

# Development of Employee Online Attendance System using Webcams and Web-Based Location (Case Study of CV. OTW Computer Gusaha)

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## ABSTRACT

**Purpose:** Attendance is an activity of data collection to determine the number of presences in an activity in an institution or company. In the previous era, attendance at CV. OTW Computer Gusaha was still done manually through paper, which was very ineffective and inefficient, resulting in attendance data not being well stored. From this problem, a reliable and efficient online attendance application is needed for users. The purpose of this application is to improve the efficiency of the attendance process, facilitate monitoring and evaluation, and minimize the risk of fraud in the attendance process.

**Design/methodology/approach:** The method used is the geolocation method.

**Findings:** The results of this research show that an online attendance system using webcam and web-based location can improve the efficiency of CV. OTW Computer Gusaha and increase the discipline and responsibility of employees.

**Paper type:** Research Paper

**Keyword:** Attendance System, Employee, Information System, Web-based Location, Webcam

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## I. INTRODUCTION

Managing employee attendance is a crucial aspect of any organization or company (Yanto et al., 2022). It allows the company to track employee attendance and monitor their performance (Anshari et al., 2021). However, in recent years, managing employee attendance has become increasingly difficult using manual methods that require a lot of time and effort. Therefore, many companies have switched to online attendance systems to improve the efficiency and accuracy of employee attendance management (Nasser, 2022).

One company that has adopted an online attendance system is CV. OTW Computer Gusaha. The company previously used a manual method to record employee attendance, which made attendance management less effective and efficient. To improve the efficiency and accuracy of employee attendance management, the company decided to develop an online attendance system using webcams and web-based location (Kolandaisamy et al., 2022).

The purpose of this research is to evaluate the effectiveness of the developed online attendance system in improving attendance management, employee discipline, and minimizing the risk of fraud in employee attendance management in CV. OTW Computer Gusaha. The developed online attendance system uses geolocation as the main method of recording employee attendance. This method allows for accurate tracking of employee location and attendance. In addition, the use of webcams in the system also provides an additional layer of security to prevent fraud in attendance management (Sunaryono et al., 2021).

According to Hasta Yanto et al. (2022), employee attendance management is crucial for businesses to track employee productivity and improve company performance. However, manual methods of attendance management can be time-consuming and prone to errors (Jain et al., 2022). Therefore, companies are turning to online attendance systems to improve the efficiency and accuracy of attendance management (Sutabri et al., 2019).

Furthermore, Arizal et al. (2020) noted that the use of geolocation technology in attendance management can provide accurate tracking of employ-ee attendance, which can improve the efficiency and effectiveness of attendance management.

## II. METHODS

This research aims to evaluate the effectiveness of the developed online attendance system in improving attendance management, employee discipline, and minimizing the risk of fraud in employee attendance management in CV. OTW Computer Gusaha. The research method used in this study is a case study approach.

The case study approach is a suitable research method for this study because it allows for an in-depth analysis of the developed online attendance system and its effectiveness in a real-world setting (Sheikh et al., 2019). The case study approach also allows for the collection of qualitative data from various sources, including interviews and observation, to provide a comprehensive understanding of the sys-tem's effectiveness (Marutotamtama et al., 2022).

Data collection for this research was conducted through interviews with employees and management of CV. OTW Computer Gusaha. The interviews were conducted to gather information on the effectiveness of the developed online attendance system in improving attendance management and employee discipline (Sawhney et al., 2019). In addition, observation was conducted to monitor the system's usage and identify any issues or challenges in its implementation (Bharathy et al., 2021).

The collected data was then analyzed using a qualitative data analysis approach (Rabu, 2018). The data was coded, categorized, and themes were identified to provide a thorough understanding of the effectiveness of the developed online attendance system (Qureshi, 2020).

The research steps taken in this research are as follows:

1. Conduct a literature review to discuss the differences from other studies that have been conducted and emphasize the innovation carried out in this research.
2. Conduct interviews with employees and management of CV. OTW Computer Gusaha. to gather information on the effectiveness of the developed online attendance system.
3. Conduct observation to monitor the system's usage and identify any issues or challenges in its implementation.
4. Analyze the collected data using a qualitative data analysis approach.
5. Provide a thorough discussion of the research results in the "Results and Discussion" chapter.

The case study approach used in this research provides useful insights into the effectiveness Ismail et al. (2022) of the developed online attendance system in improving attendance management, employee discipline, and minimizing the risk of fraud in employee attendance man-agement in CV. OTW Computer Gusaha.

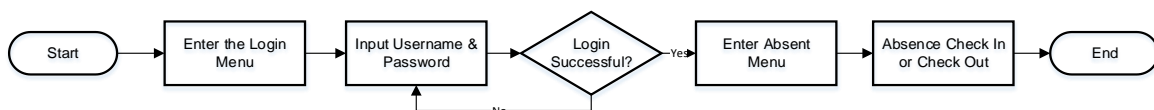


Figure 1. Application Flow

## III. RESULTS AND DISCUSSION

The result of this research is an online attendance application for employees that is designed and developed using the PHP frame-work and MySQL database. The application can make it easier for employees to perform attendance. In addition, the application development also includes location features used to determine the position of attendance and a selfie photo feature for employees who will perform attendance.

### A. Attendance Process Interface

On the dashboard page, employees can click on the attendance icon, then they will be directed to the attendance page where they can select the "check-in" button to register their attendance. Afterwards, a notification will appear indicating that the attendance has been successfully recorded.



Figure 2. Dashboard page

Here, we can do many things, such as clocking in and out, creating a leave request form, creating a vacation form, and also viewing attendance history data.

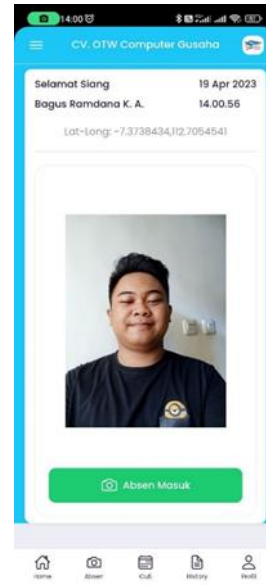


Figure 3. Attendance page

This is a page for taking pictures and recording attendance, where the application will capture data in the form of pictures and location through longitude and latitude coordinates.

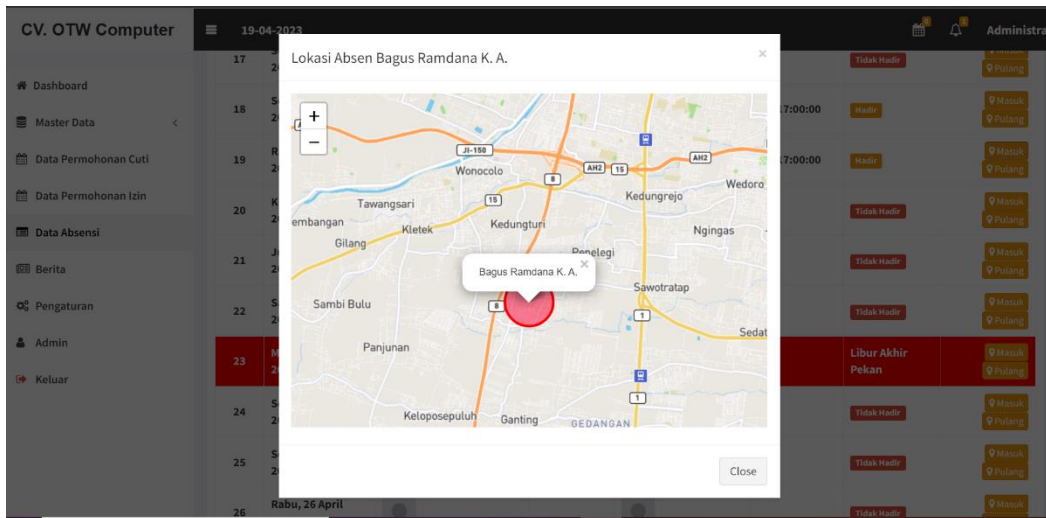


Figure 4. Location Detection

### B. Attendance Report

The admin can view and print employee attendance data on the administrator menu.

**LAPORAN DETAIL HARIAN  
PERIODE WAKTU 04 - 2023**

Nama : Bagus Ramdana K. A.  
Jabatan : Direktur

No.	Tanggal	Jam Masuk	Scan Masuk	Terlambat	Jam Pulang	Scan Pulang	Pulang Cepat	Durasi	Lembur	Status	Keterangan
1	Sabtu, 1 April 2023	08:00:00	08:00:41	00:00:41	17:00:00	17:00:00	00:00:00	8 jam, 59 menit		Hadir	Telat
2	Minggu, 2 April 2023	Libur Akhir Pekan			Libur Akhir Pekan			0 jam, 0 menit		Libur Akhir Pekan	
3	Senin, 3 April 2023	08:00:00	08:01:02	00:01:02	17:00:00	17:00:55	00:00:55	8 jam, 59 menit	0 jam, 0 menit	Hadir	Telat
4	Selasa, 4 April 2023	08:00:00	07:21:38	-00:38:22	17:00:00	17:14:21	00:14:21	9 jam, 52 menit	0 jam, 14 menit	Hadir	Tepat Waktu
5	Rabu, 5 April 2023	08:00:00	08:12:08	00:12:08	17:00:00	17:09:08	00:09:08	8 jam, 57 menit	0 jam, 9 menit	Hadir	Telat
6	Kamis, 6 April 2023	08:00:00	08:02:59	00:02:59	17:00:00	17:08:16	00:08:16	9 jam, 5 menit	0 jam, 8 menit	Hadir	Telat

Figure 5. Attendance Report

Here is the display of the detailed employee attendance report every day. It includes information on the date, clock in time, clock in attendance, late attendance, clock out attendance, duration of work, overtime hours, lateness status, and attendance notes.

**C. Testing**

Enter the system integration and testing process. At this stage, the modules that have been made before will be put together. After the integration process system has done , next get into testing module.

Table 1. Testing Application

Test Cases	Test Data	Test Type	output	Results
Login	Username and Password are correct	Valid	Pop up successful and headed to dashboard page	Succeed
	Incorrect Username and Password	Invalid	Usernames not registered and wrong password	Succeed
	Blank Username and Password	Invalid	Username and Password are not can blank	Succeed
Roll call	Location no enabled / not allowed	Invalid	No Can absent, appear "Oops! you have decided For No share your position, however nothing. We don't will request again ."	Succeed
	Location Enabled	Valid	Roll call successful, the time and date appear roll call	Succeed

Objective from testing module for know is design and function application from device soft has fit and running with ok. So, with exists stage testing, then can know as well as prevent happening errors, bugs, or errors in the previous program enter the stage pro-duction.

#### IV. CONCLUSION

Based on the research conducted, it can be concluded that the development of an online attendance system using webcam and web-based location can improve the effectiveness and efficiency of employee attendance at CV. OTW Computer Gusaha. With the online attendance system, employees can easily and quickly perform attendance, and admins can access employee attendance data more efficiently.

The contribution of this research is to provide practical solutions for more effective and efficient employee attendance problems. In addition, the development of this online attendance system can be adopted by other companies and increase overall company productivity.

The implication of this research is the importance of using technology to simplify and improve work processes in the company. Companies can utilize technology to optimize work processes and increase employee productivity.

The weakness of this research is that it is still limited to a case study in one company and has not tested the use of the system on a larger scale. Therefore, future research can look at the development and implementation of the system on a larger scale to ensure the effectiveness and efficiency of this system.

The opportunity for future research is the development of an online attendance system with more features, such as the use of artificial intelligence technology and integration with payroll applications. In addition, research can focus on the use of online attendance systems in larger companies with many branches to see the effectiveness of the system on a larger scale.

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