8: @@@@ AND @@@@ Edit a customer

Given that an admin user is logged onto the system.

Given that the customer details exist with the system.

Select the Query menu.
Select the Customer item from the class drop-down menu.
Select the attribute you would like to use to search for a customer.
Search for a customer.
Click on Search.
The application displays all users who meet the criteria entered.

Scenario 9

Select Workflow Menu.

Select Activity Function.

Create Discount For specific product.

Select Valid date for discount.

Select Target For membership or birthday.

Submit button to complete.

Scenario 10

Select workflow menu

Select Activity Function.

Select Create promotion.

Select Valid date for discount.

Select product for promotion.

Give value for Buy N get one.

Submit button for complete.

2.2 New Use Case

Scenario 11

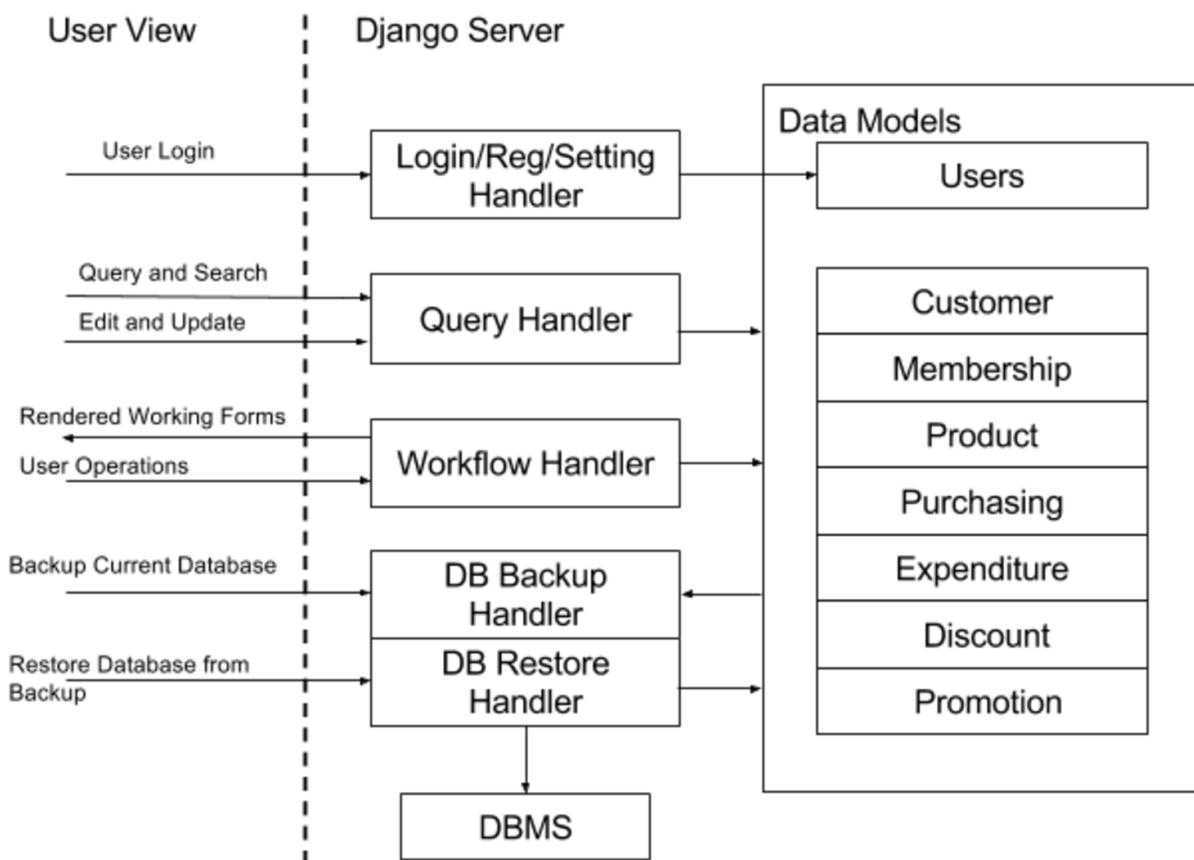
select Query Menu
select Backup and restore menu.
select backup.
backup intraday table of database
cover previous date.
Exit function.

Scenario 12

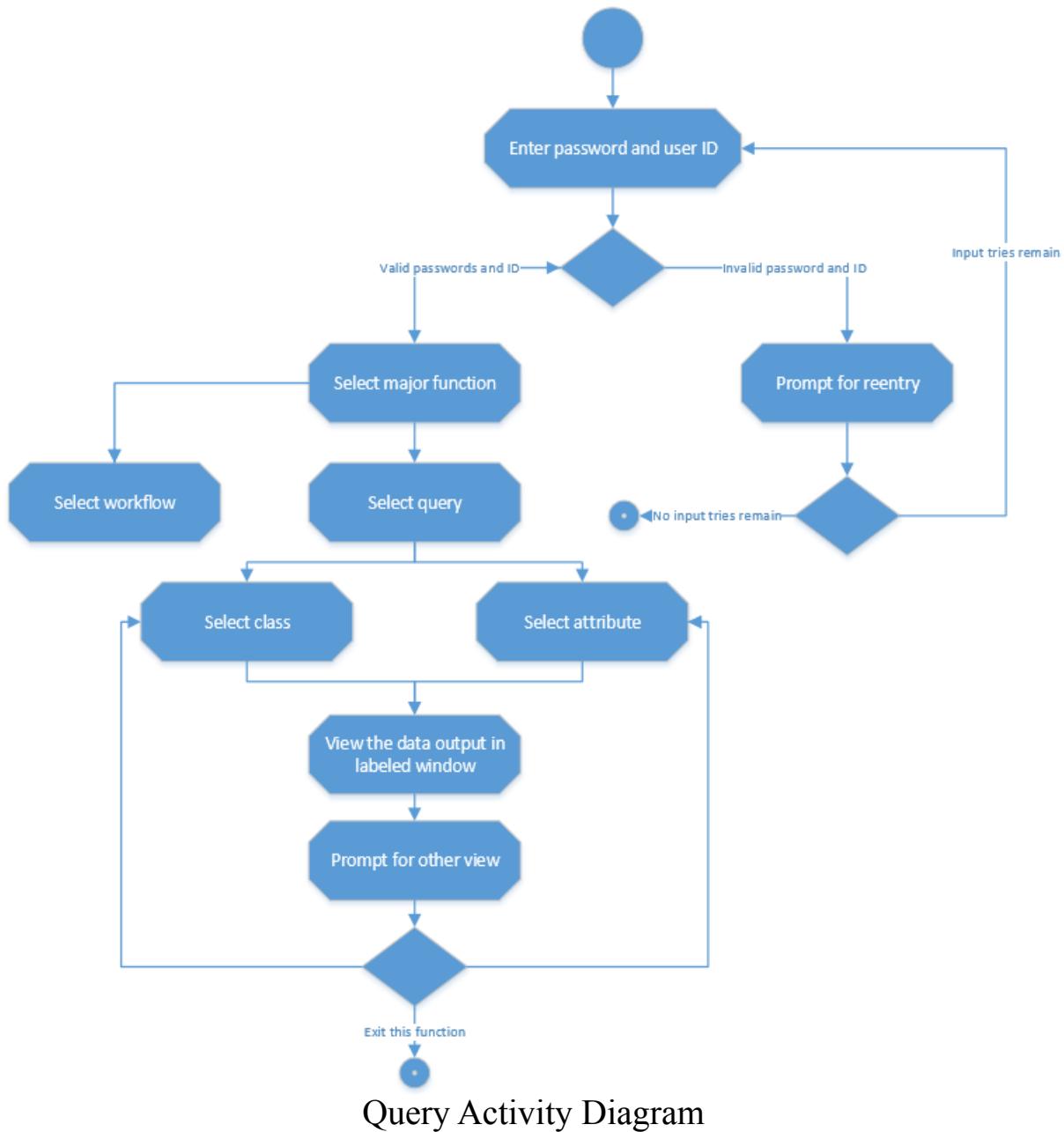
select Query Menu
select Backup and restore menu
select restore
do query and specify the date.
submit query get the table.
Exit function.

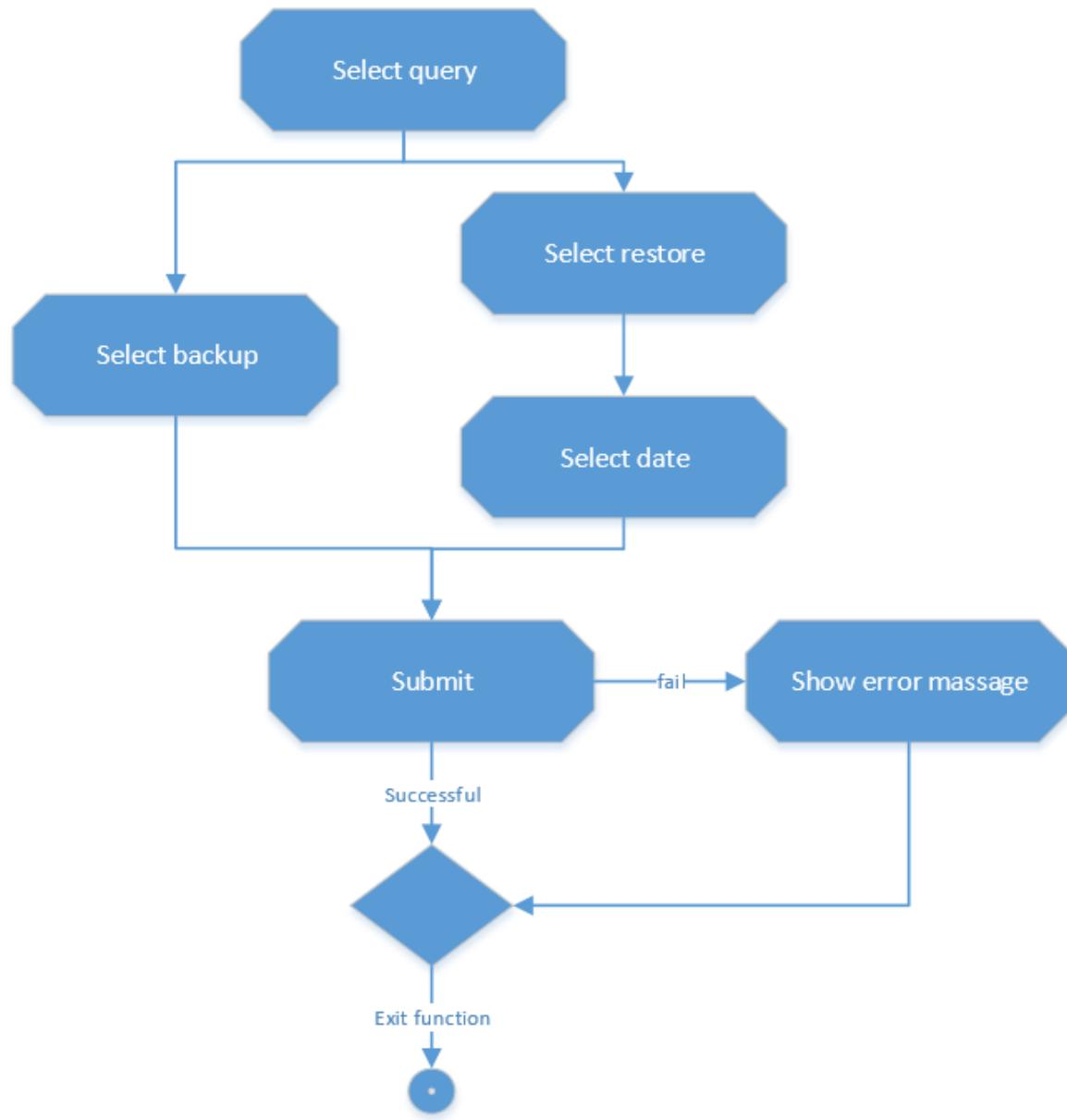
2.3 Architecture Diagram

Below figure shows the overview of the web application's framework, it also demonstrate how the web view handler interact with the user view an data models. In this sprint, we add the function of system database backup and restore. The related components of the completed system are shown as below.

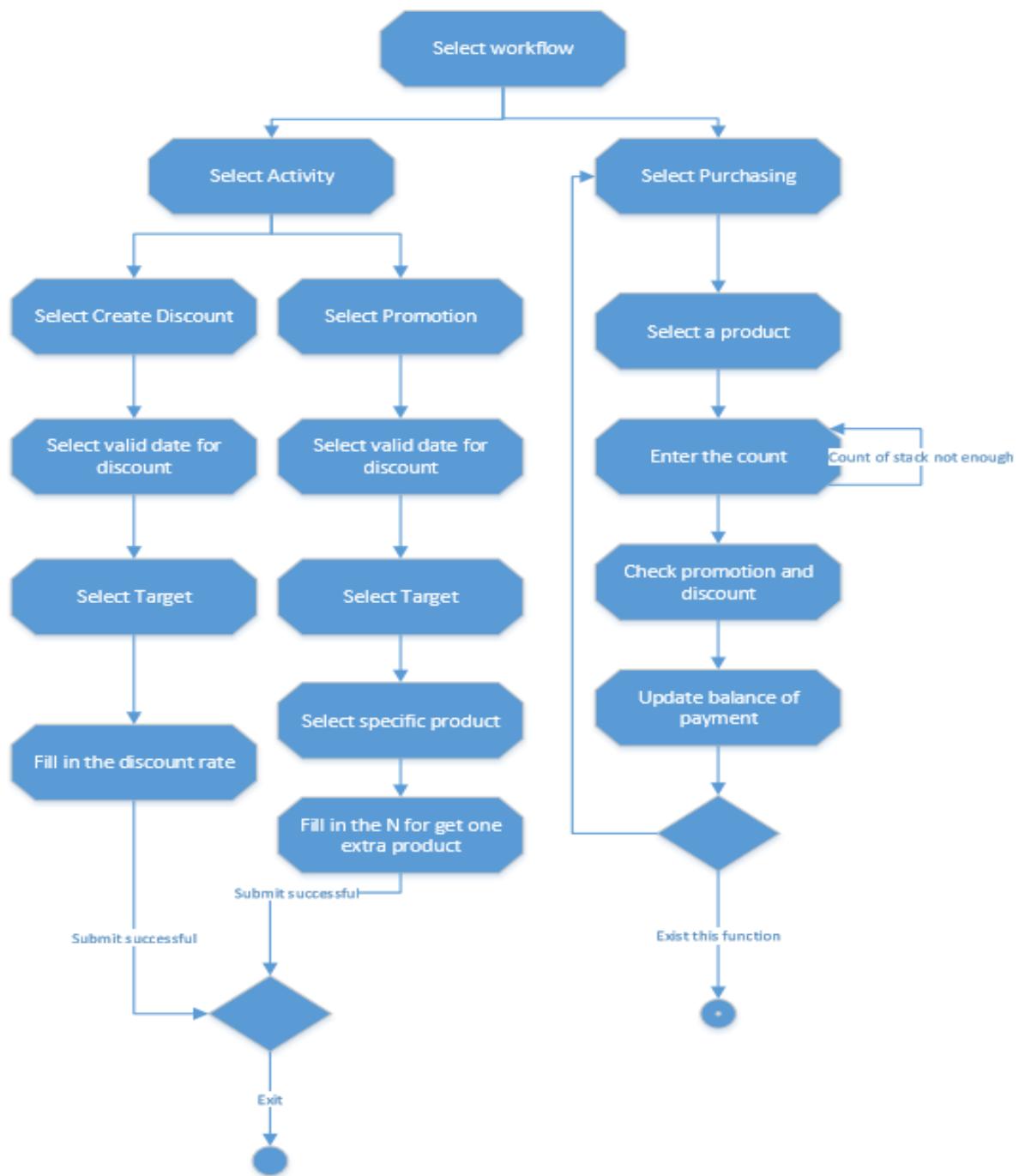


2.4 Activity Diagram

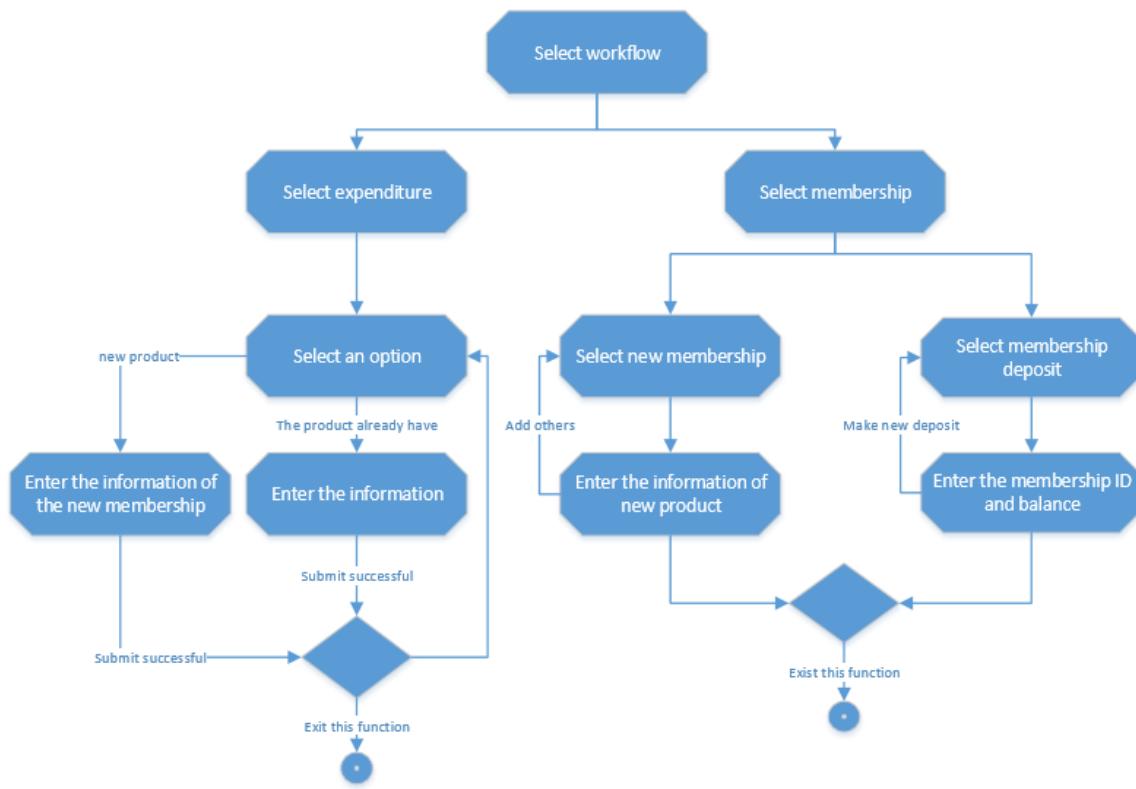




Back and Restore Activity Diagram

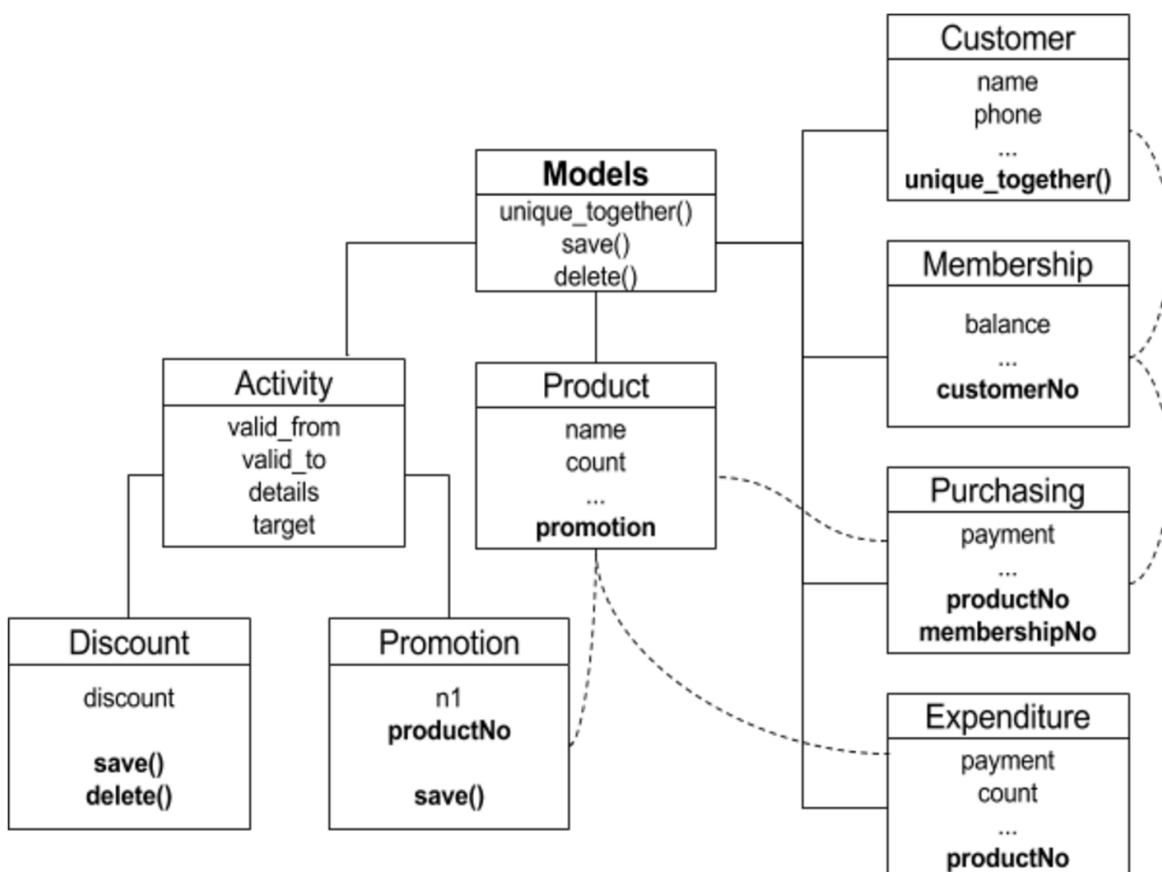


Discount and Promotion Activity Diagram

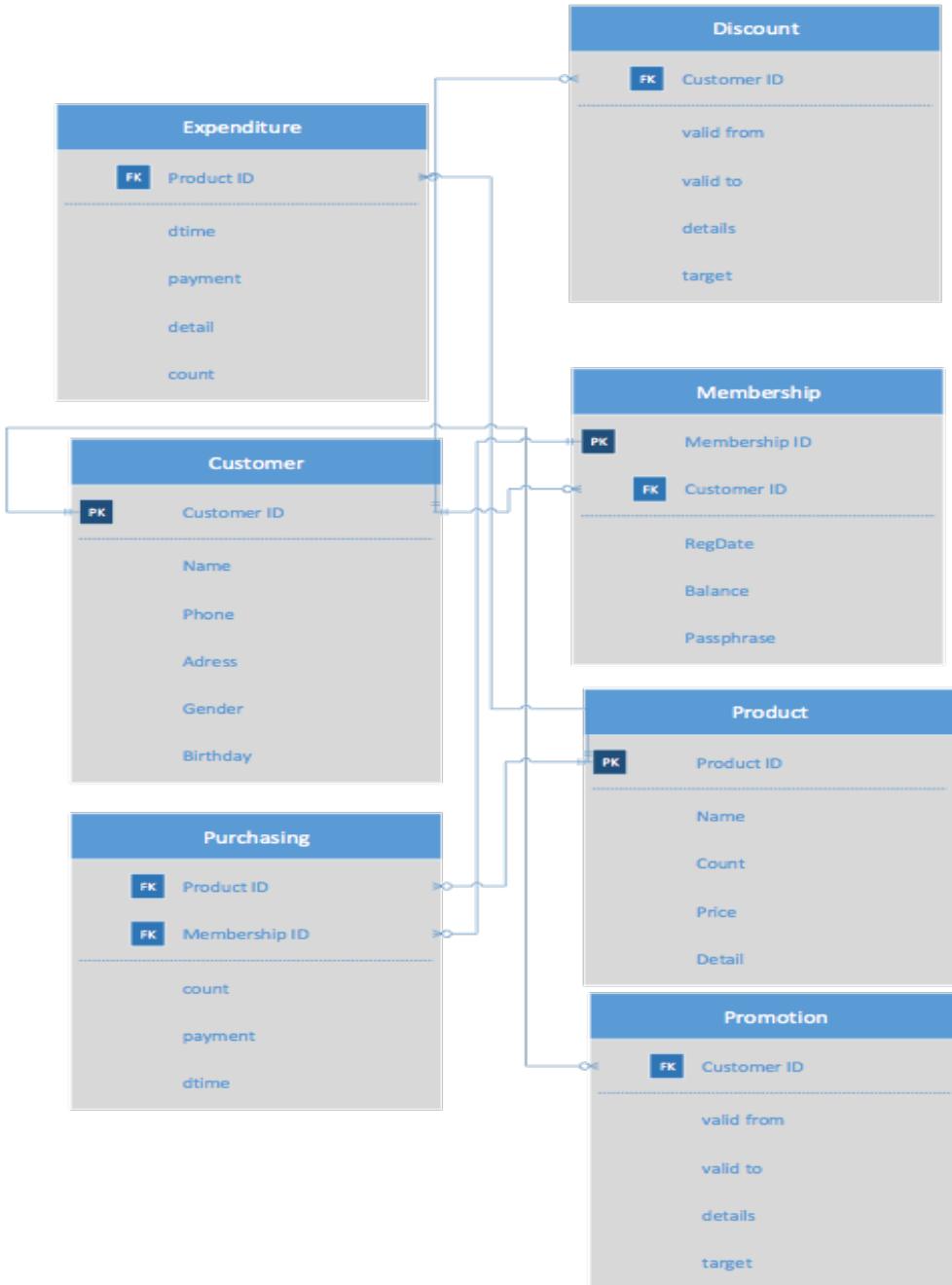


Workflow Activity Diagram

2.5 Class and Components Diagram



2.6 Database Diagram



3. Working Code

3.1 Code Sample

Below code section demonstrate how to perform system backup and restoration on data models, in this case, it's parse the specified date from user request and restore the system database from the backup data of that date.

```
# Recover database from specified date backup
@login_required
def restore_date(request):
    resp = 'Restore successes!'

    try:
        bak_date = request.POST.get('bak_date')
        print 'restore from backup date: ' + bak_date
        call_command('loaddata', str(bak_date) + '.json', verbosity=3, interactive=False)
    except:
        resp = sys.exc_info()[0]

    return HttpResponse(resp)

# Backup database of current date
@login_required
def backup_date(request):
    resp = "Backup successes!"

    try:
        today = datetime.datetime.now().date()
        #call_command('dumpdata', '>', str(today) + '.json', verbosity=3, interactive=False)
        subprocess.check_call("./manage.py dumpdata > " + str(today) + ".json", shell=True)
    except:
        resp = sys.exc_info()[0]

    return HttpResponse(resp)
```

3.2 Software Engineering Design Module Matrix

Module Name	PIC	S	O	L	I	D	Cohesion	Coupling	Reason of Ranks
Login/Register	Chao	8	8	6	6	10	8	8	Login and register should be separated interfaces
Membership	Chao	10	8	8	10	10	10	9	Simple logic and strong cohesion.
Purchase	Yihang	10	8	8	10	10	10	9	Simple logic and strong cohesion.
Product	Saheed	10	8	8	10	10	10	9	Simple logic and strong cohesion.
Activity	Chao	10	10	8	10	10	10	9	Decorator Class
Promotion	Yihang	10	9	8	10	10	9	8	Using decorator pattern.
Discount	Saheed	10	9	8	10	10	9	8	Using decorator pattern.
Query Handler	Chao	10	9	7	10	10	8	8	Few coupling with data models.
Workflow Handler	Chao	10	9	7	10	10	8	7	Few coupling with data models and UI.
Promotion Handler	Yihang	10	9	7	10	10	8	7	Few coupling with data models and Purchase
Discount Handler	Saheed	10	9	7	10	10	8	7	Few coupling with data models and Purchase
Backup/Restore Handler	Chao	10	9	7	10	10	9	9	Very few coupling with server environment.
Query JS	Saheed	8	7	5	8	10	8	8	Few coupling with UI.

Workflow JS	Yihang Chao	7	6	5	7	10	7	6	Few coupling with data models and UI
Login JS	Chao	8	7	5	6	10	8	8	Few coupling with UI
Backup/ Restore JS	Yihang	8	7	5	8	10	9	9	Very few coupling with Backup/Restore handler.

3.3 User Interface Screens

This project finally delivered a website that could be deployed on web server or local computer. Below screenshots show some user interface of this application:

The screenshot shows a web browser window for the URL `localhost:8000/query/init/`. The page title is "Waka". The navigation bar includes links for Home, Query (highlighted in red), Workflow, and About. A user profile for "cchen" is shown on the right. The main content area has tabs for "Query and Edit" and "Backup and Restore" (which is selected). A message box displays "Backup to Date" and "Backup successes!". Below this is a "Restore from Date" section with a date picker set to "11/16/2016". A calendar for November 2016 is shown, with the 16th highlighted.

The screenshot shows a web browser window for the URL `localhost:8000/purchasing/`. The page title is "Waka". The navigation bar includes links for Home, Query, Workflow, and About. A user profile for "Tony Zhao" is shown on the right. The main content area has tabs for "Purchasing" (selected) and "Membership", "Expenditure", and "Activity". On the right side, there is a "Customer Purchasing" form with fields for Stock (dropdown menu "select an product"), Price (text input "0.00"), Count (text input "0"), Membership ID (text input "Membership ID"), Payment (text input "0.00"), and a "Submit" button.

Waka

Home Query Workflow About Tony Zhao

Purchasing

Membership

Expenditure

Activity

New membership

Name: Zhao Yihang

Phone: 8324741068

Gender: Male

Birthday: mm/dd/yyyy

Balance: 0.00

Pin code: Pin code

Address: Address

Waka

Home Query Workflow About Tony Zhao

Purchasing

Membership

Expenditure

Activity

Stock

Others

Stock In

Stock

New Stock

Count: Count

Payment: 0.00

Details: Details

Waka

Home Query Workflow About Tony Zhao

Purchasing

Membership

Expenditure

Activity

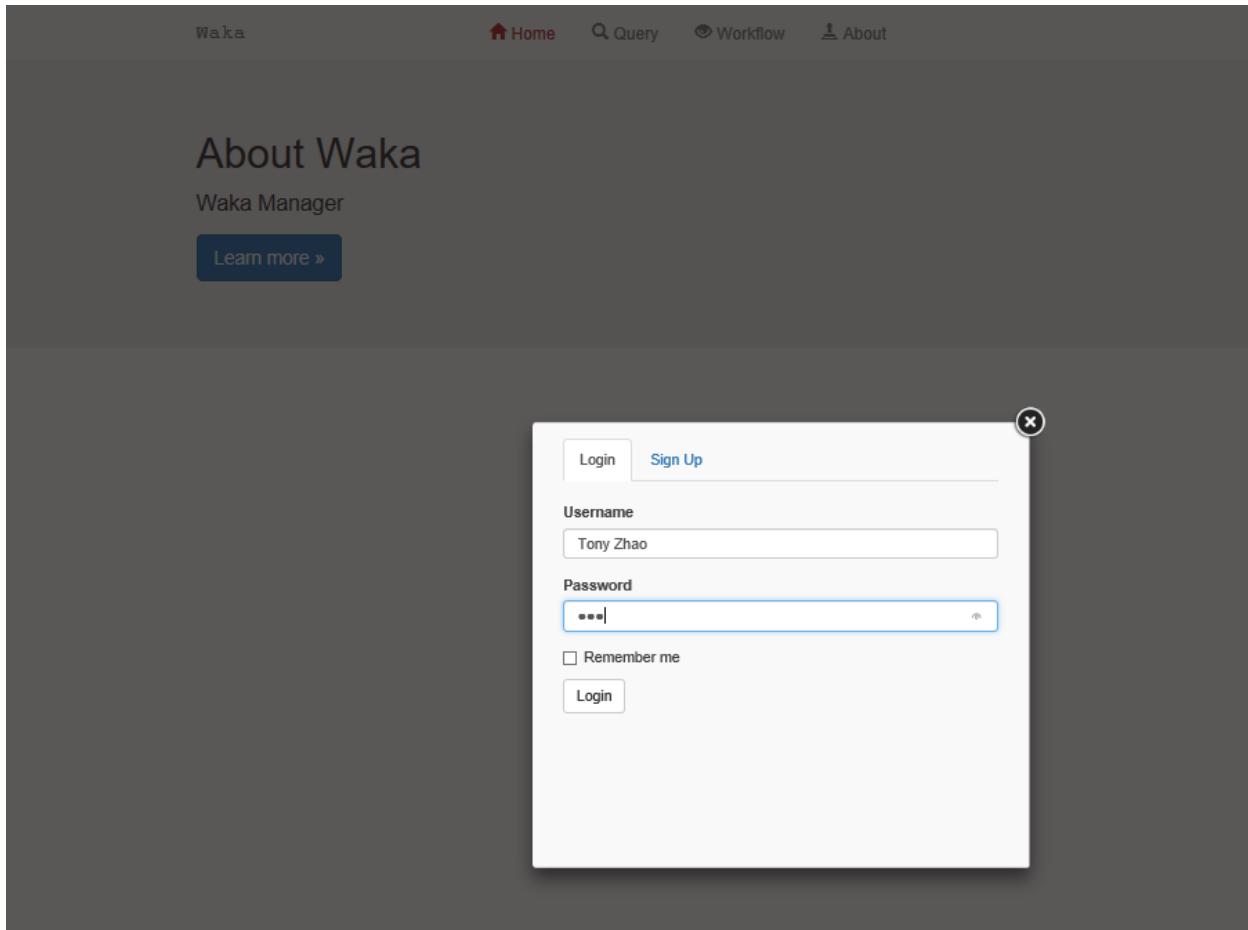
Create Discount

Create Promotion

New Discount

Valid From: mm/dd/yyyy

Valid To:	mm/dd/yyyy	YY
July	12	2012
August	13	2013
September	14	2014
October	15	2015
November	16	2016
December	17	2017
January	18	2018
February	19	2019
March	20	2020
April	21	2021



4. Project Repository and Tools

4.1 Repository

This project uses GitHub as the source code control tool. Below figure shows the screenshot of the source code repository:

The screenshot shows a GitHub repository page. At the top, there are buttons for 'Branch: master ▾', 'New pull request', 'Create new file', 'Upload files', 'Find file', and a green 'Clone or download ▾' button. The main area displays a list of commits from user 'cchen1983' with the message 'Fix minor bugs.'.

File/Commit	Description	Time Ago
contacts	Add first stage development source.	2 months ago
home	Add first stage development source.	2 months ago
login	Update code comments	a month ago
query	Fix minor bugs.	6 hours ago
static	Add Activity/Discount/Promotion Modules.	18 hours ago
templates	Implement discount and promotion applying	7 hours ago
waka	Add first stage development source.	2 months ago
workflow	Fix minor bugs.	6 hours ago
.gitignore	Add first stage development source.	2 months ago
ReadMe.txt	Initialize the django project.	2 months ago
get-pip.py	Add first stage development source.	2 months ago
manage.py	Add first stage development source.	2 months ago
mysqlUtils.py	Add first stage development source.	2 months ago
waka.sql	Add first stage development source.	2 months ago
wakalnit.sql	Add first stage development source.	2 months ago
wakaTest.sql	Add first stage development source.	2 months ago

Below the commit list is a section for 'ReadMe.txt' with a preview icon.

4.2 SCRUM Tool

For project management purpose, we use Scrumwise, an online SCRUM platform , to manage all the tasks and resources by evenly distributed them to multiple sprints. Below screenshot shows the situation in one of the sprints:

The screenshot displays the Scrumwise interface with the following details:

Sprint 5: Completed, 11 days completed.

- DJTeam:
 - Activity public interface Implementation: Sprint completed, 3 d
 - Promotion Class Implementation: Sprint completed, 4 d
 - Discount Class implementation: Sprint completed, 4 d

Sprint 6: Completed, 18 days completed.

- DJTeam:
 - Implement Discount/Promotion Info Query/Response.: Sprint completed, 5 d
 - Integrated test and debug: Sprint completed, 3 d
 - Event handler of create new promotion implementation.: Sprint completed, 5 d
 - Event handler of create new discount implementation.: Sprint completed, 5 d

At the bottom left is a button to "Add a sprint". At the bottom right are buttons for "Show All sprints" and a dropdown menu.

5. Weekly SCRUM Sheets

COMP 5423 Software Engineering Processes, CS Dept, PVAMU Fall 2016 SCRUM MASTER DAILY/WEEKLY FORM						
<p>This form must list the date of each week, tasks assigned to each team member for the week, and the answers to the three questions that the Scrum Master must ask each team member every day. All members MUST sign the form. Entries in this form WILL contribute towards individual member grade changes. Incorrect information WILL lead to grade degradation of entire team. This form MUST be submitted to the instructor EVERY week by the SM to the instructor at beginning of class. Each team will project this form in class, to present their progress in class each week.</p>						
Project Name:	Time set for call / meeting each day: 10:00 AM PM					
Date of each week:	11/10/16	11/11/16	11/12/16	11/13/16	11/14/16	11/15/16
Master Name:	Chao Chen					
SM: All tasks accomplished?: Yes No						
Tasks Assigned for the week:	Implement Backup/Restore handler. Refactoring code for SOLID.					
What did you do?	Coding for Backup Part	Coding for Restoration	Test/Debug	Code Refactoring	Code Refactoring	
What obstacles you had?	Program Command Interact error.					
What do you plan to achieve?	Finish Backup Part	Finish Restoration	Fix all bugs	Reduce Coupling	Reduce Coupling	
Date of each week:	11/16	11/16	11/16	11/16	11/16	11/16
Member 2 Name:	Yihang Zhao					
SM: All tasks accomplished?: Yes No						
Tasks Assigned for the week:	Implement Backup/Restore JS . Refactoring code for SOLID.					
What did you do?	Coding JS for Backup part	Coding JS for Restoration	Code Refactoring	Code Refactoring	Code Refactoring	
What obstacles you had?						
What do you plan to achieve?	Finish Backup JS	Finish Restore JS	Reduce Coupling	Remove Hardcoded Parameters	Reduce Coupling	
Date of each week:	11/16	11/16	11/16	11/16	11/16	11/16
Member 3 Name:	Sealeel Aspinwall					
SM: All tasks accomplished?: Yes No						
Tasks Assigned for the week:	Refactoring code for SOLID ,					
What did you do?	Code Refactoring	Code Refactoring	Code Refactoring			
What obstacles you had?						
What do you plan to achieve?	Reduce Coupling	Remove Redundant code	Remove Hardcoded Parameters			