



UTM
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SECI 1513 - Sec 07

PROJECT Low Fidelity Prototype - PART 1

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Introduction

The Fourth Industrial Revolution (4IR) is the incorporation of advanced digitization, advanced technologies, and efficient resource utilisation into traditional manufacturing and industrial operations. It is expected to alter our way of life and communication. It is used to improve efficiency and, as a result, drive competitiveness. Significant disruption to culture, business model, and employment trends is also expected. Jobs that are repetitive and rule-based are more likely to be automated as technology advances. 4IR brings more than just technological changes because we humans must equip ourselves with new knowledge and techniques in order to keep up with the changes of 4IR. Artificial intelligence (AI), machine learning, Internet of Things (IoT), big data analytics, high-speed mobile internet, augmented reality, virtual reality and more are the technologies of the fourth industrial revolution. They have become the driving force behind a plethora of products and services that are quickly becoming indispensable and necessary in modern life. For example, AI helps us to improve the workflows by automating the system and tasks, increasing productivity, performance and improving services and etcetera. They help us to improve the quality of life and create a new market and a lower barrier to entrepreneurship.

Entrepreneurs can now easily build up their business with a lower start-up cost with minimal time and cost constraints. It helps the entrepreneurs to save money and provide a smoother and more systematic flow for them. Nevertheless, there are some disadvantages of technology of the Fourth Industrial Revolution. For instance, time is needed to learn how to use these technologies in a proper and efficient way to gain the benefits. Cybersecurity risks such as the risk of hacking data and using it maliciously also exist when we use those technologies.

Selection of Fourth Industrial Revolution (IR4.0) technologies

We integrate Internet of Things, also known as IoT into our e-wallet as it would improve the performance of the application while possessing a unique structure compared to others. IoT refers to the billions of physical devices such as computers, mechanical and digital machines around the world that are connected to the Internet, all collecting and sharing data between each other without requiring human-to-computer interaction. With IoT technology such as cloud technology, it would provide users with services such as directly top up or online shopping from the application itself and less micromanaging within the application. As businesses are slowly beginning to be digitised, usage of physical currency is slowly declining.

To keep up with the advancement of technology, integration of cloud technology into the e-wallet could make it more competitive as with higher performance, easy to learn interface and secure transactions makes the user experience even more sublime as everything related to finances can be directly accessed through the cloud.

Potential client

Businessman

For this e-wallet application, businessmen will be considered as the first potential client. Most businessmen begin their business by setting up shops like grocery stores. They need to prepare spare change for customers. Time is needed to count the amount of change required to give back to customers. As for customers, they need to calculate the money for paying for the products while the businessman has to recount the change for insurance. This is a time-consuming and inconvenient process. With this application, a businessman can ease the micromanagement of money and save time rather than using cash, credit, or debit card. Since customers are also using the E-wallet, they can just use the QR code scanning service to pay for their items, which is also known as scan and go. The money will be transferred instantly to the businessman's E-wallet, which is a lot faster than using cash, credit card, or debit card. Besides that, the transaction fee is low to none. The customers do not lose much to give themselves some convenience.

Besides being quick and convenient, security and safety issues can be solved by E-wallet. Without an E-wallet, businessmen need to handle a hefty amount of money and store it in a cash box, which is insecure as cash boxes can be broken by robbers. With an E-wallet, businessmen can store their money in the E-wallet and access it through the application. The money will be digitally stored and with an added bonus of providing better mobile wallet security by preventing third parties from accessing information that can be used to commit fraud or identity theft such as requiring a PIN to log in, setting up multi-factor authentication (MFA) for proceeding the transaction which is more secure.

Office Worker

The second potential client for this E-wallet is office workers. Office workers usually are the ones who do not have change as they only carry big money notes. Carrying spare change is inconvenient for them as it is uncomfortable and makes their pockets look bulky. Office workers are not required to carry change with the help of the E-wallet. Office workers are able to get through a purchase in seconds with QR code scanning and paying the exact amount of money that they need to. Not only that, the E-wallet helps them to pay for their water and electricity bills in a fast and convenient manner. It saves a lot of time for busy office workers as the bill payment procedure becomes much simpler. Without this mobile application, they have to top up their sim card at either a convenience store or at a mobile service provider store. Office workers can just top up their sim card at any place at any given time as they like with the E-wallet.

Other than that, the concerns of security and safety will be reduced as office workers will not be carrying a lot of cash money with the help of E-wallet. For example, office workers have to scan their debit or credit card at the counter to pay for something where it might expose details of their debit or credit card. There exists some risk and security issues there.

With the E-wallet, office workers can just use it to scan the QR code to pay for something where they don't need to expose any details about their personal information. Every transaction process has to be authorised with a PIN, fingerprint scanner, or password while using the E-wallet.

Office workers can also collect loyalty points to get coupons, vouchers, cashback or discounts through buying more items using the E-wallet. It can improve office workers' morale throughout each day and treat them better by buying more items knowing that they will earn loyalty points.

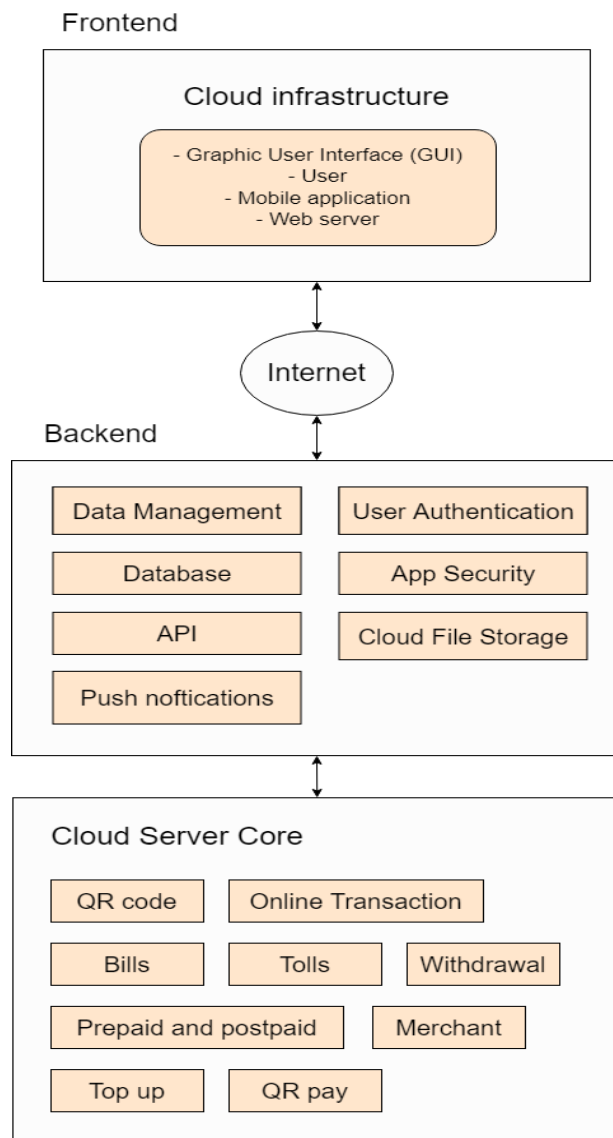
Function

Our e-wallet provides functions such as QR pay which payments are made instantly through the scanning of QR code. When compared to other payment methods such as bank transfer and cash payment, using QR codes appears to be superior as it is faster. Recipients only need to generate their own QR code by a simple click through the built-in app inside the e-wallet to receive payment. The payments are made in a matter of a few seconds.

Besides, our e-wallet also offers internal transfer through unique account numbers that are linked to their account for every user of the e-wallet. In addition, you can deposit money via credit card or debit card. The e-wallet also supports transactions either from a bank account to e-wallet or from e-wallet to bank account.

Furthermore, you can use it to pay your utility bills such as water, electricity, and mobile bills easily and conveniently when compared to conventional payment methods. Moreover, It can be used to pay for online shopping. For example, payments can be made using this e-wallet on e-commerce platforms like Lazada and Shopee. In addition, it can be used to pay tolls.

Cloud Computing architecture



Frontend is connected to the backend together with the internet. In frontend we have the cloud infrastructure which includes Graphic User Interface(GUI), user, mobile application and web server. Graphic User Interface(GUI) is the interface inside the mobile application and web server that acts like a switch to start or end a service.

In the backend, we have data management, database, API, push notifications, user authentication, app security and cloud file storage. A database is a logically organised collection of structured data kept electronically in a computer and data management is the process of an organization's data being ingested, stored, organised, and maintained from the database. API, as known as Application Programming Interface which is a software middleman that allows two apps to communicate with one another, like we can transfer funds between 3rd party applications. For push notification, push notification is just like the incoming notification message when someone sends us a fund to use. Besides, user authentication is a method for a device to confirm the identity of someone connecting to a network resource, which requires people's identity so that they can use their E-wallet for safe

purposes. The app security in the backend serves as a protection to our end users and it can ensure that our E-Wallet is safe from any intruders. Our cloud file storage allows servers and applications to access data via shared file systems.

We also have a cloud server core where it stores various of our E-Wallet functions such as QR code, online transaction, bills, tolls, withdrawal, prepaid and postpaid, merchant, top up and QR pay.

Conclusion

In conclusion, our e-wallet is designed to implement IoT technology such as cloud-based technology to enhance the user experience such as performance, and bring more quality of life improvements. We discuss that e-wallet have many use cases for all categories of people, but through more consideration, we conclude that the field of potential clients comes down to businessmen and office workers. We inspect businessmen and office workers as our main field of potential customers as the e-wallet application solves their inconvenience of micromanaging money. In terms of time-saving, the e-wallet also allows for payment of bills and sim card credit topping up directly in the app. Security and safety of money are also assured as personal information such as credit card details is protected with information encryption. E-wallet also provides promotions for them as vouchers, cashback and discount would ease their financial burden. During our discussion, we faced some issues when designing the cloud architecture. We lack the resources and experiences and exposure in this field. Plus there are not sufficient enough cloud architecture samples for us to refer to. Thus, we divide the project into several manageable parts and assign tasks to each of us to undergo intensive internet surfing for research documents and information extraction on websites on cloud infrastructure about its components and its complexity. We managed to design the cloud architecture for our e-wallet with our efforts.