

## Article 7

### Construction of Mobile Fidyah Calculator

Arifah Fasha Rosmani  
Faculty of Computer & Mathematical Sciences  
Universiti Teknologi MARA Perlis Branch

Asiah Ismail, Noor Azura Kamarudin  
Academy of Contemporary Islamic Studies  
Universiti Teknologi MARA Perlis Branch

#### **Abstract**

*Fidyah is the fine for Muslims who are not able to qada (replace) their fast during the current Ramadhan month until the next Ramadhan. Fidyah can be paid in cash or in the form of food such as rice or dates, and it can only be given to poor Muslims who are permitted to accept Zakat. Mobile Fidyah Calculator is designed and developed for Muslims to get accurate calculation of Fidyah. Mobile Fidyah Calculator provides the calculation of rice in Kilogram (kg) as a person should pay Fidyah according to the type of rice they consumed. Mobile Fidyah Calculator also provides a guidance and information that help the users to increase their knowledge about Fidyah.*

**Keywords:** *Fidyah, mobile, android, qada, fasting.*

#### **Introduction**

Fidyah is an obligatory practice in Islam for Muslims in certain cases (Ahmad, 2010). Fidyah is the compensation that needs to be paid for the fasting days, which could not be performed due to several reasons such as having a chronic illness or being on a journey (musafir).

*“[Fasting for] a limited number of days. So whoever among you is ill or on a journey [during them] - then an equal number of days [are to be made up]. And upon those who are able [to fast, but with hardship] - a ransom [as substitute] of feeding a poor person [each day]. And whoever volunteers excess - it is better for him. But to fast is best for you, if you only knew.”(Surah Al-Baqarah:184)*

It can also be described as a penalty for not fasting during the Ramadan month until the next Ramadan, due to accepted reasons or delay in replacing fasting days (Possumah & Ismail, 2012). Those who are permitted to be excused from fasting can compensate by giving alms to the poor (Gilani, 2011). The amount of Fidyah that are to be distributed to the poor is based on a specified weight of particular food commodities such as crops like rice (the staple food of the population). Fidyah calculation varies according to the price of rice set by the government (Majlis Agama Islam Wilayah Persekutuan, 2016).

Nowadays, Muslims are not aware about Fidyah; they do not know how to calculate and how to pay for it in a proper way. If this issue continues, there will be no awareness in each Muslim on the importance of Fidyah and they will not consider it as their obligation. To prevent this, there is a need to develop an application that will assist and guide them in completing one of the most important responsibilities as Muslims.

Thus, this project aims to develop a mobile application, which can calculate the accurate calculation of Fidyah for Muslims. It is designed to ease the process of Fidyah calculation based on type of rice consumed in Kilogram (kg).

### **Related Works**

There are two existing website systems in the market, which are Kalkulator Fidyah ([secure.zakatsel.com.my](http://secure.zakatsel.com.my)) and Kalkulator Fidyah (E-muamalat). Both are web-based applications, which are used to calculate Fidyah. It is almost similar to Mobile Fidyah Calculator except that when compared to the existing calculators' technique, this application proposes a new paradigm in calculating Fidyah as it uses a mobile platform. This mobile application also focuses on the aspects of usability, interface design and functionality.

#### *i. Kalkulator Fidyah*

Kalkulator Fidyah ([secure.zakatsel.com.my](http://secure.zakatsel.com.my)) has been developed by Zakat Selangor (Figure 1). This website calculates the amount of Fidyah based on the data entered by users. The users need to key in their details such as name, IC number and address. Users are required to fill up just simple data; the calculation is also easy to understand. Although, the interface is very simple with plain background, unfortunately, this page can no longer be accessed due to excessive traffic conditions.

HARGA FIDYAH : RM 1.50				+ tazoh
TAHUN GANTI	TAHUN TINGGAL	BIL. HARI TINGGAL PUASA	JUMLAH TAHUN TINGGAL	
<input type="text"/>	<input type="text"/>	<input type="text"/>	0	<input type="button" value="save"/>

Figure 1: Interface of Kalkulator Fidyah

#### *ii. e-Muamalat: Kalkulator Fidyah*

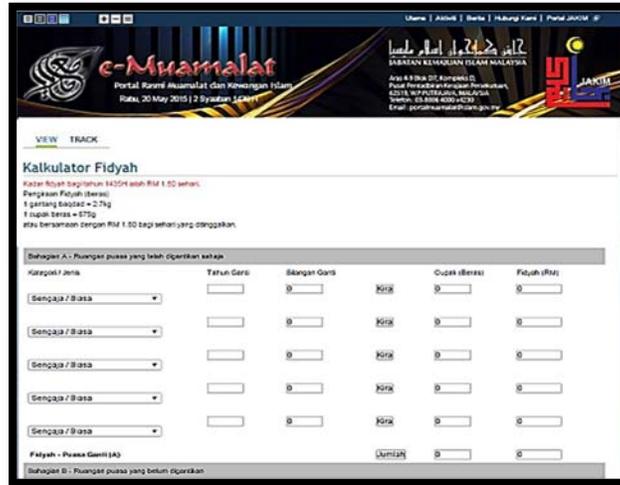


Figure 2: Interface of e-Muamalat: Kalkulator Fidyah

e-Muamalat: Kalkulator Fidyah ([e-muamalat.islam.gov.my/kalkulator-fidyah](http://e-muamalat.islam.gov.my/kalkulator-fidyah)) website is designed to calculate Fidyah for Muslims who have delayed the fasting days due to a particular excuse. “E-muamalat” website is handled by Jabatan Kemajuan Islam Malaysia (JAKIM). The design of the interface is interesting and it also provides an explanation about Fidyah. However, there are too many text fields that users need to fill up and this might confuse them.

### Methodology

In this research, a new model has been mapped based on a Waterfall Model; it uses a sequential design process, in which progress is seen as flowing steadily downwards and is frequently used in software development processes (Balaji & Murugaiyan, 2010). The requirement for every phase should be clear in the process of developing Mobile Fidyah Calculator. Below are the processes involved in the project:

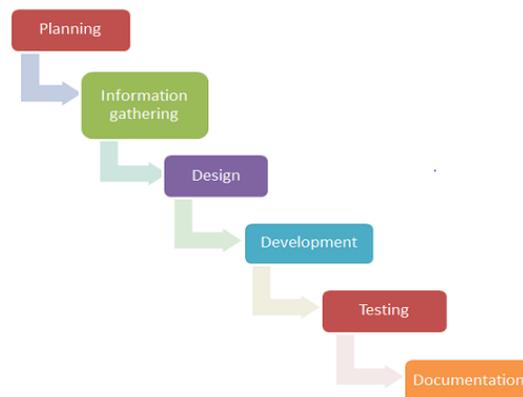


Figure 3: Methodology

- i. Planning: Finding information about Fidyah and study all the requirements needed in the project.

- ii. Information gathering: Searching for all the information that are related to the topic and understand the users' requirements.
- iii. Designing: Creating a sitemap and a wireframe to design the interface of Mobile Fidyah Calculator.
- iv. Developing: Write a Java script and combine the entire interface.
- v. Testing: Test users' satisfaction levels after they have used the application.
- vi. Documenting: Document all the activities as a final report.

*i. Design and Development*

This paper will focus only on the design and development phase.

a) Sitemap Design

A sitemap is a visual or a textually organized model of an application content that allows users to navigate through the application to find the information that they are searching for. A sitemap is designed before the development process. From the sitemap, the developer gets an idea on how to design the interface and the whole function of the application. The sitemap tells users how the application works and this makes it easier for users to use the application because each page listed in a sitemap is typically linked to the page it represents. This allows visitors to quickly jump to any section of an application listed in the sitemap.

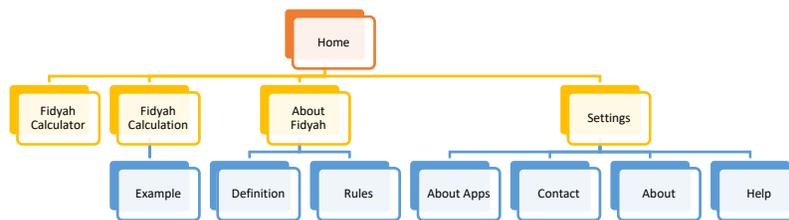


Figure 4: Sitemap

Figure 4 shows the design of the sitemap of Mobile Fidyah Calculator. The sitemap was designed to construct the flow of the application. It is organized hierarchically, breaking down the application information into specific subject areas. The first page is the Home page, which includes three main menu buttons which are “About Fidyah”, “Fidyah Calculation” and “Fidyah Calculator”. Meanwhile, action bar contains “About Apps”, “Contact”, “About” and “Help”. This application is focused on Fidyah Calculator, which calculates the amount of the Fidyah according to the data entered by users.

b) Wireframe Design

A wireframe, which is also known as screen blueprint or page schematic, represents the framework of a website or an application. Wireframe describes the page layout. It is a series of drawings or designs that shows the arrangement sequence of every page. Before developing the project, the developer will design the interface of an application using suitable software, and for Mobile Fidyah Calculator, Balsamiq Mockups is used to design the interface. The drawing is not too fancy, just a simple basic shapes, stick figures and simple backgrounds. This is to construct an idea before developing an actual application. Designing the wireframe helps the developer to plan how to

develop the real application and the developer can make changes on the wireframe, if he/she changes his/ her mind later. Figure 5 shows the design of the wireframe of Fidyah Calculator application.

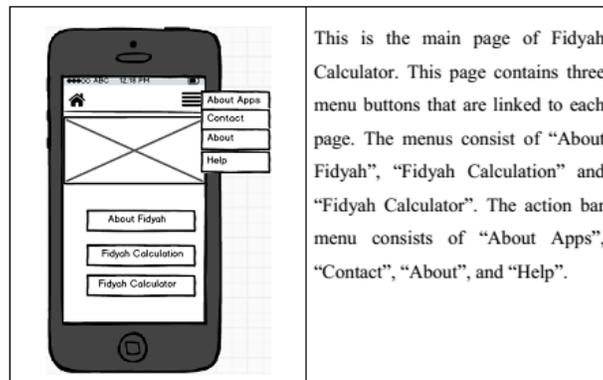


Figure 5: Example of a wireframe design

### c) Interface Design

Home page is the main menu interface for Fidyah Calculator Application. This page has three menu buttons which are “About Fidyah”, “Fidyah Calculation” and “Fidyah Calculator”. These three buttons are represented together with images. Meanwhile, the action bar consists of four menus, “About Apps”, “Contact”, “About” and “Help”, which are included with icons.

This is Fidyah Calculator, which is to calculate the Fidyah amount based on the data entered by users. Users need to enter the year they have replaced fast, the year they have missed fast and the number of days missed. When they click the calculate button, it will compute the result and display it on the text field. Reset button function is to clear all the data in the text box. Figure 6 shows the example of the main interface of Fidyah Calculator Application.



Figure: 6: main interface

The app bar, which is also known as the action bar, is one of the most important design elements in building an Android application. This is because the action bar can provide interactive elements

that are familiar to users. This Fidyah Calculator provides information about the application. “About Apps”, “Contact”, “About” and “Help” can assist users to understand the application. These action bars use a combination of words and icons. Figure 7 shows the action bar interface of Fidyah Calculator.

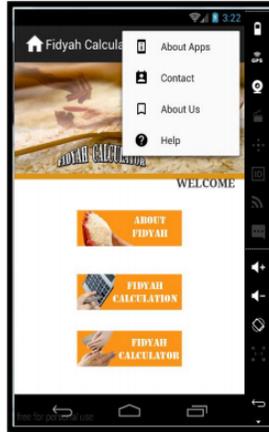


Figure 7: action bar interface

Fidyah Calculator is a page used to calculate the amount of Fidyah based on the data entered by users. There are three user inputs that users need to fill up. The first text field is “YEAR REPLACED FAST”, which is the year users replaced fast, “YEAR MISSED FAST” is the year users missed fast, and “NO. OF FASTING DAY MISSED” is the number of days users missed fast. When they click the “CALCULATE” button, it will compute the amount of Fidyah in Kilogram (kg), while the “RESET” button is to reset all the data in the text fields. “CONVERT” button will pop up a message that explains how to convert the amount that they get in Kilogram into Ringgit Malaysia (RM). Figure 4.4 shows the examples of data entered by users to calculate the amount of Fidyah in Kilogram (kg).

Example:

Siti has missed 3 fasting days in 2009, and she replaced the missed days in 2015. The calculation will be:

$$2015 - 2009 = 6 \text{ years} - (1 \text{ year}) = 5 \text{ years}$$

$$5 \text{ years} \times 3 \text{ days} \times 0.68 \text{ kg} = 10.20 \text{ kg}$$

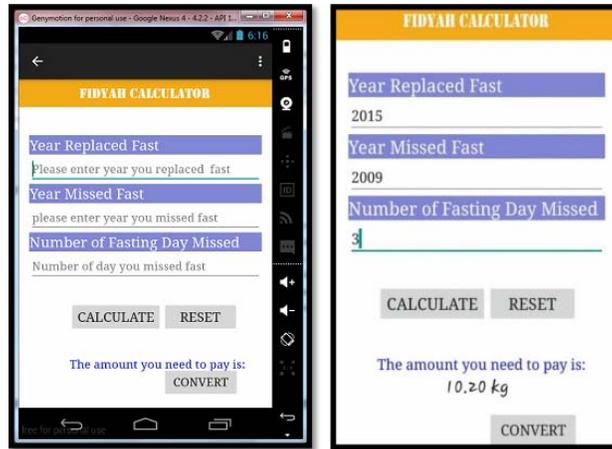


Figure 8: Fidyah calculator

### Results and Analysis

There are three types of testing that have been conducted; 1) User Acceptance Test, 2) Usability Test, and 3) Heuristic Evaluation. User Acceptance Test and Usability Test were carried out to get the respond and to collect data from respondents about Fidyah Calculator. There were 30 respondents who were students and lecturers from non-IT background. Heuristic Evaluation was conducted by lecturers from Computer Science Department, Universiti Teknologi MARA (UiTM) Perlis Branch who are considered as experts in application development. This paper will only discuss User Acceptance Test result and analysis.

#### *i. User Acceptance Test*

User Acceptance Test (UAT) is the test done when the system is completed and will be tested by the real-world audience. The purpose of this test is to find out whether the users can accept the application or not and to know whether this application is useful or not. The test was done by 30 respondents including students and people around UiTM Perlis Branch. The participants were given a mobile phone to use and navigate through Mobile Fidyah Calculator application, and then they were asked to answer a questionnaire. Table 1 shows the measurement criteria used in questionnaire for acceptance test:

Table 1: Measurement Criteria

Rank	Value
Strongly Agree	5
Agree	4
Not Sure	3
Disagree	2
Strongly Disagree	1

The measurement criteria have a ranking from 1 to 5, where 5 values the highest with strongly agree and 1 values the lowest with strongly disagree.

#### *ii. User Acceptance Test Result*

The result obtained from the evaluation of user acceptance test was gathered, analysed, and can be viewed in table below. Table 2 shows the mean score gathered from user acceptance test. The values of mean were calculated to get the average from the result obtained.

Respondents were provided with six evaluation questions after they had used the application. For question 1, 60% of the respondents strongly agreed that they could understand the definition of Fidyah. While, 40% of them strongly agreed that they could understand the example of Fidyah calculation.

For question 3, 57% of respondents were able to fill-in the data in the text field to calculate the Fidyah amount. Some of them faced a problem while trying to fill-in the data, this might be caused by the terms used in the application. Some of them did not understand what value they should enter in text field. To overcome this problem, this mobile application should change and use more suitable terms for Fidyah calculator page.

Table 2: Mean Score for User Acceptance Test

No	Description	1	2	3	4	5	Mean
1	I can understand the definition of Fidyah.	-	-	-	12	18	4.6
2	I can understand the example of Fidyah calculation.	-	-	-	18	12	4.4
3	I am able to fill-in the data in text field.	-	-	1	12	17	4.5
4	This application helps me gain knowledge about Fidyah.	-	-	-	2	28	4.9
5	This application helps me to calculate the amount of Fidyah rather than using manual calculation.	-	-	-	2	28	4.9
6	This application is useful.	-	-	-	1	29	4.97

Other than that, for question 4 and 5, 93% strongly agreed that this mobile application helped them gain more knowledge about Fidyah and calculate the amount of Fidyah more easily rather than using the manual calculation. Meanwhile, for question 6, 97% of the respondents strongly agreed that this application is useful. In a conclusion, the objectives for this application design have been achieved since most of the respondents gave a good response and it was found usable by them.

## **Conclusion and Future Works**

There are several benefits of Mobile Fidyah Calculator, one of them is, users are able to get information about Fidyah. Fidyah Calculator is also usable and easy to use even for first time users, because it only provides three menu buttons on the main interface page. They just need to click the menu they want, and it will go the next page. The interface is also attractive and interesting because it is not crowded and does not include unrelated information.

The use of the background colour is also suitable and encourages users to use the application. Fidyah Calculator helps Muslims to calculate and get the accurate amount of Fidyah in a mobile environment rather than using manual calculation. It also adapts the concept of Multimedia Learning Principles to make the application attractive and usable to the users. These principles are applied by combining images together with words, to assist the users to understand better.

There are few recommendations that can be done for Fidyah Calculator's improvement. All the recommendations can be analysed from the comments and suggestions from the respondents from User Acceptance Test, Usability Test, and Heuristic Test. Currently, this application provides information about Fidyah, how the calculation is done and how to calculate the Fidyah in Kilogram (kg) only. In the users' test, a few respondents suggested that the application should be able to convert the amount of Fidyah into Ringgit Malaysia (RM).

Besides that, the application can be enhanced by adding another language, such as Malay language or Arabic language; it is because some users might not understand the information given in English. Other information about Fidyah can also be added, such as how to pay Fidyah and where they can pay it.

As a conclusion, we can conclude that the project has achieved the objectives. Fidyah Calculator is useful to the users because it can help Muslims to get information and calculate the amount of Fidyah. This is an alternative way to get the accurate amount rather than using manual calculation. This application also provides the calculation in Kilogram (kg) because a person can pay the Fidyah according to the type of rice they eat.

## **References**

- Ahmad, R. (2010). *Amalan Fidyah dalam masyarakat Islam di Kanchong Darat, Banting, Selangor: satu analisis/Rumaizi bin Ahmad* Doctoral dissertation, University of Malaya.
- Balaji, S., & Murugaiyan, M. S. (2012). Waterfall vs. V-Model vs. Agile: A comparative study on SDLC. *International Journal of Information Technology and Business Management*, 2(1), 26-30.
- Gilani, A., Davies, M., & Khunti, K. (2014). Religious fasting, Ramadan and hypoglycemia in people with diabetes. *Diabetic Hypoglycemia*, 7(1), 15-19.
- Possumah, B.T., & Ismail, A. G. (2012). Baitul Mal and Legal Constraint: Public Wealth Management in Malaysian Context. *International Journal of Academic Research in Business and Social Sciences*, 2(11), 27-52.
- Majlis Agama Islam Wilayah Persekutuan. (2016). *Fidyah*. Retrieved from <http://www.maiwp.gov.my/i/index.php/perkhidmatan-kami/fidyah>