

ABSTRACT

DESIGN OF WEB-BASED GEOLOCATION ABSENCE SYSTEM TO FACILITATE MONITORING OF EMPLOYEE ATTENDANCE

(CASE STUDY: SPS TPQ AL IKHLAS EDUCATIONAL INSTITUTION)

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The SPS TPQ Al Ikhlas Educational Institution faces significant challenges with its time-consuming attendance system, which is prone to data inaccuracies. This conventional method lacks a location validation mechanism, leading to low reliability of employee attendance data. To address these issues, this research aims to design and build a web-based attendance system utilizing geolocation technology to create a more structured, accurate, and efficient monitoring process. The system was developed using the Waterfall methodology, with a backend built on Node.js and Express.js, and a frontend developed with React.js and TypeScript. Geolocation functionality is implemented to validate employee attendance based on geographical coordinates (latitude and longitude) within a predetermined radius. The system's functionality was thoroughly evaluated using the Blackbox Testing method. Test results confirmed that all key features, including *user* authentication, location-based attendance, and data recapitulation, function according to the designed specifications. The results of this study show that the developed web-based geolocation attendance system is a successful, effective, and practical digital solution. The system is proven to overcome the limitations of the manual process by improving data accuracy, supporting discipline, and simplifying the administrative workload for the institution.

Keywords: Attendance, Geolocation, Waterfall, Employee Monitoring, Website