

SmartBridge-VMware Tanzu Build-A-Thon

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Digital Payment Book

1. Introduction

Payment book application is designed to maintain customers, payments, and their purchases. A retailer will be an admin of the application and each customer of the retailer's shop will be the user. Customers can create their account in the payment book app by reading and agree to the terms and conditions of the shop.

Once a user created their account they can login to their account by using their own credentials, users will be able to see their purchase history, pending payments, and also if the user is having any doubt or complaint they can contact the retailer by using the contact our service. Admin will maintain data about purchases made by the customers & can see payment details and pending payment of the customers. Admin will send alerts to the customers if there is any due for payment or payment is pending for a long time.

2. Literature Survey

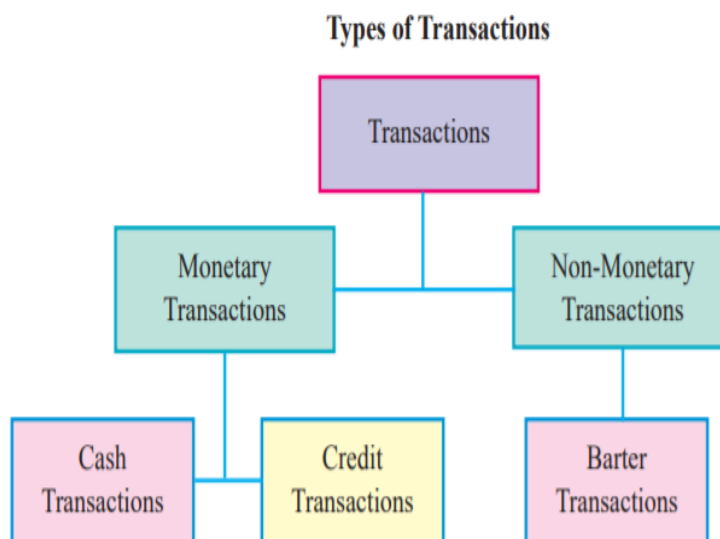
India is the second-largest smartphone market in the world after China. The smartphones and other facilities with strong back up of Internet providers like Reliance Jio have boosted usage of the digital wallets, electronic payments. Mobile connectivity and internet are very important for online payments. As of November 2019, the active internet users in India are 504 million (Digital in India 2019 by IAMAI and Nielsen). Financial service institutions and other firms have tried a lot in increasing online payments and governments have also increased efforts to make increased penetration of internet. The penetration in rural India is also increasing substantially). The digital payment market is estimated to be \$ 69,168 million in

2020(statistica.com). This is contributed by the technological developments happening in this field and emergence of digital wallets. Digital wallet is a software application that helps users to digitally store money, payment credentials, and more. Consumers can use this software to implement various types of cashless transactions (McKinsey, May 2015). This is very much used for digital payment. The major deterrent for India's growth in this sector is the reach and quality of internet. India was ranked 128 out of 140 countries in terms of internet download speed as per the research done by The Hindu (December 2019). This must be improved for digital payment to be more successful. Though digital payment has reduced in different key sectors affected by COVID19, a lot of other sectors have seen an increase of utilization like online retail stores, gaming industry, utility payment etc

2.1 Existing Problems

Book-keeping is related with recording of business transactions. Business enterprise and other organizations deal in activities which involve exchange of money or money's worth. All these activities are recorded for the purpose of taking important decisions as to whether the activities are feasible, profitable and are to be continued or not. Information about the business and other organizations is required not only by the proprietors and managers of business and other organisations but also to various other stakeholders such as the government, investors,

customers,
employees
and
researchers



2.2 Proposed Solution

The timely notifications and SMS from the app displays the current status for a customer/ vendor hereby making space for no ambiguous transactions or dealings. This helps improve decision making to buy in bulk as well as just-in-time buying, and to maintain low inventory.

Offers n special messages can be broadcasted to their customers in the time of emergency or lockdown. The app enables shopkeepers to add new customers in one click.

3.Theoretical Analysis

3.1 Block Diagram

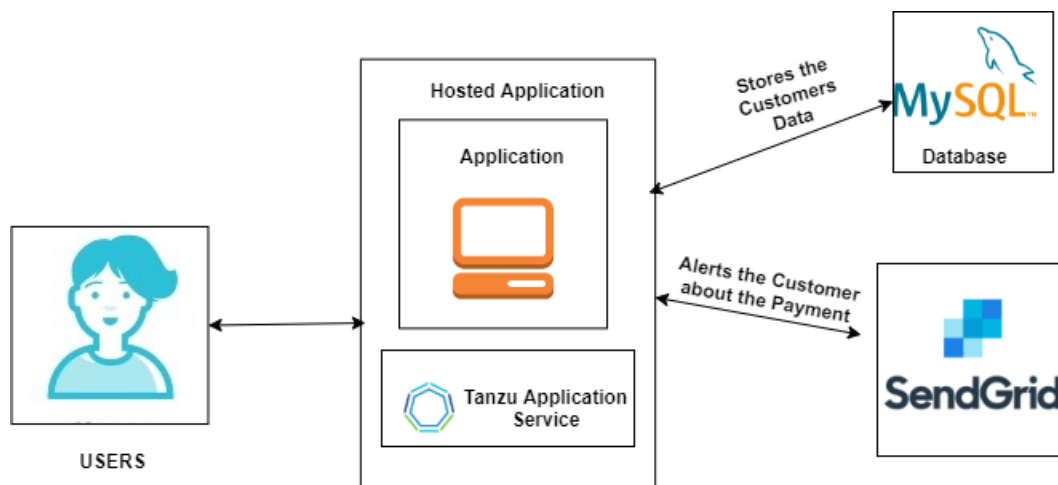


Fig : Proposed Solution For Digital Payment Book

3.2 Hardware and Software Requirements

3.2.1 Software Requirements

- Operating System: Windows10
- Text Editor / IDE: Spyder, Visual Studio Code
- Language: Python 3.8, HTML, CSS, JS, Bootstrap
- Framework: Flask

3.2.2 Hardware Requirements

- Processor: Intel Core i5 8thgen
- RAM: 8GB
- Hard Disk:500GB

4 Experimental Investigations

One such web app is the Digital Payment Book app. It allows small business owners to manage their accounting books digitally. Yes, the manual accounting or the ledger book which is now available digitally on the mobile device is called the Digital Payment Book app.

This app has replaced the traditional Digital Payment Book by its new digital ledger book. Digital Payment Book is an Indian app that is launched to help small business owners to record their daily financial transactions along with accepting payment online and keep their daily business accounting data up to date.

Small businesses include running a *paan* shop, tea shop, mobile accessory shop, *Kirana store*, milk delivery, vegetable vendor, grocery store, barbershop, and much more. Every such business is required in both rural and urban areas. Indeed these are essential services. Also, it is a hoary practise that all these businesses must accept the *udhar* model as customers may not always have the cash to buy things. This does not mean running a business for charity but there needs to be an accounting system to record the pending payments from customers to collect it later.

This is where the app plays a role in managing the cash book online to help businesses serve customers and collect money.

The app will help to store transaction details of all the customers personalized and will record every entry. There is no need to know accounting to start a business with this app. It will do all calculations for you.

The records of each customer are stored individually along with the payment due date. Minute details like how much you gave and received are also recorded in the app, With this app, it is now easy to manage the accounts of more than one business you run. Concurrently carry out different businesses and still enjoy all the accountings in this one book which is pocket friendly.

Maintaining inventory becomes easy as the app will show the current status of customer transactions. Which items are in demand, or what kind of service your customers look for can be determined with the previous transaction details, and deciding on expanding business becomes possible.

5. Results

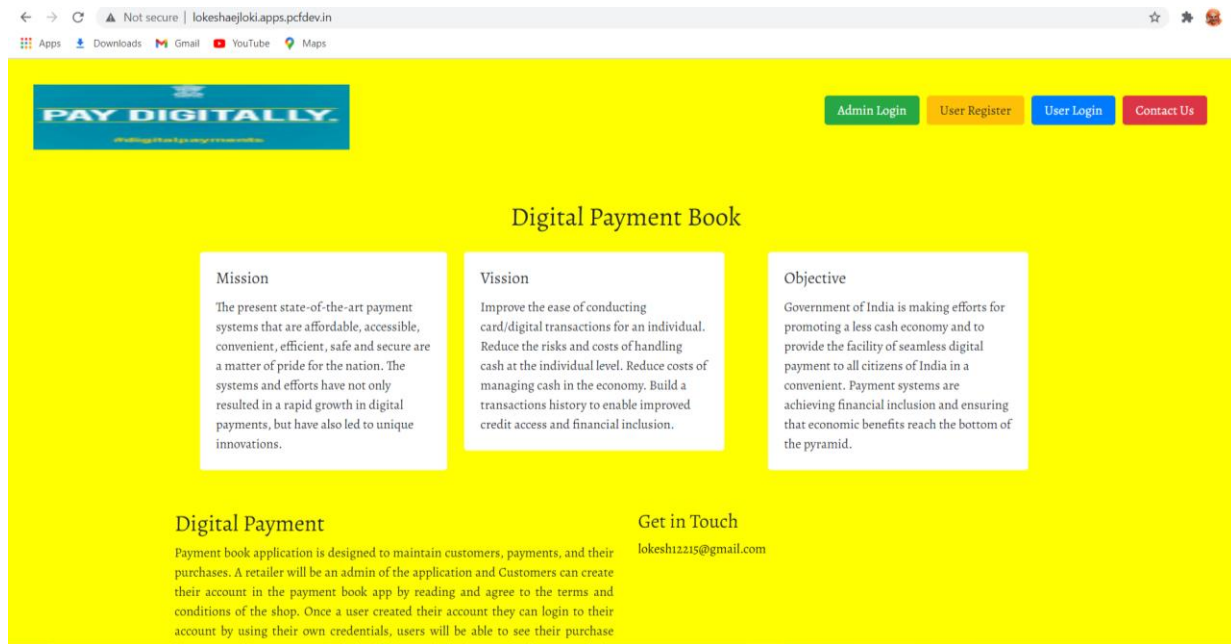


Fig 5.1 :Home Page of Digital Payment Book

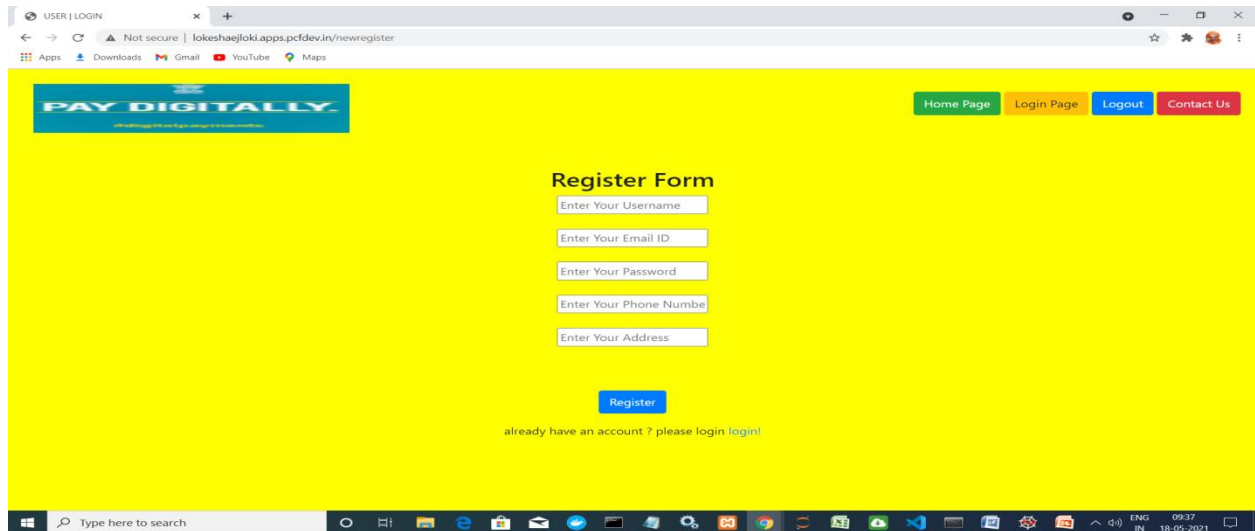


Fig 5.2:- Customer Can Register Digital Payment Book

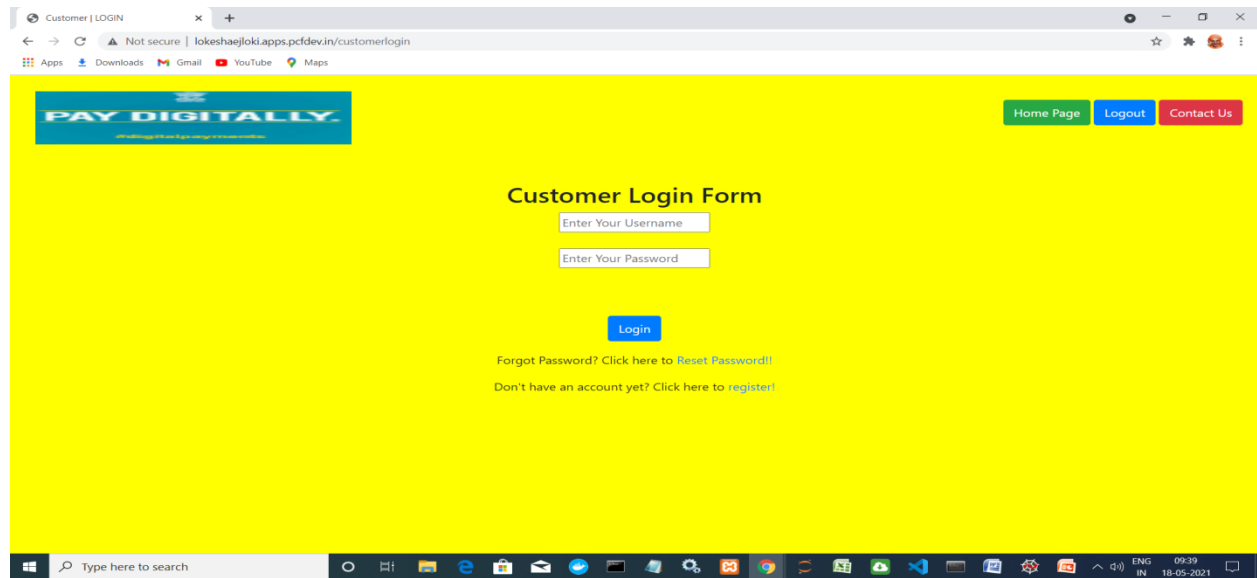


Fig 5.3:-Customer Login

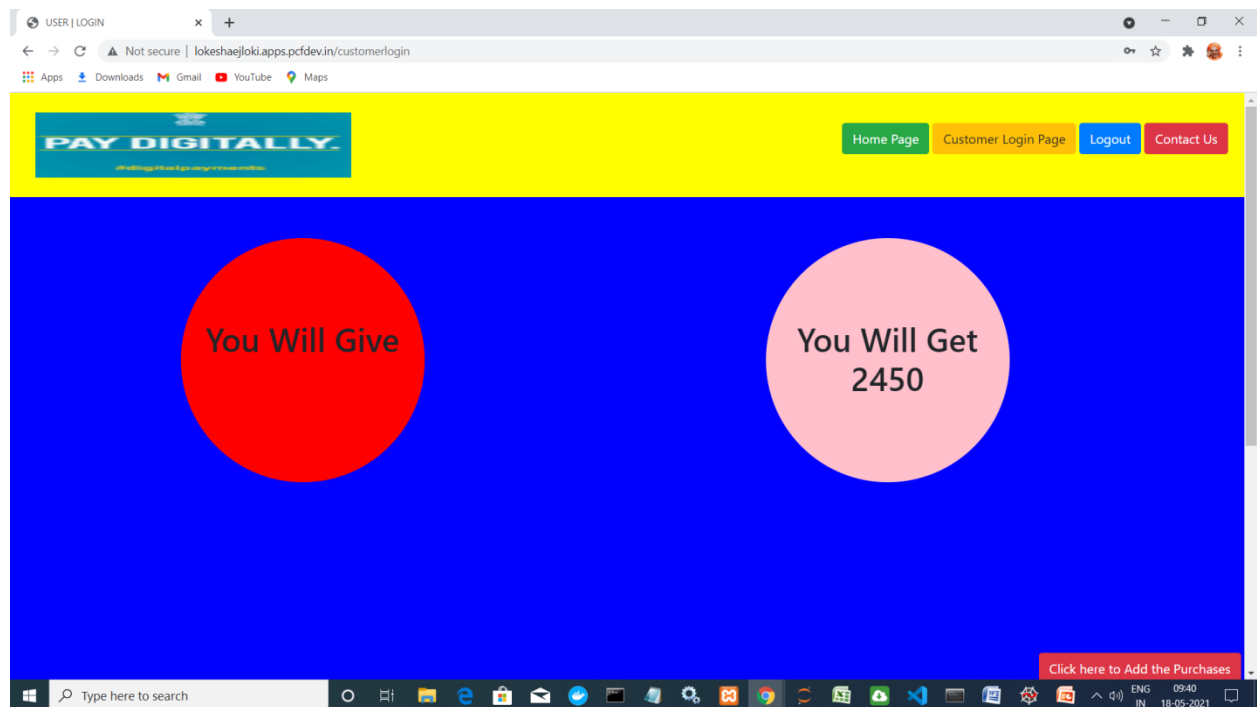


Fig 5.4:- Customer can view balance & add purchase items

The screenshot shows a web browser window with the URL `lakeshaejloki.apps.pcfdev.in/customerlogin`. The page has a yellow header with the "PAY DIGITALLY" logo and navigation links: Home Page, Customer Login Page, Logout, and Contact Us. Below the header is a blue banner with a red button that says "Click here to Add the Purchases". The main content area is yellow and titled "Previous Purchase items details". It contains a table with the following data:

ID	User Name	User ID	Item	Amount	Pay Method
2	Lokesh	12215	bat	1000	You Got
3	Lokesh	12215	volleyball	3000	You Got
5	Lokesh	12215	voll	200	You Give
6	Lokesh	12215	washingmachine	1000	You Give
7	Lokesh	12215	washingmachine	10000	You Give
8	Lokesh	12215	byke	20000	You Give
9	Lokesh	12215	salary	30000	You Got
10	Lokesh	12215	laptop	5000	You Give
11	Lokesh	12215	laptop	5000	You Give
19	Lokesh	12215	mobile	10000	You Got
24	Lokesh	4545	bag	350	You Give

Fig 5.5 :- Customer can view the previous purchase items

The screenshot shows a web browser window with the URL `lakeshaejloki.apps.pcfdev.in/adminlogin`. The page has a yellow header with the "PAY DIGITALLY" logo and navigation links: Home Page, Admin Login Page, Logout, and Contact Us. Below the header is a blue banner with a red button that says "Click here to Sending Messages to Customers". The main content area is blue and contains two large circles: a red circle on the left with the text "Total Amount Give 42722" and a yellow circle on the right with the text "Total Pending Amount".

Fig 5.6:-Admin Dashboard

The screenshot shows a web browser window with the URL `lokeshaejloki.apps.pcfdev.in/adminlogin`. The page has a yellow header with the "PAY DIGITALLY" logo and navigation links: Home Page, Admin Login Page, Logout, and Contact Us. Below the header is a blue banner with a red button that says "Click here to Sending Messages to Customers". The main content area is titled "Registered Customers details" and contains a table with the following data:

ID	User Name	Email	You Give	Pending
1	Lokesh	lokesht12215@gmail.com	2450	0
3	Teja	lokesht12215@gmail.com	0	105
4	Loki	lokesht12215@gmail.com	500	0
5	Santhosh	lokesht12215@gmail.com	0	0
6	Rakesh	lokesht12215@gmail.com	0	0
7	karti	lokesht12215@gmail.com	0	0
8	ramesh	lokesht12215@gmail.com	0	0
9	Sslc	lokesht12215@gmail.com	0	0

Fig 5.7:- Admin Can View the register Customer details

The screenshot shows a web browser window with the URL `lokeshaejloki.apps.pcfdev.in/adminsendmsgpyltr`. The page has a yellow header with the "PAY DIGITALLY" logo and navigation links: Home Page, Admin Dashboard, Admin Login Page, and Logout. The main content area is titled "Sending the messages to Customers" and contains a form with three input fields: "Enter Your Username", "Enter the Email", and "Enter the Pending Amour". Below the form is a blue "Send" button.

Fig 5.8 :- Admin Can Send the messages to pending amount to customers

6. Advantages and Disadvantages

Advantages

- Improved the transparency of the tax collection process.
- User friendly
- the government faced the complex task of managing multiple indirect taxes. But the backbone of the GST, the *GST Network (GSTN)*, will manage all the processes related to GST operation. This is a fully integrated platform, which will simplify and ensure the smooth functioning of the GST activities.

Disadvantages

- Companies who operate their businesses in multiple states, have to register in all those states. This adds an extra level of complexity that did not exist earlier

7. Conclusion

Transformations that take place in the digital world have impacted in every phase of human life. Smartphones and internet facilities had made life simpler by a click of a button. This ultimately increases the needs and expectations of the consumers. In the current scenario with the increasing use of cashless payments has almost substituted the physical cash transactions. Though there are few limitations especially when it comes to privacy and security.

It was also inferred from the study that consumer has enough awareness of the information security in cashless transactions. Cashless transactions are to be encouraged as it provides convenience and agility. Even internet banking has become very popular for transactions. Modern technology and automation are going to take the transactions more user friendly in the future.

11. BIBLIOGRAPHY

[1] <https://www.w3schools.com/bootstrap/>

[2] Akhila Pai H. (2018), Study on Consumer Perception Towards Digital Wallets, IJRAR, 3, 385-391

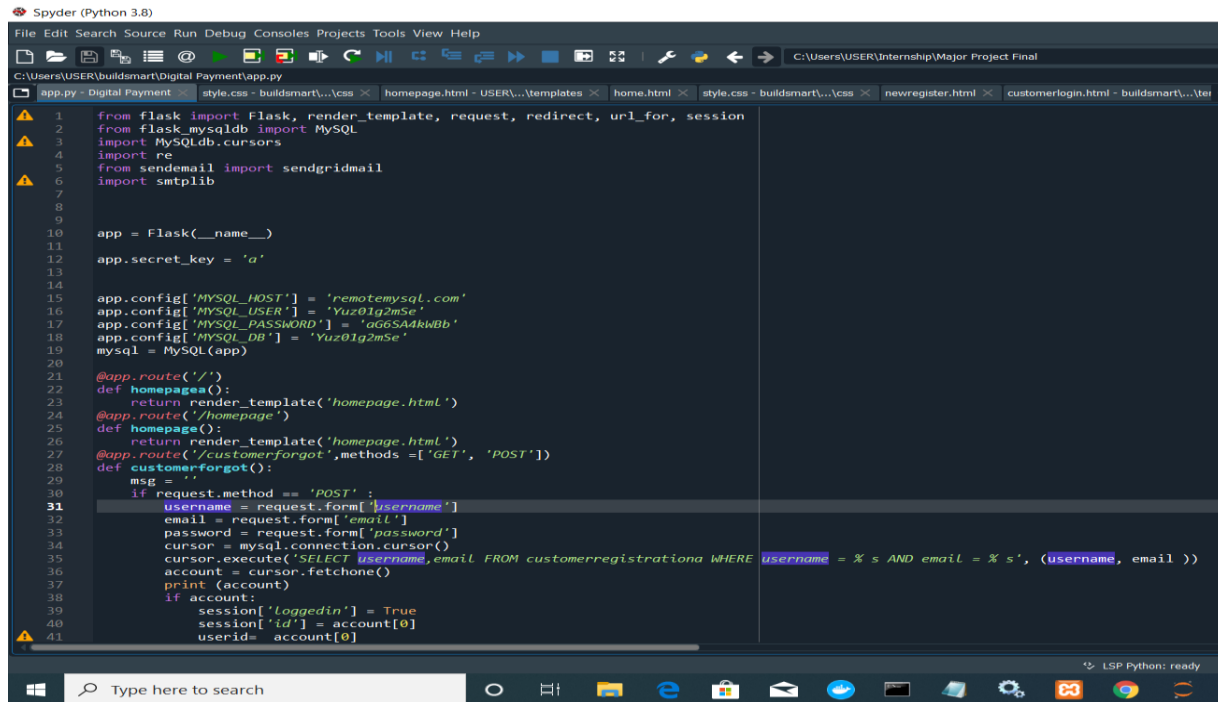
[3] Alkhowaiter, W. A. (2020). Digital payment and banking adoption research in Gulf countries: A systematic literature review. *International Journal of Information Management*, 53, 102102.

[4] Babu Sudhir, D and Narayanamma Lakshmi, P (2018), "Consumer Perception Towards Digital Payment", *International Journal of Emerging Technologies and Innovative Research* (www.jetir.org), ISSN:2349-5162,5(8),350-354, Available: <http://www.jetir.org/papers/JETIRA006063.pdf>

[5] Chattopadhyay, S. (2018). Awareness and participation of small retail businesses in cashless transactions: An empirical study. *Management Dynamics in the Knowledge Economy*, 6(2), 209-225

APPENDIX

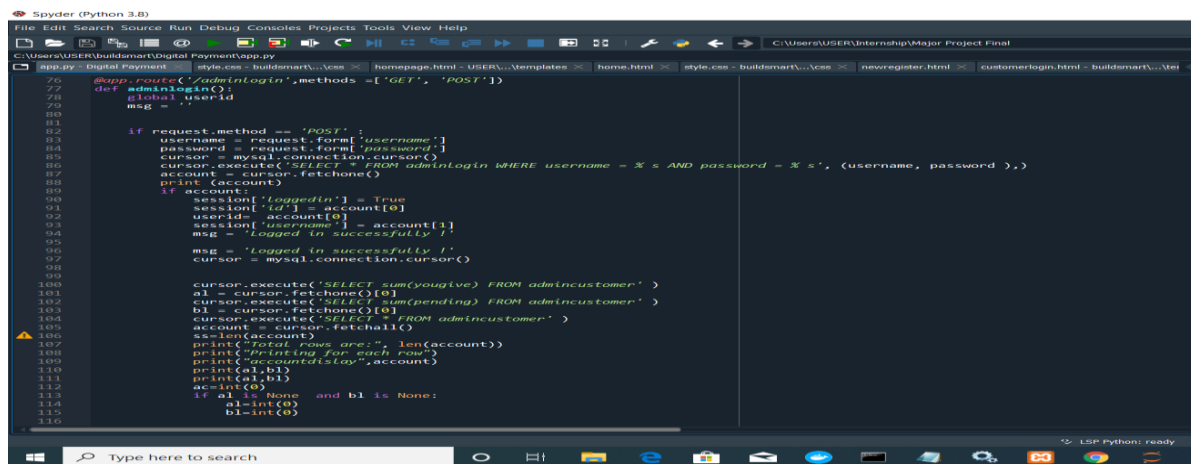
A] Source Code



```

1  from flask import Flask, render_template, request, redirect, url_for, session
2  from flask_mysql import MySQL
3  import MySQLdb.cursors
4  import re
5  from sendemail import sendgridmail
6  import smtplib
7
8
9
10 app = Flask(__name__)
11
12 app.secret_key = 'a'
13
14
15 app.config['MYSQL_HOST'] = 'remotemysql.com'
16 app.config['MYSQL_USER'] = 'Yuz01g2mSe'
17 app.config['MYSQL_PASSWORD'] = 'aG6SA4kWBb'
18 app.config['MYSQL_DB'] = 'Yuz01g2mSe'
19 mysql = MySQL(app)
20
21 @app.route('/')
22 def homepage():
23     return render_template('homepage.html')
24
25 @app.route('/homepage')
26 def homepage():
27     return render_template('homepage.html')
28
29 @app.route('/customerforgot', methods=['GET', 'POST'])
30 def customerforgot():
31     msg = ''
32     if request.method == 'POST':
33         username = request.form['username']
34         email = request.form['email']
35         password = request.form['password']
36         cursor = mysql.connection.cursor()
37         cursor.execute('SELECT Username, email FROM customerregistrationa WHERE username = %s AND email = %s', (username, email))
38         account = cursor.fetchone()
39         print(account)
40         if account:
41             session['loggedin'] = True
42             session['id'] = account[0]
43             user_id = account[0]

```



```

76 @app.route('/AdminLogin', methods=['GET', 'POST'])
77 def adminlogin():
78     global user_id
79     msg = ''
80
81
82 if request.method == 'POST':
83     username = request.form['username']
84     password = request.form['password']
85     cursor = mysql.connection.cursor()
86     cursor.execute('SELECT * FROM adminLogin WHERE username = %s AND password = %s', (username, password))
87     account = cursor.fetchone()
88     print(account)
89     if account:
90         session['loggedin'] = True
91         session['id'] = account[0]
92         session['username'] = account[1]
93         msg = 'Logged in successfully !'
94         cursor = mysql.connection.cursor()
95
96
97 cursor.execute('SELECT sum(yougive) FROM admincustomer')
98 a1 = cursor.fetchone()[0]
99 cursor.execute('SELECT sum(pending) FROM admincustomer')
100 b1 = cursor.fetchone()[0]
101 cursor.execute('SELECT * FROM admincustomer')
102 account = cursor.fetchall()
103 print('Total rows are:', len(account))
104 print('Printing for each row:')
105 print('accountsisior', account)
106 print(a1, b1)
107 ac = int(a1)
108 if a1 is None and b1 is None:
109     a1 = int(a1)
110     b1 = int(b1)

```

```

185     bl=int(0)
186
187     elif al is None:
188         al=int(0)
189     elif bl is None:
190         bl=int(0)
191
192     if al>bl:
193         ak=a1-b1
194         cursor = mysql.connection.cursor()
195         bn=int(0)
196         all=cursor.execute('UPDATE admincustomer SET yougive=%s,pending=%s WHERE username =%s',(ak,bn, username))
197         mysql.connection.commit()
198         print(all)
199
200
201
202
203     return render_template('customerdashboard.html',account=account,len=len(account), msg = msg,ak=ak)
204
205     elif bl>al:
206         am=b1-a1
207         cursor = mysql.connection.cursor()
208         bn=0
209         all=cursor.execute('UPDATE admincustomer SET yougive=%s,pending=%s WHERE username=%s',(bn,am, username))
210         mysql.connection.commit()
211         print(all)
212
213     return render_template('customerdashboard.html',account=account,len=len(account), msg = msg,am=am)
214
215     else :
216         cursor = mysql.connection.cursor()
217         bn=int(0)
218         all=cursor.execute('UPDATE admincustomer SET yougive=%s,pending=%s WHERE username =%s',( ac,bn,username))
219         mysql.connection.commit()
220         print(all)
221
222     return render_template('customerdashboard.html',account=account,len=len(account), msg = msg,ac=ac)
223
224
225     print(al)
226     print(bl)

```

```

344     send_mail(email,TEXT,TEXT)
345     msg = 'Contact us successfully ! as soon possible we will try to contact you early'
346     return render_template('contactus.html', msg = msg)
347
348
349 @app.route('/newregister', methods=['GET', 'POST'])
350 def newregister():
351     msg = ''
352     if request.method == 'POST':
353         username = request.form['username']
354         email = request.form['email']
355         password = request.form['password']
356         phonenumber = request.form['phonenumber']
357         address = request.form['address']
358
359         cursor = mysql.connection.cursor()
360         cursor.execute('SELECT * FROM customerregistrations WHERE username = %s',(username,))
361         account = cursor.fetchone()
362         print(account)
363         if account:
364             msg = 'Account already exists !'
365         elif not re.match(r'[a-z0-9]+@[a-z0-9]+\.[a-z0-9]+', email):
366             msg = 'Invalid email address !'
367         elif not re.match(r'[a-z0-9-]+', username):
368             msg = 'name must contain only characters and numbers !'
369         else:
370             cursor.execute('INSERT INTO customerregistrations VALUES (NULL, %s, %s, %s, %s, %s)', (username, email,password,phonenumber))
371             cursor.execute('INSERT INTO customerlogin VALUES (NULL, %s, %s)', (username,password))
372             mysql.connection.commit()
373             yougive=int(0)
374             pending=int(0)
375             cursor.execute('INSERT INTO admincustomer VALUES (NULL, %s, %s, %s, %s)', (username,email,yougive,pending))
376             mysql.connection.commit()
377
378     msg = 'You have successfully registered !'
379     TEXT = 'Hello '+username+' ,\n\n'+''''thanks for applying registering at digital payment book '''
380     TEXT = 'Hello '+username+' ,\n\n'+''''as registering at digital payment book '''

```

File Explorer contents:

Name	Date Modified
lokesh.jpeg	18-09-2020 13:18
lokesh.jpeg	18-09-2020 18:16
MajorProject-Copy1.ipynb	16-05-2021 08:17
MajorProject.ipynb	17-05-2021 19:03
MiningProcess_Flotation_Plant_Database.csv	25-09-2019 03:17
Multipylibsave	17-05-2021 18:17
Multipylibsave	17-05-2021 19:17
myipa.py	19-09-2020 08:18
punth.jpg	18-08-2020 19:10
Quality of mining process.docx	23-09-2020 10:23
Quality Prediction In A Mining Process.pdf	23-09-2020 09:17
Quality Prediction In A Mining Process.pptx	17-05-2021 12:17
Transformaila	17-05-2021 19:17

Console output:

```

Python 3.8.3 (default, Jul 2 2020, 17:30:36) [MSC v.1916 64 bit (AMD64)]
Type "copyright", "credits" or "license()" for more
>>>
IPython 7.16.1 -- An enhanced Interactive Python.
>>> from flask import Flask,render_template
>>> app = Flask(__name__)
>>>
>>> @app.route('/')
>>> def map_func():
>>>     return render_template('map.html')
>>> if __name__ == '__main__':
>>>     app.run(debug = True)

```

B) Running Application Link:- <http://lokeshaejloki.apps.pcfdev.in/>