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One of the main concerns of any academic organization is the improvement of students' academic performance in their respective classes, along with their extra co-curricular activities. Various arch have concluded students� endance ecords r one of the most important factors of their academic performance. There is a tendency for students who attend classes more regularly to achieve better academic achievements[6]. Better attendance leads to higher retention rates, better academic marks, and more satisfying educational experience.

It is generally found that some students do very well in their academic examinations, and some students do not. Students who do well are those who come to the class regularly, attend their classes properly, and are punctual in their sessions[5]. Results taken from another study have shown that attendance was a significantly better predictor of grade than any other factors such as age, prior education background or even gender [8].

Most lecturers and academic administrators have to come up with ideas to ensure a good participation from students, and make sure that the student-lecturer interaction is kept intact. The ideas may come in formats like surprise quizzes or extra credit in class[1]. In addition to those challenges, the attendances are often recorded manually by the lecturer and therefore may leads to personal errors. Using paper-based procedures are inefficient not only in attendance recording but also in administrative reporting.

It will also require the management of the academic institution to provide a well-managed filing system to contain the attendance records[9]. This indicates the need for a more efficient and effective method of solving the problem. One of technology implementation that can help to solve this problem is by combining attendance management system and the RFID (Radio Frequency Identification) technology. RFID is an automated identification and data collection technology which ensures more accurate and timely data entry.

It gains more attention recently because of its current low cost and advanced uses in other computing fields[1]. RFID combines radio frequency and microchip technologies to create a system that can be used to identify, monitor, and secure objects. RFID systems use tiny chips called tags which can contain and transmit some identifying information to an RFID reader or scanner. It can be used for retrieving from or storing data on to RFID tags without any physical contact[7].

The ability of RFID systems to deliver precise and accurate data about tagged items will improve efficiency and bring other benefits to business community and consumers alike[2].

METHOD Object-oriented approaches to developing information systems can use any of the traditional methodologies. However, the object-oriented approaches are most associated with a phased development methodology. The primary difference between a traditional approach like structured design and an object-oriented approach is how a problem is decomposed[4].

In traditional approaches, the problem decomposition process is either process centric or data centric. However, processes and data are so closely related that it is difficult to pick one or the other as the primary focus. Based on this lack of clarity, object-oriented methodologies attempt to balance the emphasis between process and data by focusing the decomposition of problems on objects that contain both data and processes[3].

UML (Unified Modeling Language) is made up of a variety of modeling techniques, deali with soft system elopmFollg Mpopularitand widespread adoption, many object-oriented development methodologies which utilize its techniques have been developed in recent years. This paper use a methodology proposed by Whitten and Bentley[11] which deals with the system analysis and design phases. Figure 1: Steps to create system functional models The first step in the methodology is modeling the current business processes.

After then, the current business process model is used to facilitate functional model creation. The functimodel crewith casmodels describthe ystem�s ons m the pointof Functimodel ion ves ur sub-steps[10]: identifying actors and use cases, creating a use case model, creating the use case description, and analysis of the use cases. This research uses STIKI Malang as the observation object. STIKI is a private IT college located in Malang, Indonesia,. The system models presented in this article are based on anal gn of thganizon�s business processes.

RESULTS The organization currently performed manually by paper forms. This practice consumes a lot of time and also prone to human errors that could be happening during or after the process of attendance recording. The process becomes more complicated for the academic administrators to summarize the attendance records and deliver the reports required by management board. Figure 2: Manual attendance management activity model Potential actors and use-cases for the new attendance management system could now be analyzed from the current attendance management activity model produced in the first step. The identified main actors based on the current process are lecturers, students, and academic administrators.

Table 1: Identified actors and use-cases The identified actors and use-cases are then used to produce the use-case model of the proposed system. Additional actor is introduced to deal with administrative tasks of the proposed system, such as system users and privileges management. Figure 3: Attendance management system use-cases model The use-cases presented in the model are then analyzed to produce brief description on how the use-cases will be implemented for the proposed system. The use-case analysis results are presented in use-case description format.

Use-case description contains the additional information to allow users understand the model in a simpler way. Use case description has three basic parts: overview information, relationships, and the flow of events. This article presents every use-case descriptions which are considered to have high level of importance. Table 2: Use-case description - recording the attendance Table 3: Use-case description - submit session report Table 4: Use-case description - view class attendance report Table 5: Use-case description - manage roles and privileges The produced use-cases and their descriptions can then be used as foundation for upcoming design phase. The use-case communicates what the system needs to do at a high

level, and all the subsequent modeling techniques are built on this.

The use-case model and its descriptions are the building blocks by which the system is designed and built. CONCLUSION This article presents the functional model of an attendance management system based on er atiinstutibusiprocThe ystemalll ecturers and students to simply record their attendance just by moving their RFID tags near the scanner device. The primary actors identified for the system are lecturers, students, academic administrators, and system administrators.

The main benefit of the proposed RFID-based attendance management system is to shorten the attendance recording activities and also reduce the hassle of managing attendance records. The system is also aiming to help the academic administrators and management boards to provide any attendance reports based on certain set of criterias. The set of functional models presented in this article can be next used to produce the behavioral model and structural model of a RFID-based attendance management system. The models can then be implemented by using any programming language that endorse the object- oriented programming approach.

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