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### Application of Fossil and Artefact Collection in The Human Reservation Center Sangiran of Sragen Krikilan Cluster Based on Android

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#### ABSTRACT

Sangiran is the biggest early man site in Indonesia which has an important value such as human evolutions, culture, early fauna, and its environments. The evidence of the living past of early man sees through fossil collection, artifact, and environment. Sangiran collections save in Sangiran Early man Museum, under the management of the Preservation Center of Early Man Site Sangiran. Sangiran site is recognized as a World Cultural Heritage that has a problem in disseminating information about its important value. There are still many people who don't know about the important value of Sangiran.

The result of the research, the writer makes a mobile informative system that is "Application of the Introduction of Fossil and Artefact Collection in the Preservation Center of Early Man Sangiran Site Cluster Krikilan Based on Android". The advantage of this system is it can be an introduction media by the Preservation Center of Early Man Site Sangiran which only used with Android, meanwhile the weakness is it can only be operated on Android, not yet able to iOS and desktop.

#### INTRODUCTION

The development of technology requires various agencies both government agencies, private and organizations must improve themselves in responding to the development of this technology. An information system is one of the most important things in an agency. With the information system, the organization or company can guarantee the quality of the information presented. As technology develops, the need for fast, accurate and informative information is needed. Therefore, the existence of an information system has become an absolute necessity for government agencies, the private sector, and organizations in carrying out business processes. The needs of the community for IT-based technology services are

very varied, one of the needs is the need for an Android-based information application.

The Preservation Hall of the Ancient Human Site is a government agency engaged in culture, at the Sangiran Museum very much information about the richness of cultural heritage. Sangiran site that has been recognized as a World Cultural Heritage also has obstacles in disseminating information of importance. There are still many people who do not know the important value of Sangiran, which is contained in the collection they have, so to facilitate the public in knowing information about the Sangiran Museum Collection, the author will make an android-based application that is "Application of Fossil Collections and Artifacts at the Preservation Hall of Ancient Human Sites

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Sangiran Cluster Krikilan Sragen Based on Android".

The objectives of this research are: (1) to design an application for the introduction of fossil colonies and artifacts at the Sangiran Archaeological Site Preservation Hall in Android, based on Android, (2). Developing an introduction application for the collection of fossils and artifacts based on Android, (3). It provides an introduction to fossil and artifact collection applications that can be accessed at the Play store, (4). Make it easy for people to get to know the collection of fossils and artifacts at the Preservation Hall of Sangiran Ancient Human Site Krikilan Cluster Sragen

### **MATERIALS AND METHODS**

Mobile applications are applications that have been specifically designed for mobile platforms (for example iOS, Android, or Windows Mobile). In many cases, mobile applications have a user interface with a unique interaction mechanism provided by the mobile platform, interoperability with web-based resources that provide access to a variety of information relevant to the application, and local processing capabilities for the collection, analysis, and format of information by means of the most suitable for mobile platforms. In addition, mobile applications provide persistent storage capabilities within the platform (Aulia et al., 2018).

The introduction comes from the basic word know. Recognition has meaning in noun classes or nouns so that recognition can state the name of a person, place, or all objects and everything that is subjected (Anandita Dyah Rengganis, 2019).

Collections are objects of cultural heritage, buildings of cultural reserves, and / or structures of cultural reserves and / or not cultural reserves which are material evidence of cultural products and / or natural and environmental materials that have important values for history, science, education, religion, culture technology, and / or tourism (Widodo, 2013).

Fossils are all the remains, traces or molds from humans, animals, and plants that have been preserved in a rock deposit from a geological or prehistoric past. The process of forming fossils is called fossilization. This process takes a very long time, from thousands to millions of years. It is important to know how to distinguish fossils from the bones of ordinary animals that have not become fossils. At first glance, it is difficult to distinguish fossils from bones and wood today, especially if the bones have been buried for a long time. As an initial differentiator, fossils have a shape similar to the bones of animals/plant remains today but are

generally heavier. Fossils are usually heavier than bones because during fossilization there is a replacement of organic compounds in the bone with minerals surrounding the deposition site. The color of fossils is also generally darker than bone / fresh plants because it has undergone a long fossilization process. The color of fossils is also generally darker than bone / fresh plants because it has undergone a long fossilization process. Fossils deposited in river environments are generally black and very hard. To know for certain whether a bone has become fossilized or not, it is necessary to analyze the elements in the bone. Bones/animals/plant remains are called fossils if the bones do not already have organic compounds in them (Marlia Yulianti Rosyidah, Pipit Puji Lestari, Nurul Fadlillah, 2017)

Artifacts are natural objects that are changed by human hands, either in part or in whole (Simanjuntak, 2008). The research at Sangiran Ancient Human Site found many cultural artifacts made from stone tools and bone tools.

Android is an operating system on mobile phones that are open and based on the Linux operating system. Android can be used by anyone who wants to use it on their device. Android provides an open platform for developers to create their own applications that will be used for a variety of mobile devices. Initially, Google Inc. buy Android Inc., a newcomer who makes software for mobile phones. Then to develop Android, the Open Handset Alliance was formed, a consortium of 34 hardware, software and telecommunications companies, including Google, HTC, Intel, Motorola, Qualcomm, T-Mobile, and Nvidia. At the time of the inaugural release of Android, 5 November 2007. Android with the Open Handset Alliance said it supports the development of open standards on mobile devices. On the other hand, Google released Android codes under software licenses and open standards for mobile devices (Hernanda, 2016).

Construct 2 is an HTML5 based tool for creating a game. The Construct 2 tool allows anyone to make a game without having any programming experience. Developed by Scirra Ltd, this is intended primarily for non-programmers who want to create a drag and drop game using a visual editor and behavior logic-based system (Asrori & Lutfi, 2012).

According to research conducted by Adhika Novandya, Ajeng Kartika, Ari Wibowo, and Yudhi Libriadiany (2012). In a journal entitled "Application of Cultural Introduction from 33 Provinces in Indonesia Based on Android" to help users get information about various kinds of culture in Indonesia such as traditional houses,

traditional clothes, folk songs, traditional dances, and traditional foods from each province in Indonesia by using a mobile phone and helping to hone the user's knowledge by giving related questions about culture in Indonesia. In addition, users can also listen to regional songs that have been provided.

According to Shafina Azzahra, Febi Eka Febriansyah (2019). In the journal journal entitled "Application of Introduction to Lampung Museum Collection Based on Android" fencing users easily get information about collections that exist in the Lampung museum, in addition to that the user can also see details of the collection in the form of images and descriptions of existing collections. The application to be built also has a Barcode scan facility, each collection in the Lampung Museum will be equipped with a Barcode, the Barcode can be scanned and the application will provide complete information related to the museum collection.

Observation is a planned and focused activity to see and record a series of behaviors or the course of a system that has a specific purpose, and reveal what is behind the emergence of the behavior and foundation of a system (Erianto, 2017).

In this case the writer directly observes the object of research that is by observing the activities in the Sangiran Ancient Human Site Preservation Hall.

Interview is a process of communication interaction carried out by at least two people, on the basis of availability and in natural conditions, where the direction of the conversation refers to the goals set by prioritizing trust as the main foundation in the process of understanding (Triatma, n.d.).

To complement the material that was already present during the observation. The author conducted an interview with Ms. Ratna Sri Panglipur as Head of Subdivision Administration, relating to the system that runs at the Sangiran Ancient Human Site Preservation Hall and to museum visitors about the media information needed by museum visitors, in order to know the flow and making applications.

Documentation comes from the word document, which means written goods, the method of documentation means the procedure for collecting data by recording data that already exists. The documentation method is a data collection method used to trace historical data. Documents about people or groups of people, events, or events in social situations that are very useful in qualitative research (Iryana, 2017).

In this case the author collects data in the form of documentation that is at the Sangiran

Ancient Human Site Preservation Hall. The document that I get is in the form of agency records, organizational structure along with job descriptions and profiles of the Sangiran Ancient Human Site Preservation Center.

Literature Study Method is a data collection technique by conducting a study of reviewers of books, literature, notes, and reports relating to the problem being solved (Rondiyah et al., 2015). This technique is used to obtain the basics and opinions in writing which are done by studying various literatures related to the problem under study. This is also done to obtain secondary data that will be used as a basis for comparison between theory and practice in the field. Secondary data through this method was obtained by browsing the internet, reading various literature, the results of studies from previous researchers, lecture notes, and other relevant sources.

Data collection techniques are the most strategic step in research because the main purpose of the research is to get data, in this case, the writer seeks references from books, research information journals, and the internet.

As for the development of the information system using the Waterfall method. The following is an overview of the research design that will be carried out by researchers.

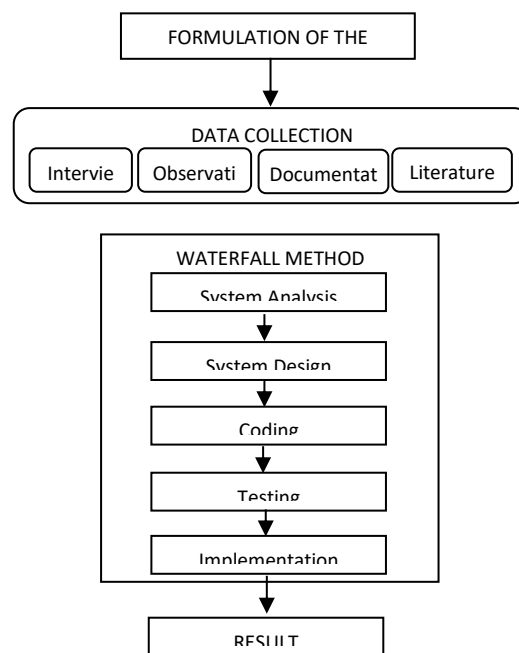


Figure 1. Research Design

## RESULTS AND DISCUSSION

Requirement analysis is the first stage in the Waterfall system development model. This analysis is needed in making a new system, this is needed to find various kinds of problems faced in the construction of an information

system in order to provide effective and efficient information. Designing and developing a system can mean creating and arranging a new system to replace the old system as a whole or improve an existing system. This system is also a network of interrelated procedures, gathered together to carry out an activity or to complete a certain goal and attract the attention of the wider community.

This stage defines the needs of the system to be developed, relating to information systems that will be designed and developed by the author. Information needs for Android-based applications include information on functional requirements and non-functional needs. The purpose of this information is that the system designed is able to solve problems on the old system and to find out what is needed for the new system.

This application is used by the Preservation Hall of Sangiran Ancient Human Site to provide information, education and insight knowledge about the Sangiran Museum, covering, museum profiles, museum collections and museum history for the wider community. The required components are interrelated and support the continuity of the system to be developed. The better and higher the specifications of both software and hardware components, the better the continuity of the system to be developed. Because of this need aims to support systems that are able to solve problems.

System design is the development of an ongoing system. A good system must have the goal of the right target because this is crucial in defining the input needed by the system and the resulting shortcomings. Basically, the system implemented here is the Android-Based Fossil Collection and Artifact Collection Application. In this system, system components and sub-systems are very influential in system development. In making the design of the system that is considered several stages so that the system can run as expected.

The system developed is the old system that will be developed into the Android system. Based on the analysis of the system, the authors try to maximize the information that is more accurate and updated.

The system to be made has advantages compared to the old system, namely: (1). Delivery of information using an Android-based application, (2). The information provided is more effective and accurate, (3). The information provided is more interesting and interactive, (4). Costs used in providing information are more efficient, (5). The benefits provided are more optimal because they do not have to carry out long and faster operational activities.

## 1. Home Menu Flowchart and Museum Profile Menu

Home Menu Flowchart and Museum Profile Menu which is a general description of the application running process as follows:

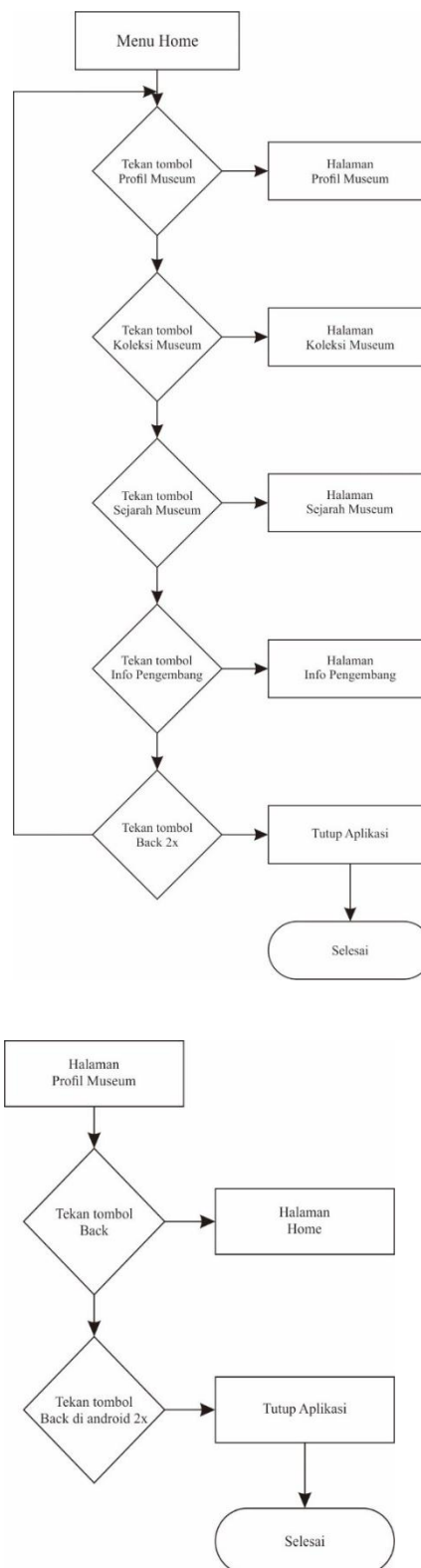


Figure 2. Home Menu Flowchart and Museum Profile Flowchart Menu

On the home page, there are 4 buttons namely the museum profile menu, museum collection, museum history and developer info, each button that is clicked according to the label will be directed to the page according to the label listed. Meanwhile, to exit the application using the default Android system that is by pressing the back button 2x quickly.

In the museum profile menu page displays the sangiran museum profile, there is a back button that is used to return to the home menu. Meanwhile, to exit the application using the default Android system that is by pressing the back button 2x quickly.

In the museum collection menu page, divided into 4 parts namely, first, the Human Fossil which consists of archaic homo Erectus, typical homo Erectus, progressive homo Erectus. Second, animal fossils consisting of ancient elephants, rhinoceroses, ancient buffalo, deer, crocodiles, shells, turtles, bulls, ancient pigs, tigers, ancient river horses, sea snails. Third, artifacts consisting of stone tools, shale tools, faceted stone balls, casting axes, perimbas axes, clasp axes, bone tools, blades, shavings. The fourth is the back button which is used to return to the home menu, while to exit the application using the default Android system by pressing the back button 2x quickly.

2. Flowchart Museum Collection Menu  
Museum Collection Flowchart contains the flow of the system running on the Museum Collection menu page.

3. Flowchart Menu Museum History

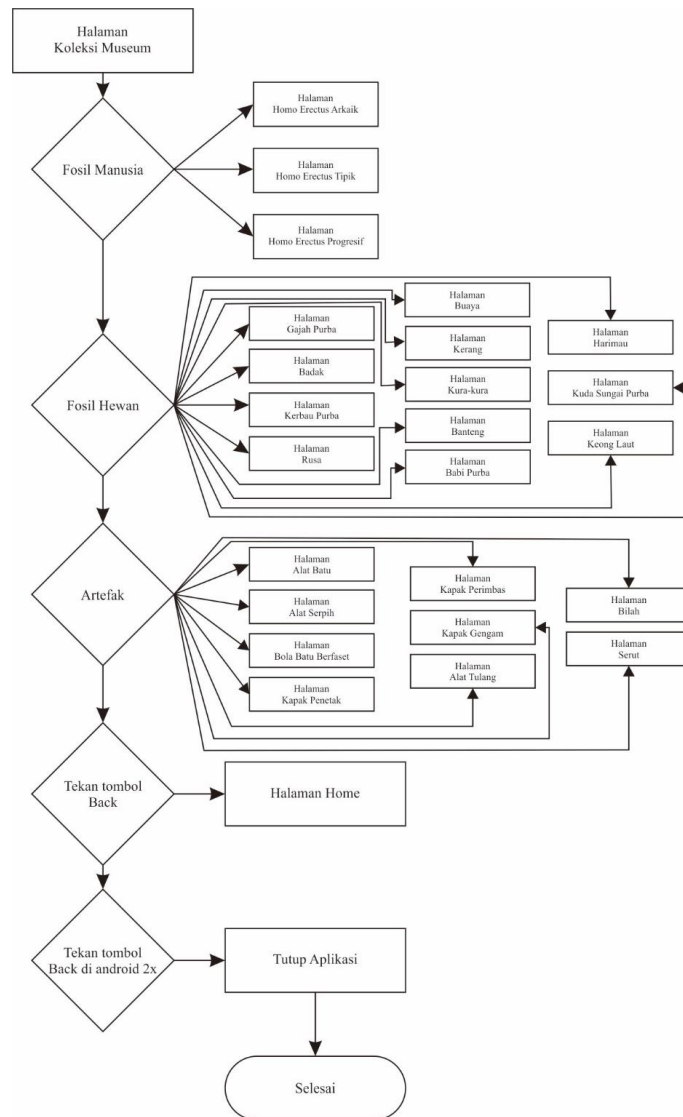


Figure 3. Museum Collection Menu Flowchart

Museum History Flowchart contains the flow of the system on the Museum History menu page.

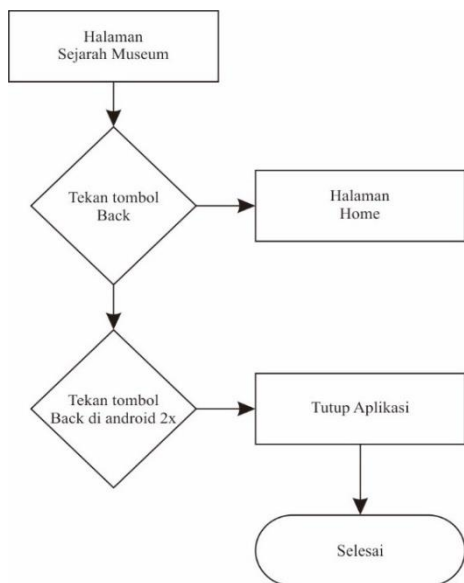
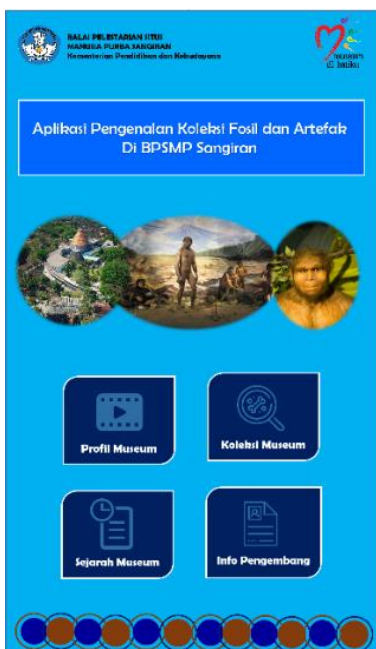


Figure 4. Museum History Menu Flowchart

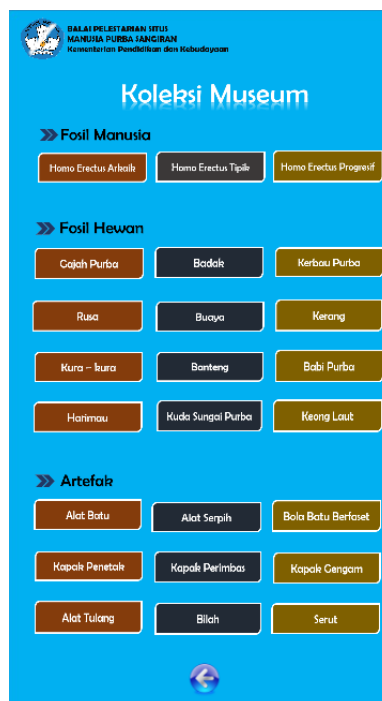


Figure 5. Sangiran Museum's Home Menu and Profile

- Home Menu Design and Sangiran Museum Profile  
 This display contains the Sangiran Museum logo and menu features on the application ranging from museum profiles, museum collections, museum history, contact, and Museum info



- Museum Collection Menu Design  
 The museum collection menu page display contains a collection of menu choices in the Sangiran Museum such as human fossils, animal fossils, and artifacts.





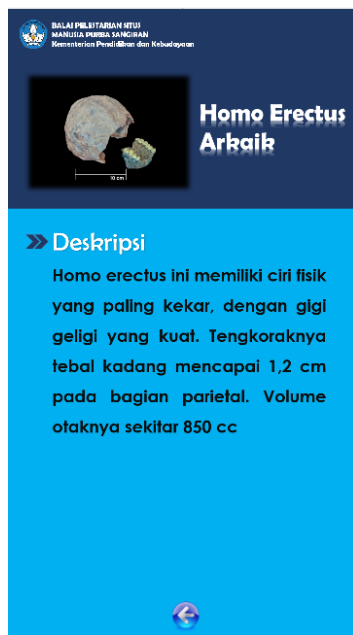


Figure 6. Museum Collection and Artifacts Description

### CONCLUSIONS AND SUGGESTION

From the results of the discussion and description described above, conclusions can be drawn as follows:

1. Development of Application Introduction to the Collection of Fossils and Artifacts using Construct 2 software by loading the Sangiran Museum Profile material, Collection of fossils and artifacts in the Sangiran Museum and the history of the Sangiran Museum.
2. Application of Introduction to Fossil and Artifact Collection is considered feasible because the application test results show that the Application of Fossil and Artifact Collection Introduction meets the testing standards and quality.
3. The introduction of the Android-based Fossil Collection and Artifact Application can provide more effective, efficient and interactive information to the public in the technological era as it is today.
4. With this Android-based Fossil Collection and Artifact Collection Application, it can foster public interest in visiting the Sangiran Museum.

While the suggestions that can improve this application are:

1. Add information that is not yet in the application.
2. Improved design of the application to make it more interesting and not boring

3. Updates in terms of appearance to make it more interesting and have its own characteristics.

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