



Development of UC TATI Appventure Mobile Application

Nooraida Samsudin·Mohd Khairul Naim Nor Ashari*

Faculty Computer Media and Technology Management, University College TATI, Kemaman, Terengganu

*Corresponding author: khairulnaimnorashari@gmail.com

KEYWORDS	ABSTRACT
Android Promoting NFC ADDIE	UC TATI Appventure as an Android mobile application game to help outsiders recognize education facilities in University College TATI (UC TATI) by reading the graphical information content in Near Field Communication (NFC) tag in each faculty. The application can be used for UC TATI promotion purpose by requesting users to answer questions in the game while reading the NFC clues provided in the NFC tags. This application was developed using ADDIE development model which consist of Analysis, Design, Develop, Implementation and Evaluation phases. The main objectives of this paper is to develop an interactive mobile trivia game about UC TATI by embeded NFC tags into facilities in academic buildings. An evaluation has been done to measure the usability of the UC TATI Appventure. As a result, user enjoy to play the UC TATI Appventure games and graphical information in the form of images was displayed by scanning the NFC tags near the selected facilities in each faculty thus promoted the UC TATI education facilities.

1.0 Introduction

UC TATI Appventure is an android mobile trivia game which developed exclusively for visitors to know more about University College TATI (UC TATI). Nowadays, human live in an advanced technology environment that may assist them achieve life efficiency such as mobile technology thus producing Bring Your Own Device (BYOD) trend. This android application allows the visitor to play quiz game about UC TATI with hints installed in several Near Field Communication (NFC) tags. The aim of this project is to develop an Android mobile trivia games and deploying Near Field Communication (NFC) technology in UC TATI thus promoting UC TATI with a new approach.

The development of mobile wireless technologies such as Near Field Communication (NFC) has generated a considerable amount of excitement among practitioners and academics because it results in shifting the academic environment from traditional settings to mobile learning (m-learning) settings. Lately, android applications development is becoming emerging in Information Technology (IT) world.

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According to Khosravi et al., (2018), Near Field Communication (NFC) is a wireless network technology that developed based on Radio Frequency Identification (RFID) technology that can communicate in a short distance and has a higher frequency with low bandwidth. It allows the customer to perform contactless transactions, access digital content, and connect electronic devices with a single touch. Based on Oxford Advanced Learner’s Dictionary 7th Edition, trivia can be defined as “facts about many subjects that are used in a game to test people’s knowledge” while game is “an activity that a person do to have fun” (Hornby, 2018). Researcher Chen (2019) and Nafisah et al. (2018) also have defined mobile trivia game with their own opinions. Generally, mobile trivia game is the concept of applying game mechanics and game dynamics in non-game context to drive participation increase engagement and encouragement with variety levels of knowledge of questions.

In this paper, mobile trivia game is develop using concept of gamification. The mobile trivia game had encouraged a good engagement from user towards a subject in the fascinating way. In this paper, the researchers introduce UC TATI Appventure mobile app. This research aims to develop an android-based mobile application called UC TATI Appventure that can be used to provide relevant, reliable, and up-to-date information about UC TATI and engage with NFC technology.

This project is implemented in order to achieve the following objectives:

- i. To develop an interactive mobile trivia game about UC TATI.
- ii. To embed NFC tags into facilities in academic buildings.

2.0 Methodology

Development of UC TATI Appventure Android Application was developed based on Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model process. ADDIE model process is choosen because it is reliable method in developing mobile application, Asyran et al (2020). Researcher Harjanta et al. (2018) reported that the ADDIE model contains five fundamental phases such as Analysis, Design, Development, Implementation and Evaluation as Figure 1.

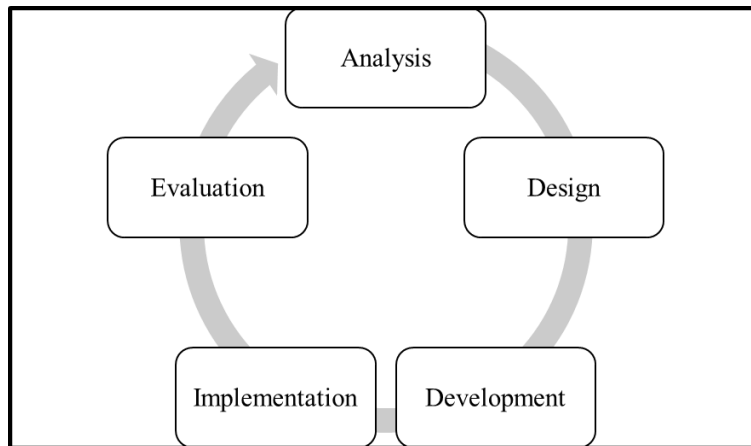


Figure 1: ADDIE Model Process Cycle

2.1 Application Design

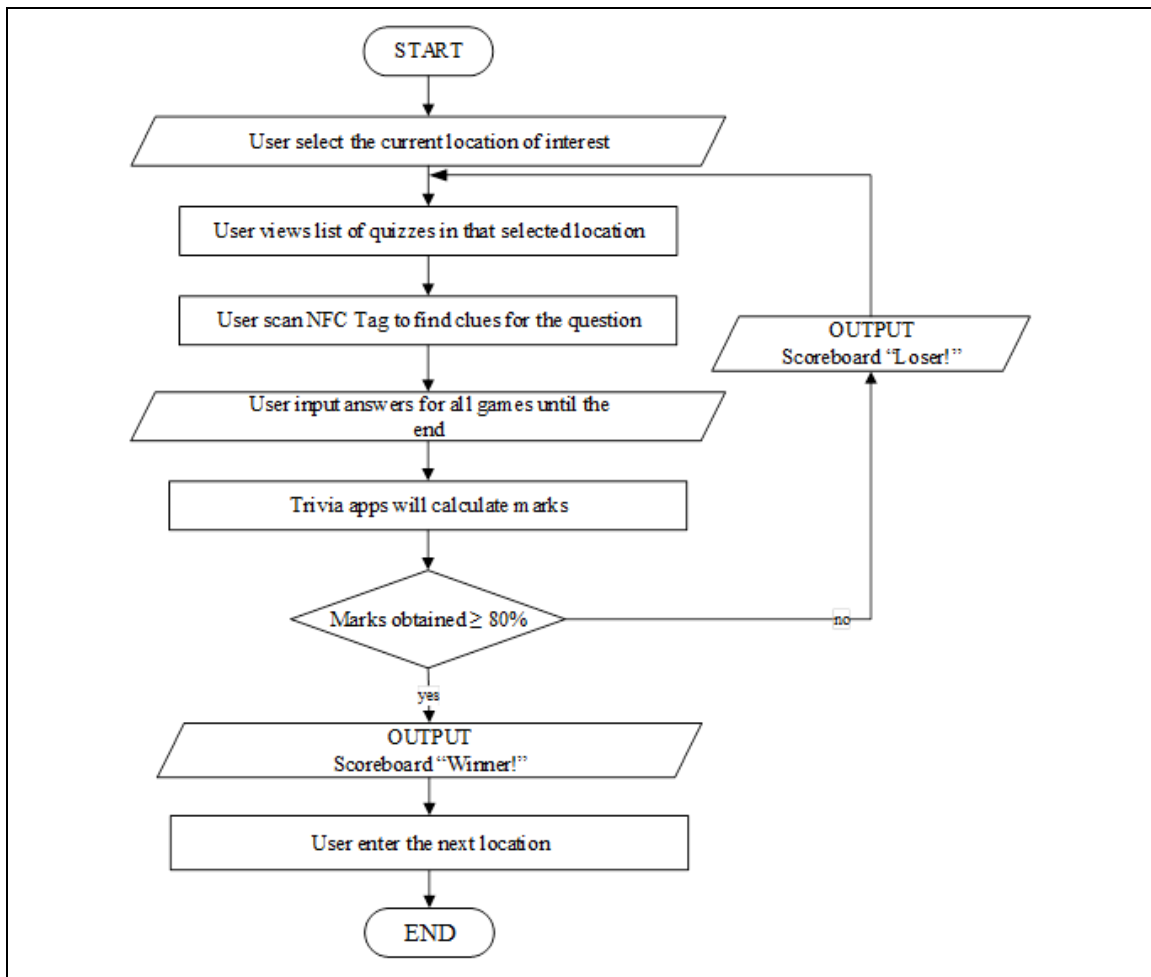


Figure 2: Flowchart of UC TATI Appventure

Figure 2 depicts the flowchart for UC TATI Appventure. After user select to play the game, user need to choose the current faculty that the user is in. Then, user can start answer the trivia. If user have difficulties to get an info to answer the trivia, user can scan the QR code or put their phone to the marker which it is the NFC. When the user finishes the game, the total number of correct answers is displayed, along with the option to retry or exit the game.

2.2 Application Development

The UC TATI Appventure was developed using the Android Framework. This framework was chosen primarily due to the widespread popularity and low cost of Android devices. The researchers used App Inventor 2 as the Integrated Development Environment (IDE), XML as the mark-up language for designing the user interface, and Java engine in a form of block programming language for developing the mobile application. Some free vector icons were used to design the application's user interface. The design of button, image is using Canva online tool.

2.3 Testing and Validation Tools

Unit tests were implemented to validate the accuracy of the mobile app's operations. In addition, a Usability evaluation was performed to determine the application's usability to users.

2.4 Project Evaluation

The participants for the Usability evaluation were ten (10) students of Faculty Computer Media and Technology Management, ten (10) students form Engineering Faculty, ten (10) staff and two (2) IT experts. The researchers used purposive sampling to select participants for the study. The evaluation took place at the University College TATI.

The application was installed on the participants' Android devices with their permission. Moreover, all participants were asked to run and test the application on their devices. After the application had been executed and tested, the participants rated it using a paper-based usability and usefulness evaluation tool questionnaire provided by the researchers. To interpret the scores, the following scales, from Poor to Very satisfactory, were used.

Table 1 Scale and Interpretation

Score	Item
1-1.5	Poor
1.51-2.5	Unsatisfactory
2.51-3.5	Moderately Satisfactory
3.51-4.5	Satisfactory
4.51-5.0	Very satisfactory

The Statistical Package for Social Science (SPSS) software was used to perform all statistical computations.

3.0 Results and Discussion

3.1 UC TATI Appventure

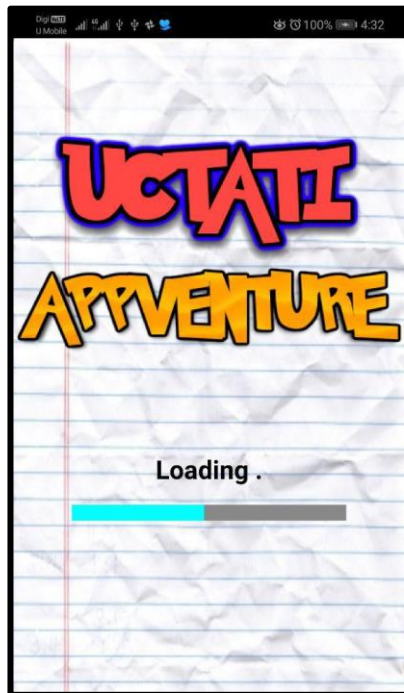


Figure 3: Splash Screen

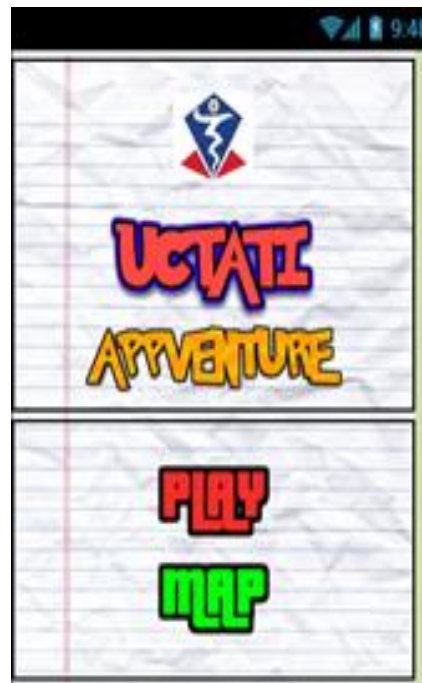


Figure 4: Main Screen

Figure 3 depicts the splash screen interface of the UC TATI Appventure App, which employs an animated feature with a free vector logo. As shown in Figure 4, the app's main interface

includes buttons for accessing the application by choosing to play the trivia game or view the map of UC TATI.

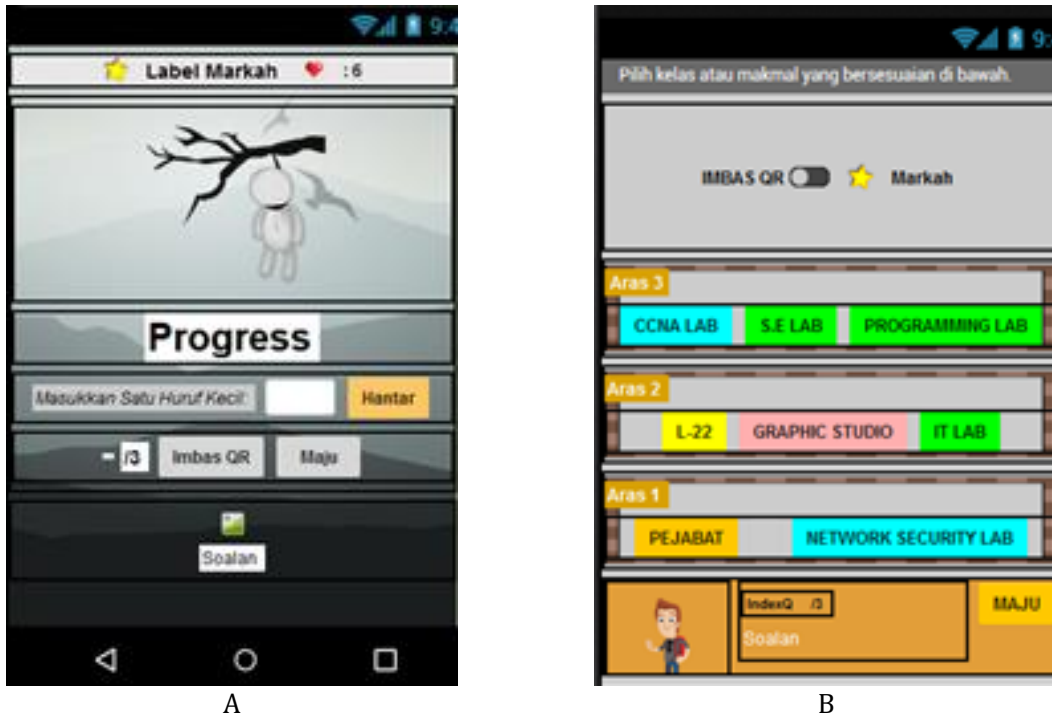


Figure 5: Types of Trivia

When the user clicks play, user need to answer first trivia which it present in a form of Hangman Game as in Figure 5 (A). After user success with the score above 80, user can continue the with the second game naming as Choose Class Game as in Figure 5 (B).

3.2 Evaluation Results

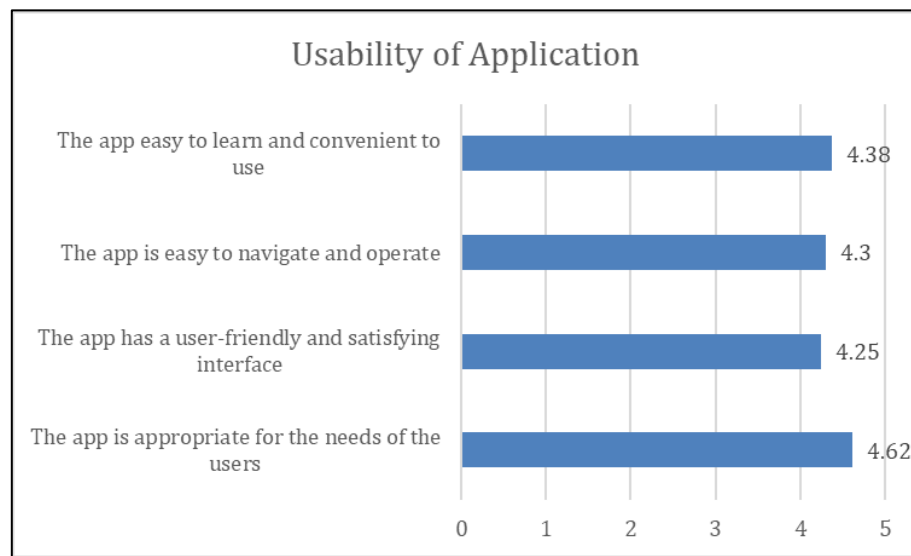


Figure 6: Usability Evaluation Result

The Likert scale value of 4.38, or "Satisfactory," for the first criterion, which is the app is easy to learn and convenient to use. As shown in Figure 6, it indicates that the majority of participants agreed that the UC TATI Appventure easy to navigate and operate with mean value of 4.3 ("Satisfactory"). In the third criterion indicates that participants agreed that the mobile app provide a user-friendly and satisfying user interface with a score of 4.25 ("Satisfactory"), and for the last criterion for appropriate for the needs of the users get score of 4.62 ("Very Satisfactory").

The results show that participants agree that the application can be a useful and effective tool for providing information about UC TATI.

4.0 Conclusion

Mobile applications have proven to be an effective tool for delivering information and indirectly can use as a promotional tool for institution. The UC TATI Appventure can be used to convey the information about facilities provided in the intuition for student and also public. This paper includes many information about the facilities used in education purposes for each faulty.

Future enhancements to the application, such as adding more trivia questions, more interactive and provide multi player option to increase user interest in using the application. Overall, our project was able to accomplish its objectives based on the result of the evaluation.

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