



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

# Low Fidelity Project

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**Technology and Information System**

**{Feeding Fido}**

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# 1.0 Introduction

## 1.1 Low Fidelity Project

What is the Low Fidelity Prototype?

Low-fidelity prototypes are often paper-based and do not allow user interactions. They range from a series of hand-drawn mock-ups to printouts. In theory, low-fidelity sketches are quicker to create. Low-fidelity prototypes are helpful in enabling early visualization of alternative design solutions, which helps provoke innovation and improvement. An additional advantage to this approach is that when using rough sketches, users may feel more comfortable suggesting changes.

Paper-based prototyping is the quickest way to get feedback on your preliminary site information architecture, design, and content. Low fidelity prototypes are easy to create and only require paper, scissors and sticky notes. You just use one piece of paper for each web page you create and then have users try them out in a usability test. Users will give their opinion where they want to click to find the information and you change the page to show that screen. This process helps you to collect feedback early in your design process and then make changes quickly and also improve your initial design.

## 1.2 Problem Background

Nowadays, due to work or travel, pet owners may not be able to see their pets on a regular basis. Almost every Malaysian family owns a pet, despite their busy schedules. Nowadays, owning a pet is difficult since the pet must be cared for while the owner is not around. Time constraints when feeding their pet and needing to feed their pet everyday become a burden on pet owners due to rushing for work and other preferences. Consider that the pet owners must wish to ensure that their cat gets fed at the same time every day, even while they are not at home. Cats are accustomed to following a routine, whether or not their owners are aware of it, therefore the pet cannot be expected to follow the owner's changing schedule.

In addition, one of the issues is financial. It's because if the pet owner wants to go for a long holiday or business trip, they'll send their pet to a pet care center for a nursery. This will be really costly.

As a result, a new invention, the “Feeding Fido” with Internet of Things, has developed as a solution to this problem. Rather than relying on neighbors or friends to feed the pet, the pet owners may now do so at any time and from anywhere by just clicking inside a smartphone application . This could be very beneficial to the pet owners.

### 1.3 4th IR Technology

#### 1.3.1 Internet of Things

What is the Internet of Things?

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

A thing in the internet of things can be a person with a heart monitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tire pressure is low or any other natural or man-made object that can be assigned an Internet Protocol (IP) address and is able to transfer data over a network.

Nowadays, many organizations in a variety of industries such as businesses with healthcare, finance, retail, manufacturing, etc are using IoT to increase their efficiency of operation. They use IoT to enhance their customer service by better understanding customers' needs in real time. Not only that, they do improve decision-making and increase the value of business by using IoT technology.

### 1.3.2 How does the IoT work with Feeding Fido?

As mentioned before, Feeding Fido which is based on IoT technology is needed for pet owners especially for those who have problems feeding their pets.

Feeding Fido as an automatic pet feeder can be controlled by users with their smartphone. This feeder can help users to record and monitor their pets' meal by simply clicking on the provided interface on the smartphone. Nowadays, most of the pet owners are desk jockey and they are facing problems feeding their pets due to busy schedules. They need to squeeze time out of their tight schedules to go home or pass the key to someone to help to feed their pets. Let's imagine that whether squeezing time out to go home or asking for someone's help will lead to some security issues. For example, you worry about your pets and go home with a very high driving speed or someone accidentally lost your key, etc. However, Feeding Fido can help pet owners to feed their pets and there is no need to worry about their pets' meals if they are not home.

Furthermore, there is no need to worry about the distance problems by using Feeding Fido. Pet owners can control the Feeding Fido anytime, anywhere, even in a foreign country as long as both user and system are connected to internet connections. Obviously, Feeding Fido is benefit for pet owners to save time and energy and also benefit for pets to keep healthy. Feeding Fido not only can help pet owners to feed their pets on time but also can control the food variation and portion for their pets. For example, some pets facing health problems like arthritis, canine parvovirus, diabetes millitus, hip dysplasia, etc and they need to change their previous diet like decrease the portion or change the nutrition distribution. However, some pet owners have difficulty controlling portions accurately for their pets. Therefore, Feeding Fido is good at helping pet owners to solve these problems by simply using a smartphone.

## 2.0 Potential Client

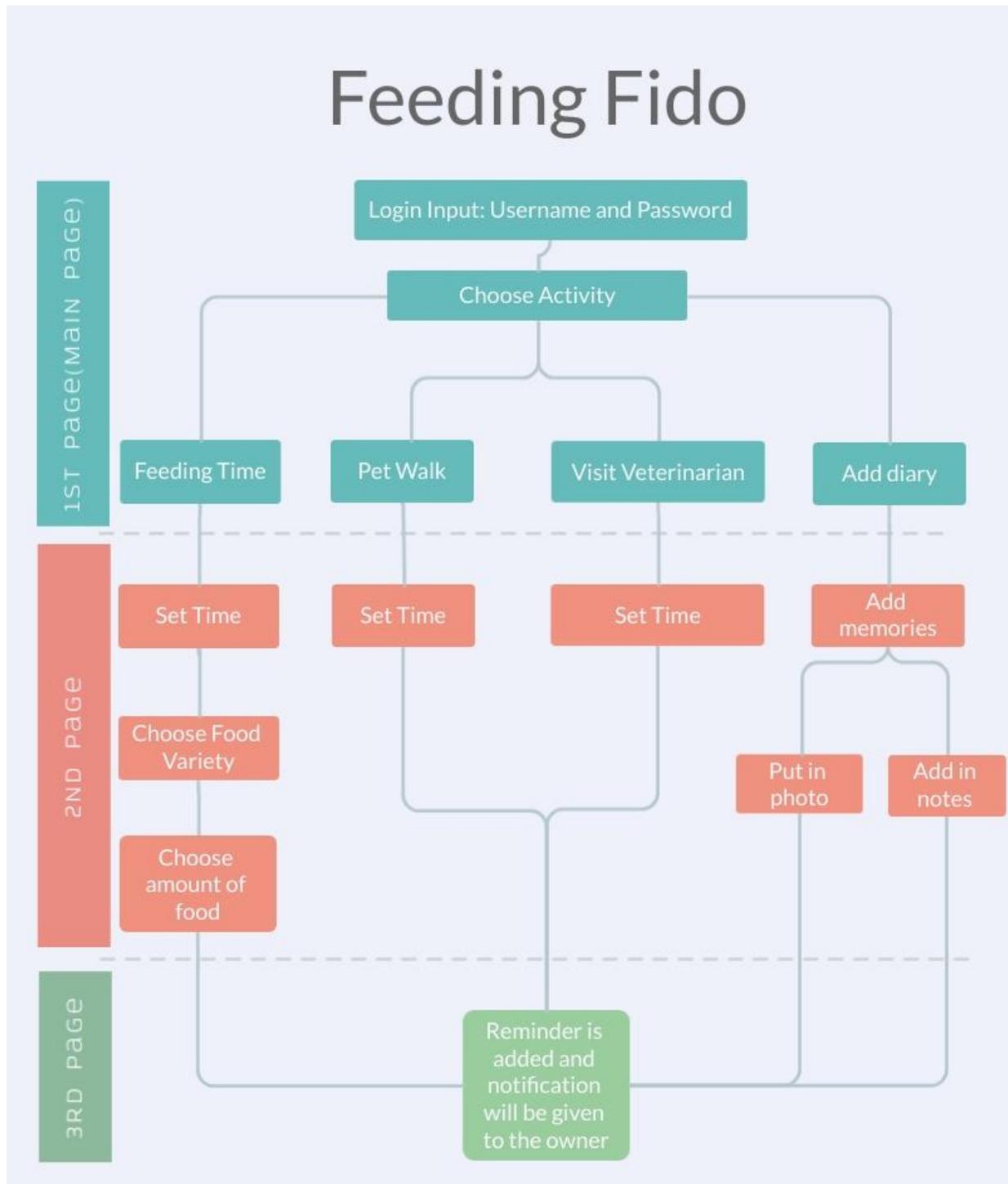
| No. | Input request  | Number of respondents | Problem faces                                   | Number of respondents |
|-----|----------------|-----------------------|---|-----------------------|
| 1.  | Time and date  | 10                    | Tight schedule                                  | 10                    |
| 2.  | Food variation | 5                     | Picky eater                                     | 4                     |
| 3.  | Food portion   | 7                     | It's difficult to keep track of the pet's diet. | 8                     |

Total respondent : 10

Based on the data in the table above, we can conclude that time and date are the most frequently requested inputs among all the respondents. Because of their hectic schedules, many pet owners struggle to feed their pets. Besides, food portion is the second most requested input. The size of the pet's portion plays an important role in keeping a healthy lifestyle. If a pet's portion is too large, he or she will gain weight regardless of how much they exercise. Finally, the food variation is the least requested input. We can keep the pet from being bored with the same old meal if we diversify the types of protein and food we provide them. This allows us to obtain a sense of the dog's preferences and dislikes, which is extremely beneficial for picky eaters! Furthermore, no single food source satisfies all of the pet's nutritional requirements. Every protein has a varied amino acid composition, and different foods provide different vitamins, nutrients, fatty acids, and enzymes, all of which are specific to their own building. As a result, each form of food has its own set of advantages and disadvantages, and the best approach to ensure a complete and balanced diet is to provide a variety of meals and food sources that can assist in the creation of a dynamic and full diet. Although food variety has many advantages, it appears to be the least preferred input among pet owners, as not every pet owner is financially capable of purchasing a variety of foods.

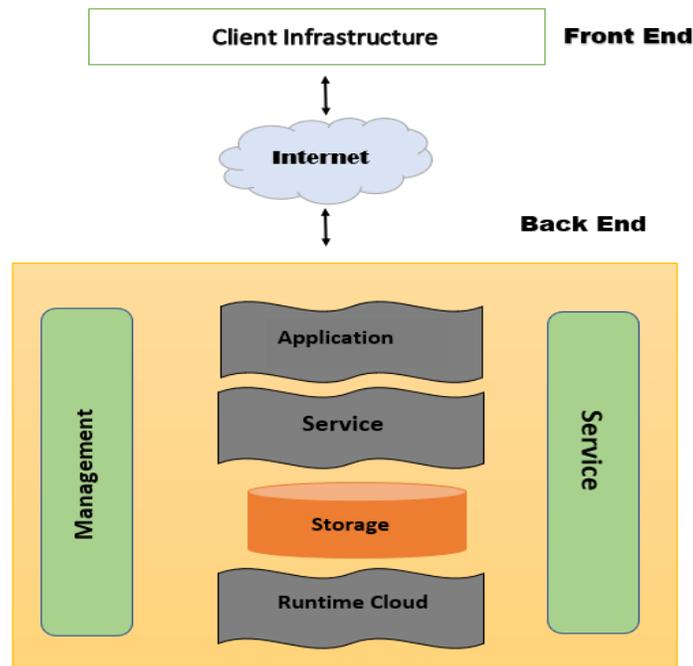
## 3.0 System Boundaries

### 3.1 Major User Views



## 4.0 Project Plan

### 4.1 Cloud Computing Architecture



What is cloud computing architecture?

Cloud computing architecture is simple and it is a spot where it will clearly state the components and subcomponents which will be included in our application. A standard internet connection will help us to access simple services like Google Docs, Skype and Netflix. Nowadays, most companies are shifting their business to cloud as they need a more significant storage, this is where cloud platforms can provide. Cloud computing works by providing intercommunity between client devices and the servers over the internet. Suggesting a suitable cloud computing architecture is crucial to sustain the service efficiency for this "Feeding Fido" project. Cloud computing architecture is divided into two parts, front-end and back-end. These two communicate via a network or internet. A diagrammatic represents of cloud computing architecture for our project is shown above.

The front-end user refers to the client side applications which is also client infrastructure where it is built using a combination of few technologies such as Hypertext Markup Language(HTML),JavaScript and applications are also an important thing that enhance user experience to our service. There is also graphical attractions like icons and buttons that can attract clients. Besides, the front-end user also allows client to access our pet feeder app features via cloud. This will be explained detail in the back-end part.

Cloud infrastructure is the only component of the front-end. Cloud infrastructure consists of hardware and software components. Hardware components such as data storage while software components are server, virtualization software etc. It also provides a Graphical User Interface(GUI) to the end-users to perform their respective tasks. Things are getting even more complicated when the Internet of Things(IoT) is considered in it due to different mobile device and computer screen resolution and sizes. We will have to balance those concerns when working on our interfaces in this project.

As mentioned above, both the front-end and back-end interact together and act like a bridge that connects each other in cloud computing architecture. The back-end user is responsible for monitoring all the programs that are running the application at the front-end. The most important thing and also played a huge part in the whole cloud computing architecture is the back-end. This is because it has a large number of data storage systems and servers. There are few components that we add in our cloud computing architecture back-end. Let's understand them in detail one by one.

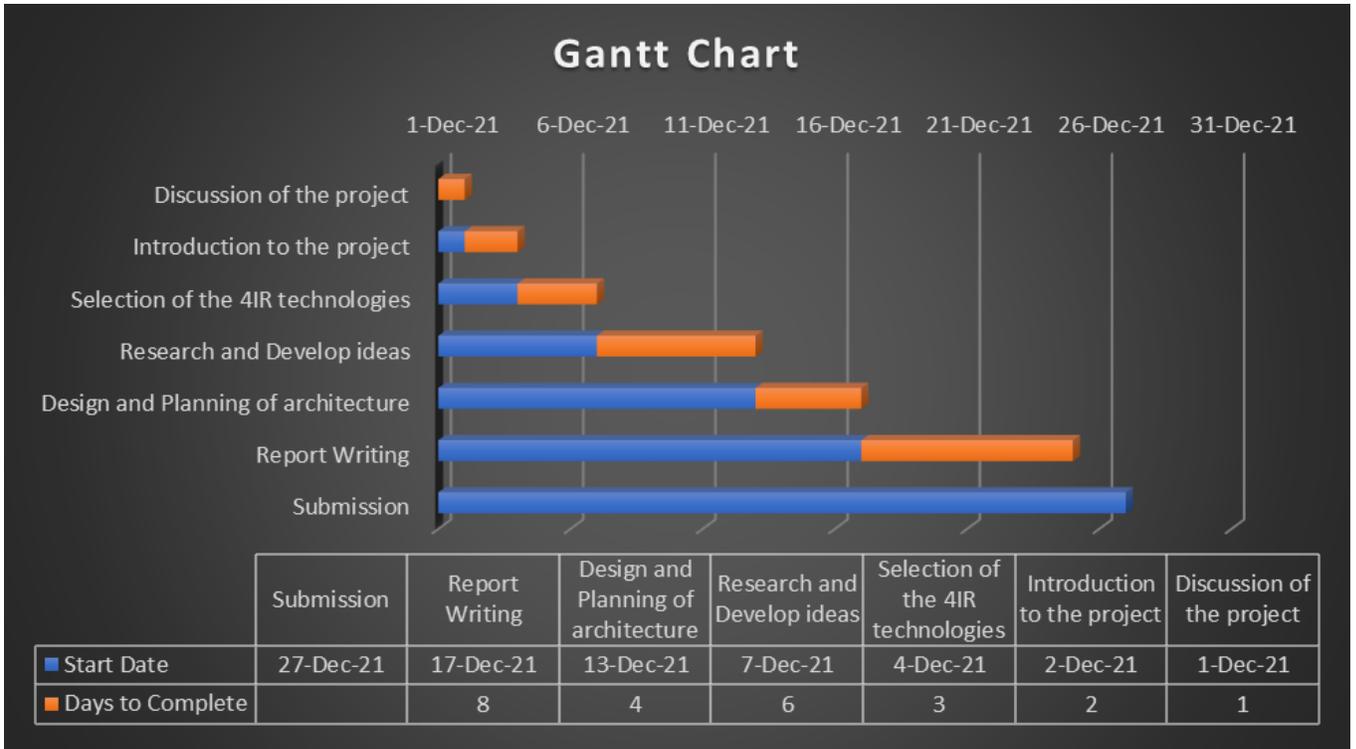
First is application. It can either be a software or also a platform. It depends on the client requirement, the application provides the result to the end-user as they wish. Second is service which is also divided into three types of services. Software as a Service(SaaS) which also known as cloud application services. This service usually do not require client to download and install instead they can run directly through web browser. We choose this service because sometimes it will take client's phone storage to download the application so they can still access through internet anytime. We also choose Infrastructure as a Service(IaaS) which also known as cloud infrastructure services. The reason we choose this service is because it can manage applications data, middleware and runtime environments.

Third is storage as shown above at our cloud computing architecture. This is one of the most important components in cloud computing because it can provides a huge amount of storage capacity in the cloud to store and manage data like files, videos, documents, etc. Some of the popular examples of cloud storage services is Amazon S3, Oracle Cloud-Storage and Microsoft Azure Storage. The capacity varies depending on the service providers available in the market. For instance, the variety of food and different pets information are all stored in

storage. Lastly is cloud runtime which refers to provide execution and runtime platform or environment also describes the beginning until terminated by the user or operating system.

Next is management. This is a platform where it will allocate a lot of specific resources to a specific task. It can also simultaneously perform various functions in the cloud environment. The main task of management is it manages the components at the back-end like application, services, storage and runtime cloud. There is also security in the back-end which is built-in. It helps to give security and secure few things in the back-end like cloud resources, files, systems and infrastructure to prevent data loss. It implements security management to the cloud server with the help of virtual firewalls.

## 4.2 Gantt Chart



## 5.0 Summary

The purpose of our project is to help clients with pets to provide their pet food on time and with the correct amount which can help them to save more time. Want to take a last-minute vacay but can't find a pet sitter? This application allows the client to set the time and amount of food needed to be given to their pet. It also allows the client to have the accessibility to check on their pets while having their food with the help of an AI camera.

Low fidelity project also known as lo-fi prototype is very suitable for anyone that is at their early stage to develop a new application as it only uses a little effort. We can use variety materials such as sheets of paper, cardboard, glue and straws. Lo-fi prototype gives benefit to developer that are cost-effective, save considerable time and avoid unnecessary work which can give their developer to develop their project successfully in a short period of time.

Cloud computing and Internet of Things (IoT) in 4th IR technologies are the most suitable ones that we choose to use in our application development which is "Feeding Fido". For an early stage developer, cloud computing would be the best choice to be used because it is cost saving. It can allow us to easy access to our data which can save time and money simultaneously. Plus, cloud computing is also a very flexibility platform to be used because it have extra bandwidth. Internet of Things (IoT) in our application development refers to physical items or objects that are equipped with system sensors and other communication gear to enable them to collect and exchange data over a network gateway such as The Internet. In the advancement of technologies, we utilize a DIY and cost effective pet feeder that connects to our app to feed our pet anytime and anywhere with only a finger tap through the phone.

Design and planning architecture is an architectural model that outlines the functions of a system and how they interact. It specifies how the function will work together to achieve the system's goals. We use design and planning function to help us imagine how the application works and we can see the flow of the application when user used it. Despite on that, we created a cloud computing architecture for us to have a quick brief throughout our application.

Even Though the app has a lot of features that can give a lot of benefits to client but there are also several limitations that will be faced during using the app. The primary limitation that we face is the fact that in order to reach the requirements and potential of our client, we must develop a application for Android and also a separate one for iOS operating systems. With this it will bring up my next point which is update and maintenance efforts will be multiplied since we need to follow the trend of the society, we are supposed to update regularly for both account Android and iOS.

In conclusion, low fidelity prototyping can help us a lot in developing and delivering a solution to a problem people are facing nowadays. As a result, we all needed to continue learning in order to create a better world in future and utilize the new technology.

## 6.0 Reference

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