



PROJECT [BCI1093] [DATA STRUCTURE & ALGORITHM]

TITLE: E-WALLET

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CASE STUDY:

Background Current Situation:



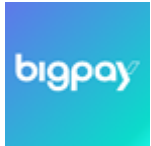
As informed in the previous executive meeting last week, our company has received a number of requests from E-Wallet Inc. to create their application. Based on our clients, they want their application to be the same and more advanced than other E-Wallet applications in the market such as:

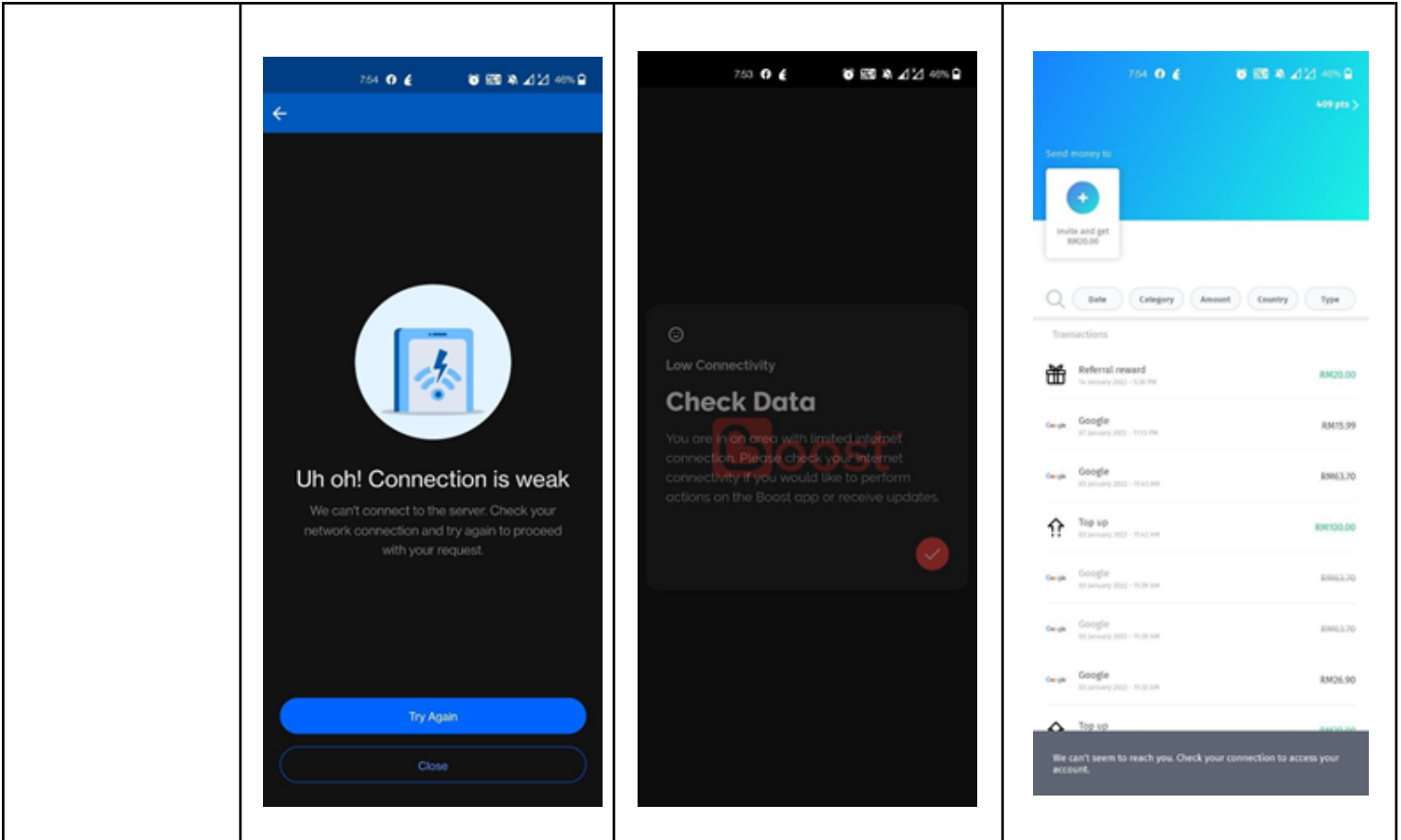
- The E-Wallet has the basic concept like other E-Wallet applications in the market.
- The E-Wallet can manage the bill payment (Add, Delete).
- The E-Wallet has a donating system for the user.
- The E-Wallet can manage the payment/card bank for users (Add, Edit, Delete).
- The E-Wallet also must show the transaction of payment that the user already made. (List Transaction)

Taking into consideration the requests by our client about E-Wallet, we have taken necessary actions by conducting in-depth research on the three short-listed E-Wallet that are already published in the market in order to give the best table comparison to make the new application for our client.

Options and Point of Comparison/Criteria:

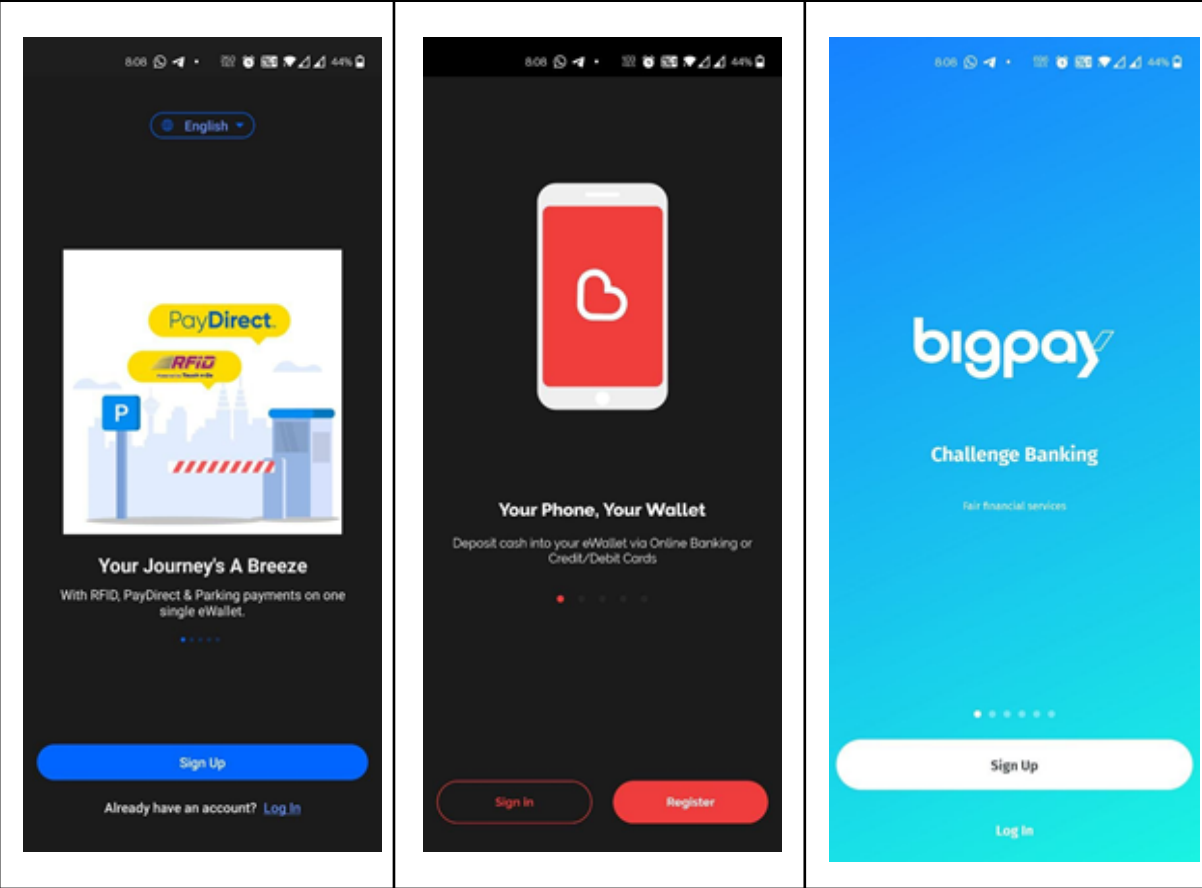
For table comparison we have decided to choose the Touch-N-Go, Boost and Big Pay concept of their interface and also their system as examples as reference to our client:

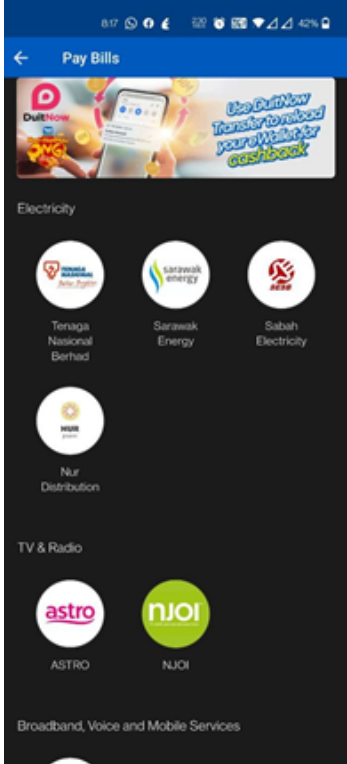
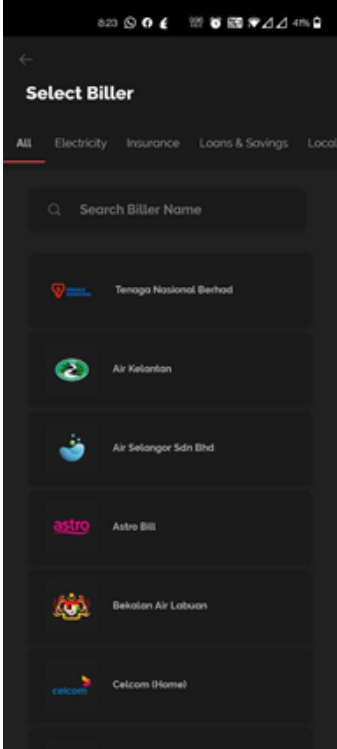
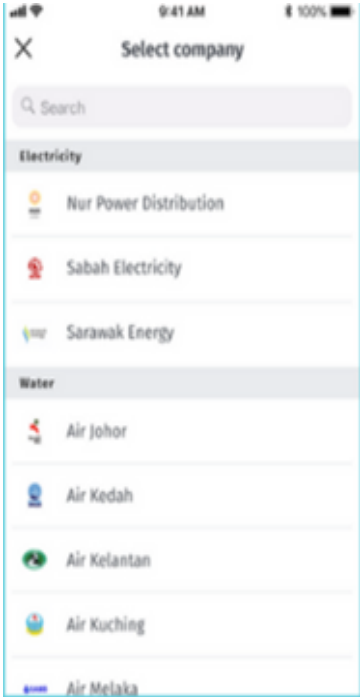
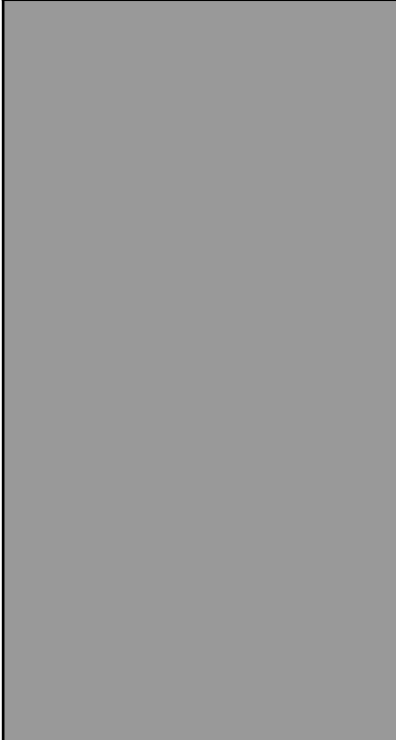
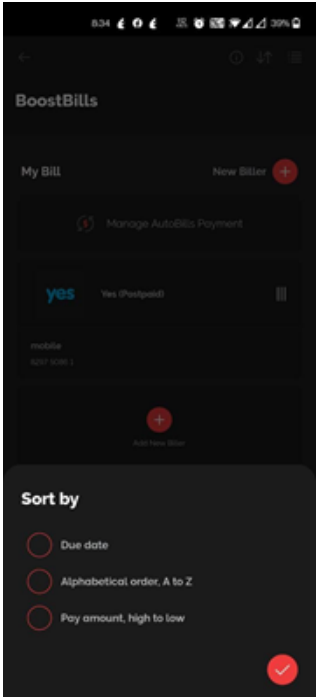
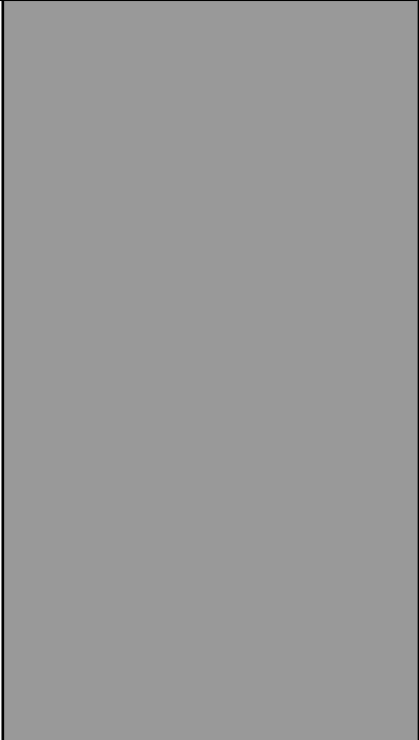
Type Of Apps	Touch-N-Go	Boost	Big Pay
Icon			
Internet Connection Checking	The Apps Need Internet Connection		

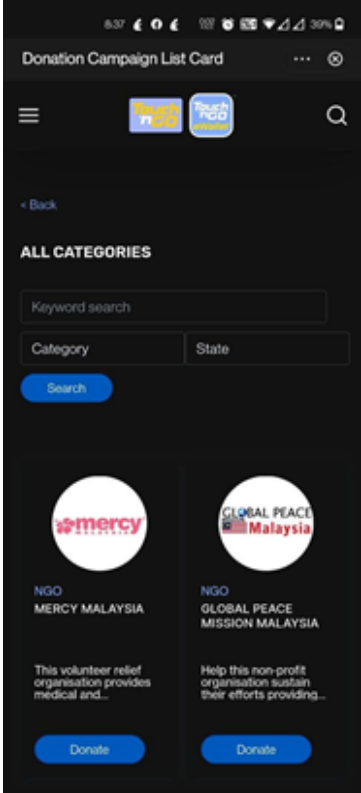




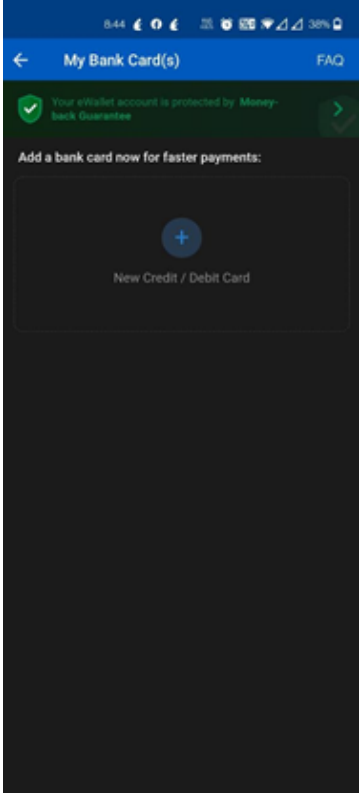
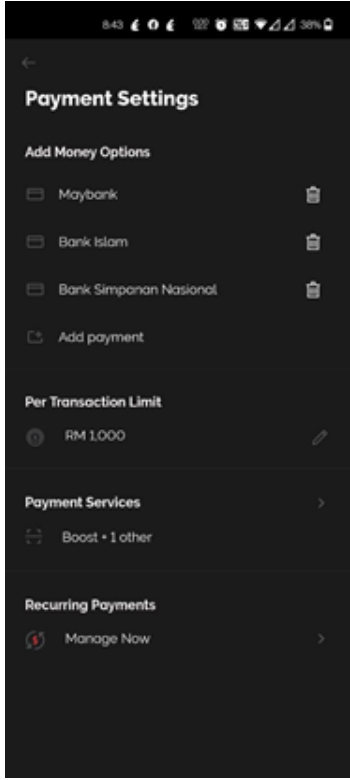
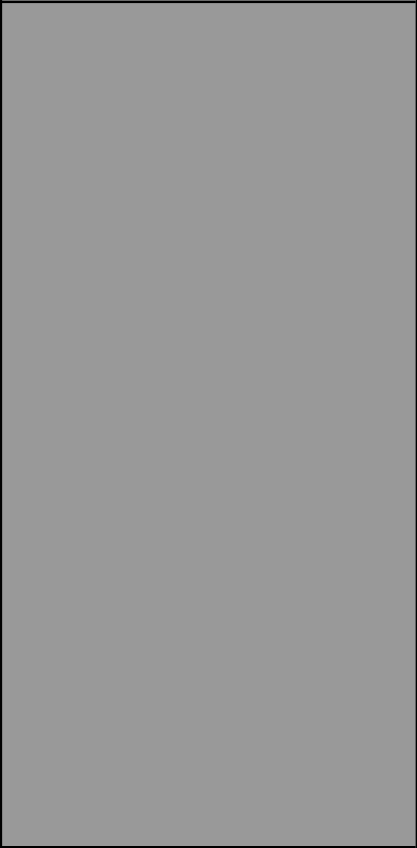
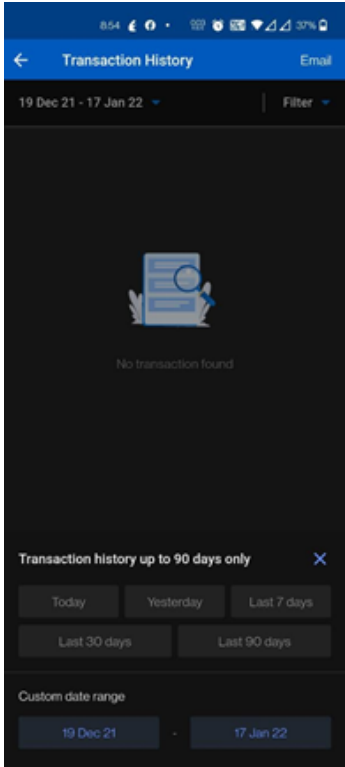
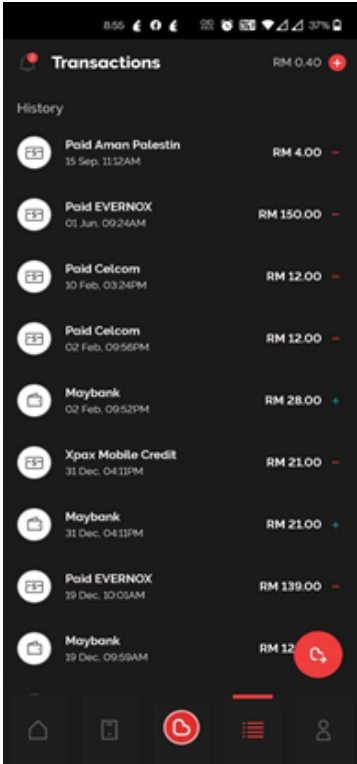
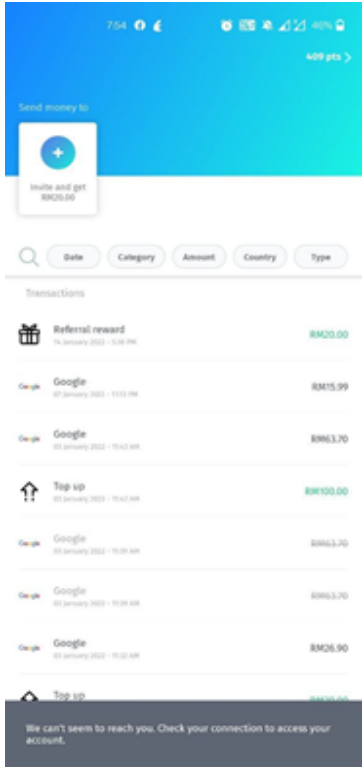
Sign In & Sign Up

The Apps Have the Sign In and Sign Up Form



Payment Bill	This Apps can Add, Edit and Delete the Bill.		
	Doesn't have a query for search filters.	Have query for search filter	Have query for search filter
			
	Doesn't have filter sorting	Have filter sorting	Doesn't have filter sorting
			

<p>Donating</p>	<p>Have query for search filter</p>	<p>Doesn't have a query for search filters.</p>	<p>Doesn't have a query for search filters.</p>
			

Payment/Card Bank Setting	<p>This App have add, edit and delete payment/card bank</p> 	<p>This App have add, edit and delete payment/card bank</p> 	<p>This App doesn't have add, edit and delete payment/card bank</p> 
History Transaction	<p>Have Searching and Sorting filter</p> 	<p>Doesn't have Searching and Sorting filter</p> 	<p>Have Searching and Sorting filter</p> 

Solution:

Based on the table comparison our client, E-Wallet Inc., agreed to do the same concept like other applications. Therefore, we decided to gather our Front-End and Back-End team to do the coding and make some design to show our client that we make some advance and the same concept that has been requested before. The design show as below:



Figure 1 above shows the logo of E-Wallet Inc.

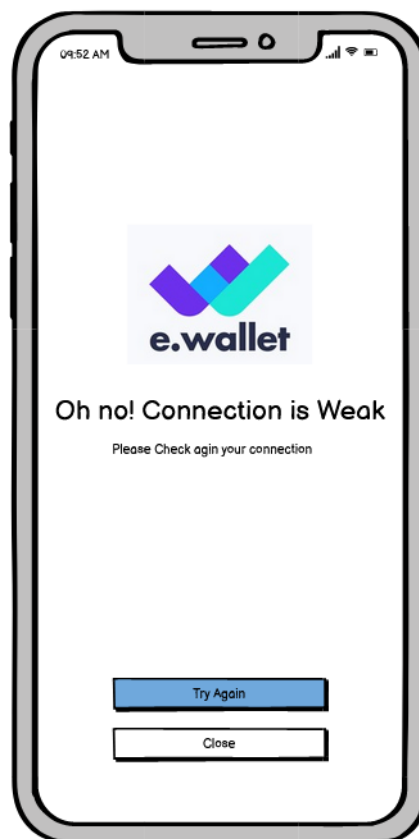


Figure 2 above shows the Internet connection checking

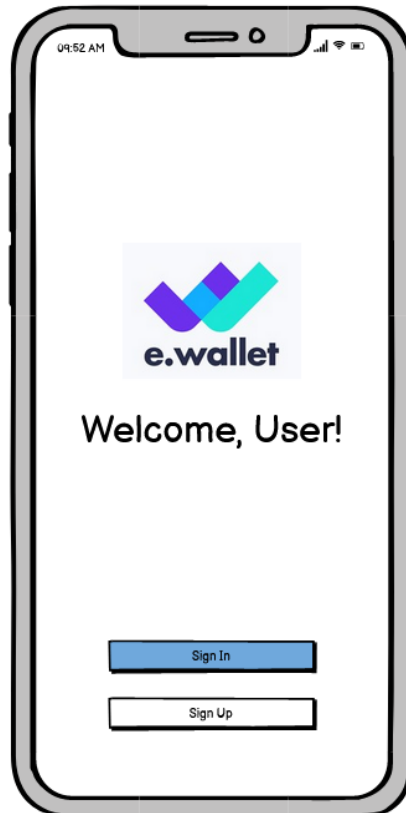


Figure 3 above shows the Sign In/Sign Up

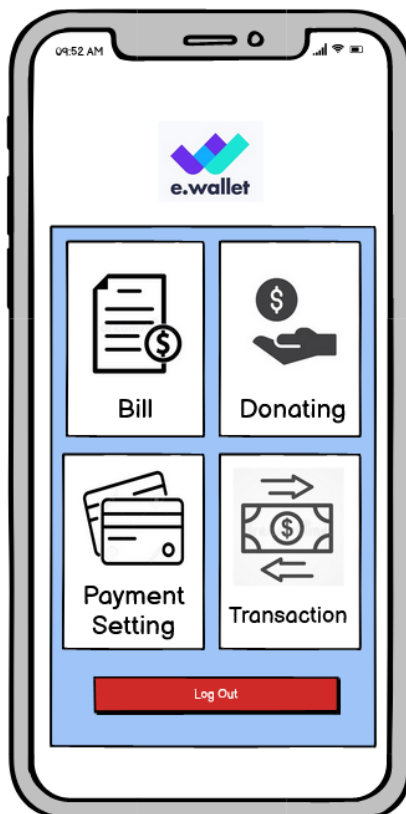


Figure 4 above shows the main page

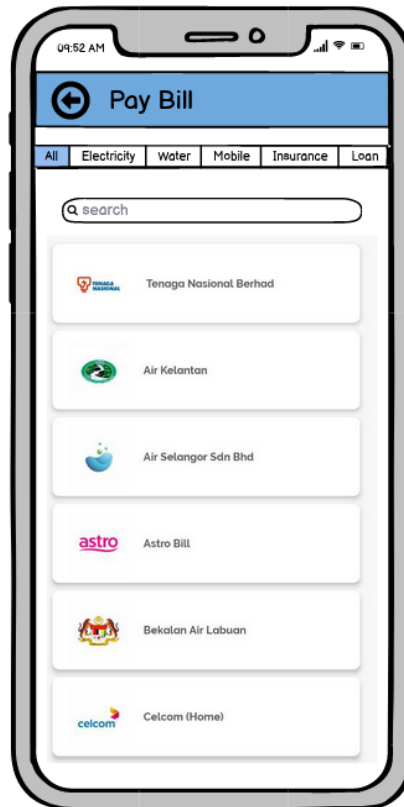


Figure 5 above shows the Payment Bill

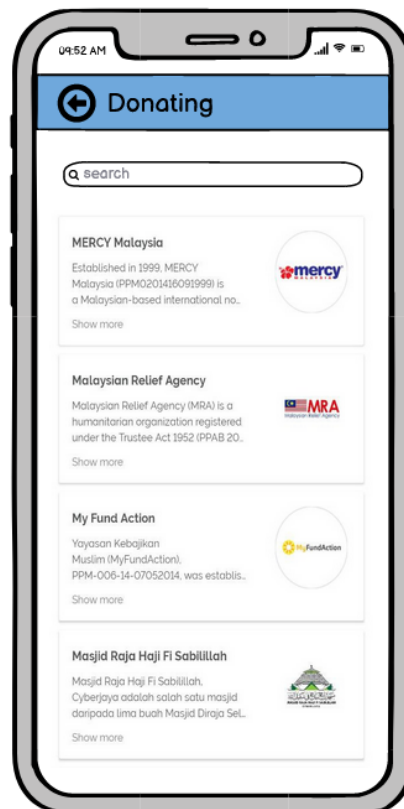


Figure 6 above shows the Donating

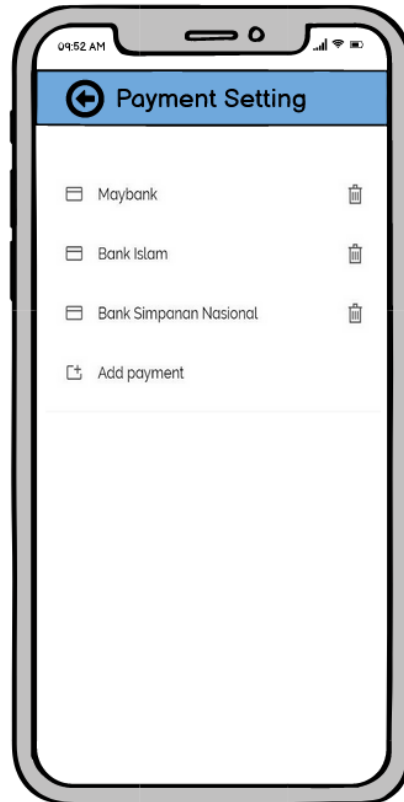


Figure 7 above shows the Payment/Card Bank Setting

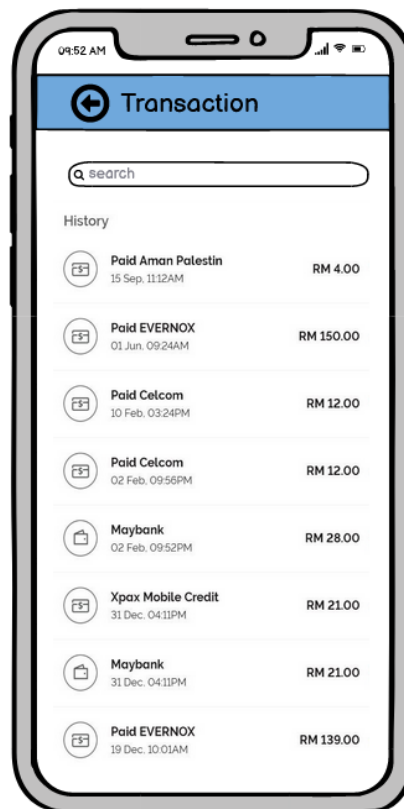


Figure 8 above shows the History Transaction

SAMPLE INPUT:

Output Of System	Input	
Check Internet Connection	2.No	1.Yes
Check User Already Sign Up?		2.No
		1.Yes
		LogIn Form: Email: ismail@gmail.com Password: ism@il123
		SignUp Form: Full Name: Ismail Bin Admad Email: ismail@gmail.com Password: ism@il123 Address: No.46 Taman Perdana Jalan 4/16 Rawang, Selangor Age: 21
Main Page		Selection: b
		Selection: d
		Selection: p
		Selection: t
		Selection: x
		Enter any key other that above
Pay Bill		Selection: b
		<div> 1. Add new bill 2. Delete current bill 3. Quit </div>
		<div> 1. Please enter the bill code ex(1010) : 1001 Please enter new mobile bill : Maxis Please enter new electricity bill : TnB Please enter new water bill : PaiP </div>
		<div> 1. Please enter the bill code ex(1010) : 1002 Please enter new mobile bill : Celcom </div>

		<p>Please enter new electricity bill : TnD</p> <p>Please enter new water bill : PaIS</p>
		<p>2.</p> <p>Please enter the bill code to be delete : 1001</p>
Donating		<p>Selection: d</p> <p>a - Search agency to donate l - List donations x - Exit Enter your choice: a</p> <p>AGENCY TO DONATE [1] MERCY Malaysia [2] Malaysian Relief Agency [3] Yayasan Food Bank Malaysia [4] Malaysia Flood Agency [5] BACK TO HOMEPAGE Select agency to donate [1/2/3/4] : 1 MERCY Malaysia Account Number : 8000792908 [MAYBANK] Enter amount to donate : 30</p> <p>a - Search agency to donate l - List donations x - Exit Enter your choice: l</p> <p>30</p>
Payment/Card Bank Setting		<p>Selection: p</p> <p>Your Choice: 1</p> <p>Holder Name: Muhammad Ismail Bin Ahmad Card Number: 5655 6699 7894 3546 Expire Date: 12/24 CVV: 685</p>

		<p>Bank Name: Maybank</p> <p>Your Choice: 1</p> <p>Holder Name: Muhammad Ismail Bin Ahmad</p> <p>Card Number: 9985 6543 1268 7798</p> <p>Expire Date: 12/23</p> <p>CVV: 753</p> <p>Bank Name: Bank Rakyat</p>
		<p>Your Choice: 1</p> <p>Holder Name: Muhammad Ismail Bin Ahmad</p> <p>Card Number: 1978 4568 1235 4654</p> <p>Expire Date: 12/24</p> <p>CVV: 999</p> <p>Bank Name: Hong Leong Bank</p>
		<p>Your Choice: 2</p> <p>Enter the card number to be delete: 1978 4568 1235 4654</p> <p>Holder Name: Muhammad Ismail Bin Ahmad</p> <p>Card Number: 1978 4568 1235 1457</p> <p>Expire Date: 12/24</p> <p>CVV: 999</p> <p>Bank Name: Hong Leong Bank</p> <p>Exit editing?: 1</p>
		<p>Your Choice: 3</p> <p>Enter the card number to be delete: 9985 6543 1268 7798</p>
		<p>Your Choice: 4</p> <p>First bank card will be delete</p>
		<p>Your Choice: 5</p> <p>Go back to the main page.</p>
Transaction History		<p>Selection: t</p> <div> <p>Your choice:1</p> <p>Please enter the bill code ex(1010):1010</p> <p>Please enter new mobile bill:30</p> <p>Please enter new electricity bill:123</p> </div>

		<div>Please enter new water bill:45</div> <div>Your choice:3</div> <div>1 My list bill</div> <div>2 My list donation</div> <div>3 Exit</div> <div>Enter choice: 1</div> <div>List Bill:</div> <div>Bill code: 1010</div> <div>Mobile bill: 30</div> <div>Electric Bill: 123</div> <div>Water Bill: 45</div> <div>End of list!</div>
Log-Out		Selection: x

SCREENSHOT OUTPUT:

Check Internet Connection:

Option 1:

```
Loading...
Are you have connect with internet?
1. Yes
2. No
Selection: 1
You are connected.Please wait a moment..
```

Option 2:

```
Loading...
Are you have connect with internet?
1. Yes
2. No
Selection: 2

Please check your connection.

Loading...
Are you have connect with internet?
1. Yes
2. No
Selection:
```

Check User Already Sign Up?:

Option 1:

Email & Password are Correct:

```
Already Sign Up?
1. Yes
2. No
Selection: 1

Log-In Form:-
-----

Please Enter email:ismail@gmail.com

Please enter password:ism@il123
Login Successfull!.
```


Email is Incorrect:

```
Already Sign Up?
1. Yes
2. No
Selection: 1

Log-In Form:-
-----

Please Enter email:ahmad@gmail.com

Please enter password:ism@il123
Password/Email is Wrong!!

Please Enter email: _
```

Password is Incorrect:

```
Already Sign Up?
1. Yes
2. No
Selection: 1

Log-In Form:-
-----

Please Enter email:ismail@gmail.com

Please enter password:1232346
Password/Email is Wrong!!

Please Enter email:
```

Option 2:

```
Already Sign Up?
1. Yes
2. No
Selection: 2

Sign Up Form:-
-----

Full Name:Muhammad Ismail Bin Admad
Email: ismail@gmail.com
Password: ism@il123
Address: No.46 Taman Perdana Jalan 4/16 Rawang,Selangor
Age: 21

Alright, you account have been created. You good to go.
```

Main Page:

```
WELDOME, Ismail
Home Page:
-----
b. Pay Bill
d. Donating
p. Payment/Card Bank Setting
t. Transaction History
x: Log-Out
Selection: p
```

Bill:

Add new bill:

```
No Bill yet!
Press 1 to add a new bill.
Press 2 to delete current bill.
Press 3 to quit from bill.
Your choice:1

Please enter the bill code ex(1010):1001

Please enter new mobile bill:Celcom

Please enter new electricity bill:TnB

Please enter new water bill:PaIP

1.
Bill code: 1001
Mobile bill: Celcom
Electric Bill: TnB
Water Bill: PaIP

Press 1 to add a new bill.
Press 2 to delete current bill.
Press 3 to quit from bill.
Your choice:
```

Delete bill:

```
1.
Bill code: 1001
Mobile bill: Celcom
Electric Bill: TnB
Water Bill: PaIP

2.
Bill code: 1002
Mobile bill: Maxis
Electric Bill: TnB
Water Bill: PaIS

Press 1 to add a new bill.
Press 2 to delete current bill.
Press 3 to quit from bill.
Your choice:2

Please enter the bill code to be delete:1001

The bill has been delete!
1.
Bill code: 1002
Mobile bill: Maxis
Electric Bill: TnB
Water Bill: PaIS
```

Quit bill:

```
Press 1 to add a new bill.
Press 2 to delete current bill.
Press 3 to quit from bill.
Your choice:3

Process returned 0 (0x0)   execution time : 163.227 s
Press any key to continue.
```

Donating:

Choice of input

```
a - Search agency to donate
l - List donations
x - Exit
Enter your Choice:
```

Search agency to donate

```
=====
          AGENCY TO DONATE
=====
[1] MERCY Malaysia
[2] Malaysian Relief Agency
[3] Yayasan Food Bank Malaysia
[4] Malaysia Flood Agency
[5] BACK TO HOMEPAGE

SELECT AGENCY TO DONATE [1/2/3/4]:
```

List of donation

```
=====
          AGENCY TO DONATE
=====
[1] MERCY Malaysia
[2] Malaysian Relief Agency
[3] Yayasan Food Bank Malaysia
[4] Malaysia Flood Agency
[5] BACK TO HOMEPAGE

SELECT AGENCY TO DONATE [1/2/3/4]:
1

MERCY Malaysia Account Number : 8000792908 [MAYBANK]
Enter amount to donate: 30

a - Search agency to donate
l - List donations
x - Exit
Enter your Choice: l

30
Process returned -1073741819 (0xC0000005)   execution time : 277.534 s
Press any key to continue.
```

Payment/Card Bank Setting:

```
Empty List!
Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:1

Please enter the card holder name:Muhammad Ismail Bin Ahmad

Please enter the card number (XXXXXXXXXXXXXXXXXX):5655669978943546

Please enter the expire date (XX/XX):12/24

Please enter the CVV (XXX):685

Please enter the bank name:Maybank

1.
Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546
Expire Date: 12/24
CVV: 685

Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:1

Please enter the card holder name:Muhammad Ismail Bin Ahmad

Please enter the card number (XXXXXXXXXXXXXXXXXX):9985654312687798

Please enter the expire date (XX/XX):12/23

Please enter the CVV (XXX):753

Please enter the bank name:Bank Rakyat
```

```
1.
Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546
Expire Date: 12/24
CVV: 685

2.
Bank name: Bank Rakyat

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 9985654312687798
Expire Date: 12/23
CVV: 753

Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:1

Please enter the card holder name:Muhammad Ismail Bin Ahmad

Please enter the card number (XXXXXXXXXXXXXXXX):1978456812354654

Please enter the expire date (XX/XX):12/24

Please enter the CVV (XXX):999

Please enter the bank name:Hong Leong Bank

1.
Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546
Expire Date: 12/24
CVV: 685
```

2.

Bank name: Bank Rakyat

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 9985654312687798

Expire Date: 12/23

CWV: 753

3.

Bank name: Hong Leong Bank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 1978456812354654

Expire Date: 12/24

CWV: 999

Press 1 to add a new bank card.

Press 2 to edit a bank card.

Press 3 to delete a bank card.

Press 4 to delete the first bank card.

Press 5 to quit from card setting.

Your choice:2

Please enter the bank card number to be delete:1978456812354654

The card has been delete!

1.

Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546

Expire Date: 12/24

CWV: 685

2.

Bank name: Bank Rakyat

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 9985654312687798

Expire Date: 12/23

CWV: 753

```
Please enter the detail of the card:
Please enter the card holder name:Muhammad Ismail Bin Ahmad

Please enter the card number (XXXXXXXXXXXXXXXX):1978456812351457

Please enter the expire date (XX/XX):12/24

Please enter the CVV (XXX):999

Please enter the bank name:Hong Leong Bank

Exit editing? yes=1, no=21

1.
Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546
Expire Date: 12/24
CVV: 685

2.
Bank name: Bank Rakyat

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 9985654312687798
Expire Date: 12/23
CVV: 753

3.
Bank name: Hong Leong Bank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 1978456812351457
Expire Date: 12/24
CVV: 999

Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:3

Please enter the bank card number to be delete:9985654312687798

The card has been delete!
```


1.
Bank name: Maybank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 5655669978943546
Expire Date: 12/24
CW: 685

2.
Bank name: Hong Leong Bank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 1978456812351457
Expire Date: 12/24
CW: 999

Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:4

1.
Bank name: Hong Leong Bank

Card holder name: Muhammad Ismail Bin Ahmad

Card Number: 1978456812351457
Expire Date: 12/24
CW: 999

Press 1 to add a new bank card.
Press 2 to edit a bank card.
Press 3 to delete a bank card.
Press 4 to delete the first bank card.
Press 5 to quit from card setting.
Your choice:5

Transaction History:

```
Press 1 to add a new bill.  
Press 2 to delete current bill.  
Press 3 to quit from bill.  
Your choice:1
```

```
Please enter the bill code ex(1010):1010
```

```
Please enter new mobile bill:30
```

```
Please enter new electricity bill:123
```

```
Please enter new water bill:45
```

```
1.  
Bill code: 1010  
Mobile bill: 30  
Electric Bill: 123  
Water Bill: 45
```

```
Press 1 to add a new bill.  
Press 2 to delete current bill.  
Press 3 to quit from bill.  
Your choice:3
```

```
1 My list bill  
2 My list donation  
3 Exit
```

```
Enter choice: 1
```

```
List Bill:
```

```
Bill code: 1010  
Mobile bill: 30  
Electric Bill: 123  
Water Bill: 45
```

```
End of list!
```

Log-Out:

```
Home Page:
-----
b. Pay Bill
d. Donating
p. Payment/Card Bank Setting
t. Transaction History
x: Log-Out
Selection: x

Process returned 0 (0x0)   execution time : 1507.540 s
Press any key to continue.
█
```

CODE:

https://drive.google.com/drive/folders/1guVguUfJPGLJ4z_C6ywaanVIEV2ZV2sL?usp=sharing

LINK PRESENTATION:

https://drive.google.com/drive/folders/1JzbZntYEuUQHqAo0B_c9NWFeY5ROi4MH?usp=sharing

REFERENCE:

Quora. (n.d.). *How to create a login system in C?*. Retrieved February 4, 2022 from <https://www.quora.com/How-can-I-create-a-login-system-in-C>

GeeksforGeeks. September 13, 2021. *Use of fflush(stdin) in C*. Retrieved February 4, 2022 from <https://www.geeksforgeeks.org/use-fflushstdin-c/>

Programiz. *C strcmp()- C Standard Library*. Retrieved February 4, 2022 from <https://www.programiz.com/c-programming/library-function/string.h/strcmp>

GeeksforGeeks. September 15, 2021. *Linear Search*. Retrieved February 4, 2022 from <https://www.geeksforgeeks.org/linear-search/>