UTM

TIS group project
(group one)

2022 SMART TABLE

GROUP MEMBERS

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RESOURCES

https://www.nucleus.be/blog/uptime-as-a-service/verschil-iaas-paas-saas-en-uaas/
https://www.mydigimenu.com/
https://blog.knoldus.com/know-about-cloud-computing-architecture/
https://www.restaurantbusinessonline.com/technology/7-answers-restaurants-tech-dilemmas
Create Your Own Online Restaurant Ordering System for Takeaway Food (barn2.com)

MOCK-UP

One for the App and another one for the table

PROTOTYPE

One for the App and another one for the table

ARCHITECTURE

The public cloud Architecture will be suitable for out Smart Table Project

MODELS

Our Project will be using SaaS Cloud Service Model.

FRONT-END

Front-End Web and Mobile on AWS will be our front-end service provider

BACKEND

Amazon Data Warehouse is a safe place to store our data.

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INTRODUCTION

Our project will use IoT 4th IR. Restaurants now offer smartphone applications to make placing orders more convenient for their consumers. Many people have also signed up for meal delivery apps like food panda, grab food, and many other apps. Is this to say that eating out is no longer an option? People, in fact, continue to enjoy eating out. If you visit a mall on a weekend, you may have difficulty finding a place to eat because all of the restaurants are already booked. There's no reason why you shouldn't improve the dining experience at your favorite restaurants and cafes, especially because restaurants and cafes are still relevant today.
Now, let me introduce our project E-table. The adoption of the E-table is one of the most recent developments that will help you improve your restaurant's visitor experience. Customers, particularly millennials, are inextricably linked to technology. Even when they are eating out, they want to stay connected to technology. Many restaurant operators have shifted to E-table as a result of this.

But, what precisely does the E-table provide customers? The E-table is a smartphone application that may be downloaded and a torch screen provided in the restaurant. Customers must first create accounts on the app. Customers can use this application to make table reservations based on the number of people who will be eating, as well as meal preparation and a variety of additional services. In case they need to change their food order, the same app will be available at their reservation table, along with the same smart menu. The app also includes a history menu that allows consumers to view their payment history, favorite dish, and other features(they will be discussing more in the next section).

But, how cloud computing will help us with our project? Our project is a cloud-based software that is an Internet-run program with components that are distributed online and all processes are performed in the cloud.

WHY DO WE NEED SMART TABLES?

The problem statement

Historically, the restaurant business has been sluggish to accept technology and creative digital solutions compared to other businesses. However, the COVID-19 epidemic in 2020 and 2021 forced the food and beverage shops to change that and to seek beyond the usual. Many restaurants have turned to technology in the last few years to adapt to a new reality. But, restaurants start adapting to technology as strategies to keep guests away from one another. But, what about using technology to improve the dining experience in restaurants?

The Solution

One of the solutions is using smart table technology which is one of the IoT 4th IR ideas. This technology can provide a better dining experience as well as a method to keep guests apart from one another which is more than suitable for the time being.

Our objective

Our main goals of this project are to offer a combination of a better dining experience and a strategy to keep guests away from one another. This starts from the customer phone which can offer to the customer a reservation of a table and a reservation of food from any where in world. which will reduce the time customer spent in the restaurant, therefore will give a better dining experience for the customer and reducing the chances of contracting the coronavirus. Our objects don't end here, it continues at the moment that the customer enters the restaurant. He will find his table with the food ready for him, and also the table will be provided with a table which has lot's features for him.

Expectations and limitations

We expect that the idea of a smart table will be in every single restaurant in the world because of the time saved for the customers and the money saved for the restaurant owners. And as usual, there is some limitation of this idea that we should mention. One of them is the possibility of traffic problems which could let customers eat cold food.

WHO ARE OUR CLIENTS

Our target customers are restaurants and coffee patients, who are willing to take their dining experience to a whole new level, by combining technology and the use of the internet, especially customers millennial ones, who cannot be separated from technology. They want to keep connected with technology even when they are eating out. So, we have come up with our very own ' E-Table' where customers have to download an app then Log in to their accounts. And through this app customers can get to reserve their table beforehand. In that app, customers get to book time slots and the amount of people who are going to dine in. They also get to take a quick glance at the menu and the prices. Upon reaching the restaurant, customers need to scan the QR code generated by the app, and the display screen at the front of the restaurant will let them know which table is reserved for them, this concept is already being used in like concept in theatres and it has shown great results in terms of efficiency.

Upon reaching and having a seat at their table, customers get to order their food on the table. Fitted with a touch screen panel, some parts of the table are sensitive to touch. The table is also durable to water, heat, and shock-resistant.

On the table, customers get to take a look at the menu once again, but in a more detailed manner. While ordering, customers get to look at the menu visually through a video, which will definitely tempt them of wanting to order more. Just like McDonald's kiosk machine, this concept is similar but only easier and hassle-free. Customers must pay immediately after placing an order, using internet banking, Visa, or MasterCard, and after the money is received, the order will be promptly transported to the kitchen, where the chefs may begin preparing the food. Customers can also view what they had eaten previously, payment history, latest offers, suggested meals, and their favorite meals. Customers can watch all this through the smart menu at home in the app and at the restaurant on the smart table.

A FLOW CHART

smart Table

STEP 1

Customers reserve tables using an app that allows them to view available tables, order food, and make reservations

STEP 2

Once the customer enters the restaurant, he will be greeted with a tablet and an app on his table, as well as a display identifying the table number reserved for that customer

STEP 3

Customers can browse the menu and order their food via the touch display on the table, or the food will be ready if the order has already been filled

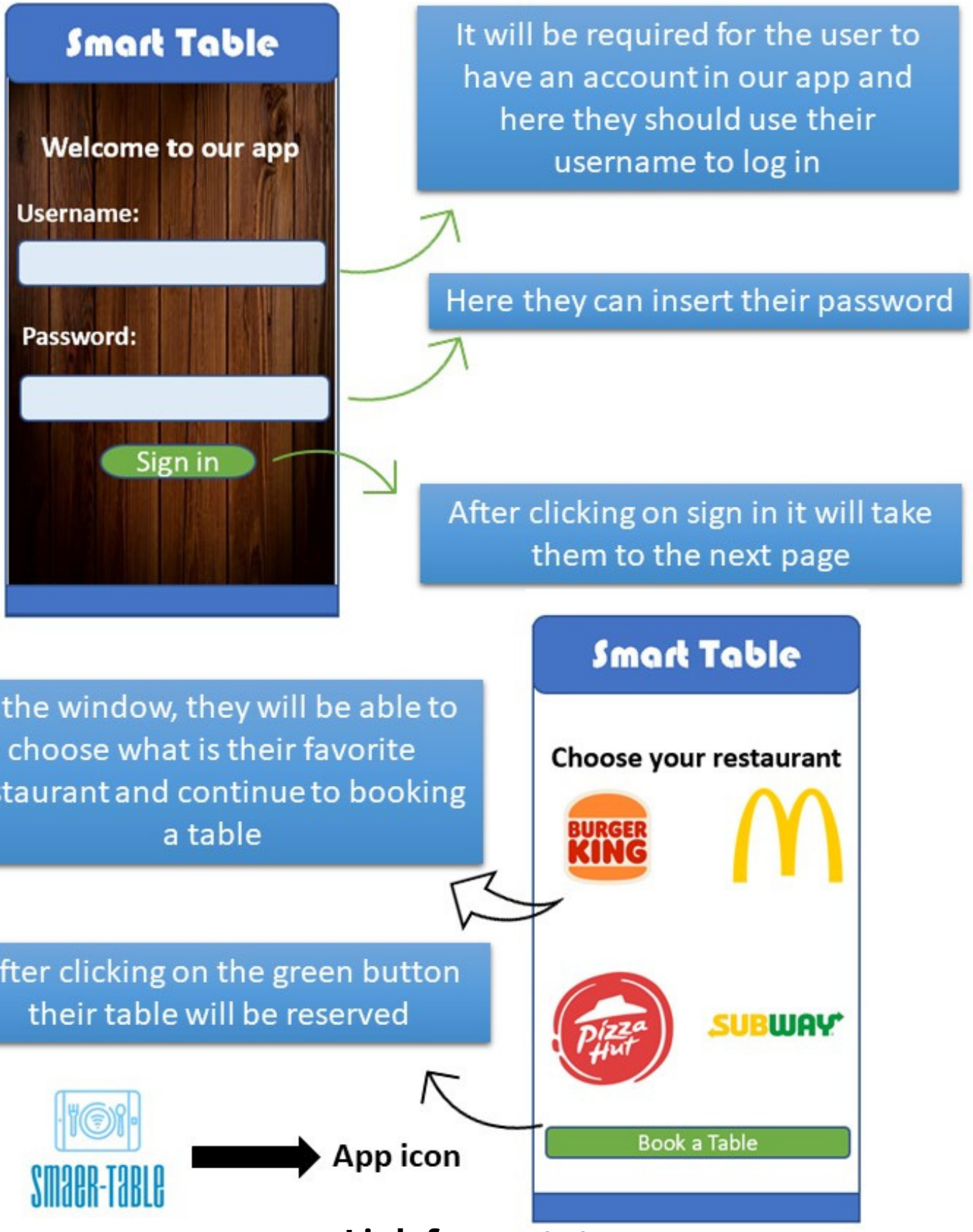
STEP 4

Payment will also be made at the table via online banking, a visa or master card, or cash

STEP 5

Customers can provide feedback, reviews, or complaints via the app.

1. The Mobile App



Link for prototype:
https://www.justinmind.com/usernote/tests/69558401/69558756/69558758/index.html

2. The table

User can either log in to an existing account, or sign up to a new account

From this list above, the user can decide what type of food he want to order

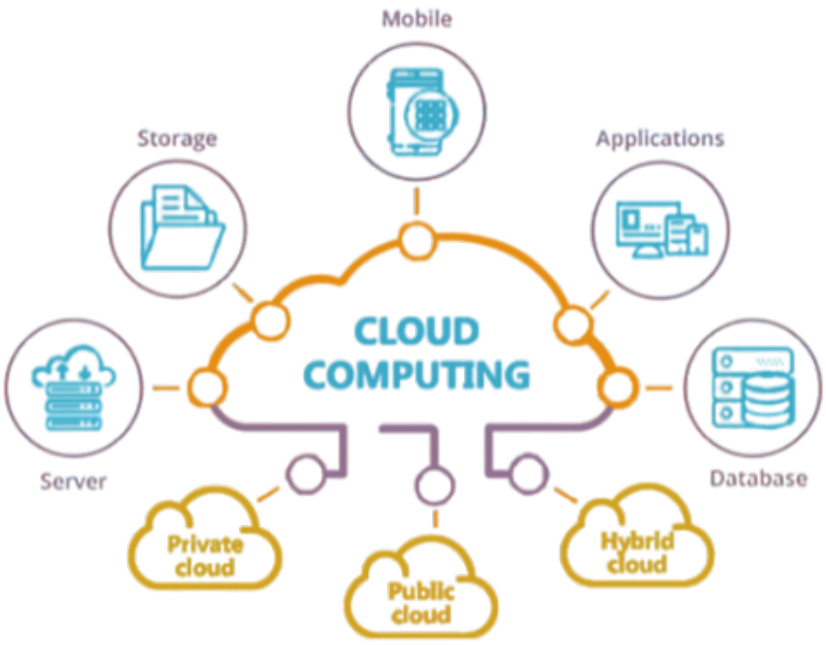
The user can return to the (login and sign up) screen from this button

Link for prototype: https://www.canva.com/design/DAE1o3_DQMs/VSmYdXpl3doXuleVQlZJ4g/view?mode=prototype

CLOUD COMPUTING ARCHITECTURE

Cloud architecture describes how technology components come together to produce a cloud, in which resources are pooled and shared through a network. The following elements make to a cloud architecture:

- A front-end (Client Infrastructure)
  -the client
  -device used
- A back-end
  -Application
  -Service
  - Storage
- A network
- A cloud-based delivery model



FRONT-END CLIENT INFRASTRUCTURE

Customers of restaurants and coffee shops will be our first cloud architecture component in our project; they will be able to access the app from their homes using their smartphones (which is the device used to access the cloud) or use the E-tables (which is the device used to access the cloud) in the restaurants or coffee shops.

BACK-END

Application

The backend architecture is heavily reliant on the application. It is the end-user interface provided by the backend for sending queries. This layer of the backend handles the client's requests and requirements. Any software or platform that the client desires can be used as the application in our project (e-Table) it is a software application that contacts the cloud using the internet (which we will discuss in the next sections)

SERVICE

The backend cloud architecture's services are a wonderful area. It enhances the backend architecture's overall functionality. Every task that executes on the cloud computing system is handled by the service. Furthermore, the service can run a wide range of jobs on the cloud. Our Project is using Saas as a cloud-based service (We will discuss why we choose this could sever and the other types of services in the next sections)

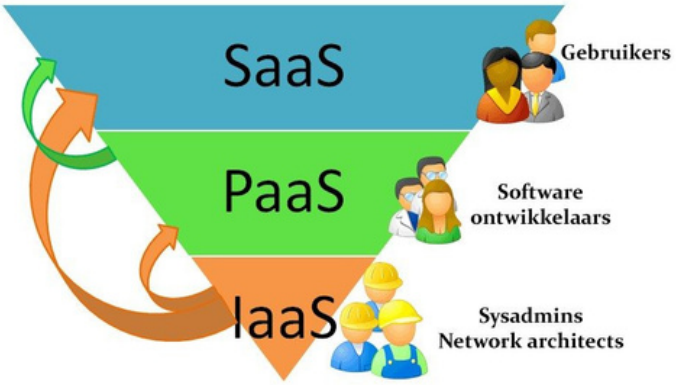
STORAGE

One of the most significant aspects of cloud computing is cloud storage. It offers a massive quantity of cloud storage capacity for storing and managing data. The amount of data stored varies depending on the cloud services offered. In our project since we are using AWS (Saas service), we are going to use Amazon S3, for the cloud storage (food data, and restaurant customers data).

NETWORK

In our project, the Internet is used to connect all client's accounts and information to the cloud. The Internet acts as a link between the frontend and the backend, allowing interaction and communication between the two.

CLOUD-BASED DELIVERY MODEL



Different cloud computing service delivery models help achieve diverse goals, and choosing which model is appropriate for you is a critical first step in making the switch to the cloud. The three most prevalent models are IaaS, PaaS, and SaaS.

Infrastructure as a Service (IaaS)

IaaS is one of the most versatile cloud computing models. Because the infrastructure and its functionalities are provided in a completely remote environment, clients have direct access to servers, networking, storage, and availability zones.

Platform as a Service (PaaS)

Another method of delivering cloud computing services is Platform as a Service (PaaS). In PaaS, customers are solely responsible for Identity Access Management, data, and apps, removing the need for businesses to maintain the underlying infrastructure.

Software as a Service (SaaS)

Because it outsources deployment to third-party services, SaaS is the most well-known of the three options. Only identity access management, data management, and software management are the responsibility of the customer. SaaS combines the advantages of IaaS and PaaS by allowing infrastructure, middleware, and web-based applications to be accessed from anywhere at any time, independent of the platform.

SOFTWARE AS A SERVICE (SAAS)

But, why we choose Saas for our project ?, we actually choose Saas for three main reasons.

1 COST

SaaS can save you a lot of money for a multitude of reasons. To begin with, it removes both the initial purchase/installation expense as well as recurrent fees such as maintenance and updates. SaaS software can be readily downloaded and maintained rather than investing large sums of money in physical installations. Furthermore, pay-as-you-go licensing enables businesses to pay only for the licenses that they use, rather than overpaying for licenses that aren't used. Small businesses can benefit from SaaS since it enables them to purchase costly, high-powered software that would otherwise be out of reach through traditional purchasing methods. Furthermore, the subscription model eliminates the substantial financial risk associated with costly software.

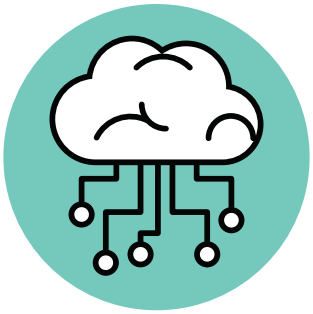
2 TIME

Many individuals believe that "time is money," and SaaS can assist you in saving both. Many SaaS programs may be installed by just connecting to the internet and logging in. In addition, your IT department's maintenance responsibilities are outsourced to the vendor. This reduces the need for additional labor hours and downtime associated with replacing traditional software. Finally, SaaS products have a shorter learning curve, resulting in speedier employee acceptance.

3 SCALABILITY & ACCESSIBILITY

One more significant advantage of SaaS is the pay-as-you-go concept, which allows for tremendous flexibility and possibilities. You can alter your usage plan at any time because the program is hosted by a third party. Furthermore, web-based access allows members to utilize the software from any location that has internet access.

cloud computing deployment models



A cloud deployment model is a set of elements that includes access to and ownership of deployment infrastructure, as well as storage space. As a result, deployment procedures differ based on who owns the infrastructure and where it is located. The three most popular cloud deployment options are public, private, hybrid, and community clouds.

1 PUBLIC CLOUD

The name says it all: data is created and kept on third-party servers in public clouds, which are open to the whole public.

2 PRIVATE CLOUD

From a technological standpoint, there is little to no difference between a public and a private model because their structures are relatively similar. A private cloud, on the other hand, is controlled by a single business and is not open to the public. As a result, it's often referred to as a corporate or internal model.

3 HYBRID CLOUD

As with any hybrid phenomenon, a hybrid cloud incorporates the greatest features of the previously described deployment methods (public, private, and community). It allows companies to blend the features of the three categories that best suit their requirements.

In our project, we choose Amazon EC2 which is a public cloud deployment model. But, why did we choose a public cloud as a deployment model for our project? This is because of the following advantages of the public cloud.

HASSLE-FREE INFRASTRUCTURE MANAGEMENT

It's convenient to have a third party manage your cloud infrastructure: you don't have to worry about developing and maintaining your software because the service provider does it for you. Furthermore, the infrastructure setup and use are simple.

HIGH SCALABILITY.

As your company's needs grow, you may easily expand the cloud's capacity.

REDUCED COSTS

There's no need to invest in hardware or software because you simply pay for the services you utilize.

24/7 UPTIME

Your infrastructure is always available and has improved operating time thanks to your provider's large network of servers.


Reflections

FARZAD: The experience while doing the work was worthwhile .From the assignment I have got to know a lot of things that I was previously unaware of. It also helped me hone my skills in doing prototypes and making reports. As the deadline given was a bit short we had a work pretty much every day to complete it but on the bright side It helped me to learn how to work properly under pressure. At first understanding on how to do the work took some of my time but fortunately it didn't affect much

LOAI: It was a good experience that I learned a lot from. Creating prototypes was fun and designing the report as well. Working as a team made an impact on me and I really loved it. We only had some minor issues of time difference and lack of time. In the future for sure I will implement the skills learned during this project. Regarding improvements, it wasn't clear in the beginning what our task is, but thankfully that has been fixed.


Reflections

GAFAAR: Overall, doing this project was a good experience, despite that there were so many things that could be better than that. Let's start with the things that I have learned from this project, first this project improve my searching and designing skills and how to work with groups. As for the issues and things that, I hope it was better and should be improved. First, the takes and topics were not clear for me. Secondly, the deadlines were so frustrating and crowded because of the exams, and I think if this project had been given to us from the beginning of the semester we could do much better than this.

MERVIN: I learnt a lot from this project. The main thing is that I've learnt to use Canva. Before Canva I was using Microsoft PowerPoint, but after discovering Canva I realized there were so many designs and great ideas from it. Besides that, being an introverted person, I've always had the trouble to communicate with people, but thanks to my great team members , they have helped me throughout this project and made me feel less introverted. I had so much fun in doing this project and it also helped me to enhance my creativity and ideas.