Year 2 - Semester 1

IS202.3 Foundations of Information Systems

Group Assignment

A Proposal for Information System Implementation

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Outlining the Problem

Introduction

The company JF & I Packaging (Pvt) Ltd we visited still marks attendance manually which can result in inaccuracies, inefficiencies, and a lack of real-time data. The purpose of this thorough documentation report is to describe the difficulties and disadvantages of manually marking attendance as well as the advantages of switching to automated attendance systems.

Challenges of Manual Attendance Marking.

1. Time-consuming: Manual attendance marking is a labor-intensive procedure that takes a lot of administrative staff members' time and energy.
2. Human Error: Inaccuracies in recording attendance, improper data entry, and duplicate entries are among the mistakes that might occur when manually marking attendance.
3. Absence of Real-Time Data: Organizations find it challenging to monitor attendance trends and make defensible decisions because manual attendance systems do not offer real-time data on attendance patterns.
4. Inefficiencies: Manual attendance recording can result in inefficient reporting, data management, and analysis, which can affect performance and productivity all around.

Benefits of Automated Attendance Systems.

1. Time-saving: Employees and administrative staff alike benefit from the streamlined attendance marking procedure provided by automated attendance systems.
2. Accuracy: By removing the need for manual data entry and electronically collecting attendance data, automated solutions lower the possibility of human error.
3. Real-Time Data: Automated attendance systems give businesses access to real-time attendance data, allowing them to monitor trends, spot patterns, and make informed decisions.
4. Efficiency: Automated attendance systems boost overall organizational productivity and performance by streamlining data administration, reporting, and analysis.

Recommendation

I. To increase accuracy and streamline the attendance marking process, switch to an automated system.
II. Make investments in staff assistance and training to guarantee a seamless switch to the new system.
III. To find areas for optimization and improvement, do routine reviews and evaluations of the automated attendance system.

To sum up, manual attendance marking presents several difficulties and disadvantages for businesses, such as labor-intensive procedures, human error, a lack of real-time data, and inefficiencies. Making the switch to automated attendance systems can solve these issues and offer several advantages, such as efficiency, accuracy, real-time data, and time savings. Organizations can improve attendance tracking procedures and boost overall productivity and performance by educating themselves about the drawbacks of manual attendance marking and the advantages of automated technologies.

Solution Proposal

The above shows the outlining problem of the JF&I Packaging Company's' third-party employees' manual attendance. Through the proposed solution, we are proposing a systematized attendance system for the third-party employees' of the JF&I Packaging Company.

For the systematized attendance system, we are proposing to use a web-based application that has a database to record the attendance of third-party employees with proximity cards or biometric time clock which is a fingerprint scanner, or facial recognition because it provide better accuracy, security, speed, convenience, etc.

We propose to use either proximity cards or fingerprint sensor or facial recognition solution by considering the below advantages and disadvantages.

Advantages and disadvantages of a fingerprint scanner.

Advantages	Disadvantages
It offers high accuracy in identifying individuals as fingerprints are unique to each employee.	It may have difficulty reading fingerprints if the employee's finger is wet, dirty or injured.
It is difficult to duplicate fingerprints, providing a secure method of authentication.	It requires regular cleaning and maintenance to ensure the fingerprint scanner is effective and durable.
It is quick and convenient for employees to clock in and out without requiring additional hardware like cards.	
It is more affordable than facial recognition.	

Advantages and disadvantages of facial recognition.

Advantages	Disadvantages
It is contactless and non-intrusive where employees can clock in and out without physically touching anything.	This is more expensive than fingerprint scanners because it has high-end systems with advanced features.
It can achieve high accuracy in identifying individuals based on facial features.	The performance can be affected by lighting conditions, facial hair changes or facial injuries.
It is difficult to deceive with photos or masks because of the advanced algorithms that can detect 3D facial structures.	Some of the facial recognition systems have been criticized for racial gender, and age biases which lead to inaccurate results.
It has a quick authentication process, especially when integrated with other systems for automatic attendance tracking.	Significant privacy issues related to the collection and storage of facial biometric data.

Advantages and disadvantages of proximity cards.

Advantages	Disadvantages
It is quick and straightforward. Employees can easily swipe or tap their cards on the reader to record their attendance.	This can be more expensive considering the cost of the card readers, software and ongoing maintenance.
They are more durable than magnetic stripe cards which help to reduce the risk of wear and tear.	The proximity cards can be stolen or misplaced by the employees.
They can be used for multiple purposes like access control, time and attendance tracking and more.	They have limited storage capacity. This can limit the amount of data that can be stored on the card.
This is suitable for large enterprises as well as small enterprises.	They aren't safe from hacking or duplicating and unauthorized access can still occur if the proper security measures are not implemented.

By considering the above advantages and disadvantages of the fingerprint scanners, facial recognition and proximity cards, we propose and recommend using the fingerprint scanners because we need to consider the financial affordability of the company to purchase the machine.

The fingerprint scanner is easy and accurate compared to proximity cards. Proximity cards can be misplaced or stolen. Therefore, we propose and recommend using a fingerprint scanner to mark the attendance.

Then after, we need a database to record the attendance of the third-party employees. The following points show the advantages of using a database to a systematized attendance system.

- A database can maintain a centralized and standardized record of attendance. As well as it ensures accurate and consistent recording of attendance data compared to the manual attendance system.

- The modern databases come with user-friendly interfaces and customizable dashboards which make it easy for the staff, and administration to access and manage the attendance record or data.

- The database provides real-time monitoring of attendance by allowing the administration to identify and address any issues quickly.

- There may be initial costs associated with setting up and maintaining a database. But there are long-term benefits, which are reduced administrative burden, improvement in efficiency, and better decision-making. This result is good in cost saving for the organization in the long term.

- The database provides security features to protect sensitive attendance data from unauthorized access or loss. With the built-in backup and recovery options, the organization can ensure data integrity and availability.

- The database can be integrated with other systems such as Human Resource Management, and payroll to streamline data flow and eliminate any duplicate data entry. This helps organizational efficiency.

For the database system, we propose either a free/unpaid database or a paid database to record the attendance. The following tables show a summary of a free database and a paid database's advantages and disadvantages.

Advantages and disadvantages of free database.

Advantages	Disadvantages
It is free to use which is cost-effective.	It may lack advanced features and functionalities.
Open-source allows users to modify and customize according to their own needs.	Free databases might not offer the same level of reliability, scalability and security.
It is easy and quick to set up.	Limited professional support options are available.
It often has large communities of users.	May limit the amount of data to store data.

Advantages and disadvantages of paid database.

Advantages	Disadvantages
Provide a wide range of advanced features, tools and functionalities that are custom-made to specific needs.	It requires a licensing fee, which can be expensive for the organization.
It includes advanced security features and compliance certifications to protect sensitive data.	It can be more complex to set up and manage. It requires specialized knowledge.
It is reliable with better uptime, performance and data integrity.	Some paid databases may lock you into a specific vendor's ecosystem which makes it difficult to switch to another database in the future.
Ability to handle a large volume of data and high query loads.	

All in all, by considering all the advantages and disadvantages we propose for the initial phase of the free/unpaid database system with fingerprint scanners to the JF&I Packaging Company by considering the financial affordability of the company. If needed in the future the company can upgrade the solution to a paid database with a facial recognition system.

Finally, we need a web-based application to operate and use the system automatically. The web-based application can be created through HTML, CSS, JavaScript, or else React JS method by a solution provider.
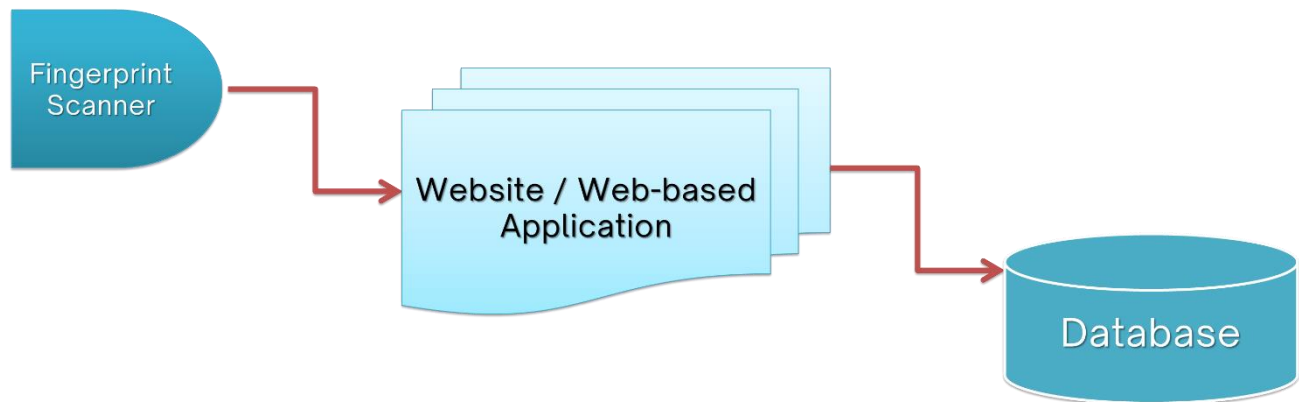
System.

Establishing features, functions, and system requirements is crucial for creating an efficient attendance system that can replace human labor-intensive attendance.

1) System Requirements.

- Scalability: The system should effectively manage attendance across various organizational departments, locations, and sizes.
- Accuracy: The system ensures precise and accurate tracking of attendance with minimal errors or inconsistencies.
- Accessibility: The product is accessible on various platforms such as tablets, smartphones, laptops, and desktop PCs.
- Integration: The ability to effortlessly transfer data between current HR management systems and other platforms.
- Security: The Company is implementing robust security measures to prevent unauthorized access and ensure the protection of data privacy.
- Personalization: This section outlines the features that can be modified to suit specific organizational requirements and guidelines.

- Notifications & Warnings: The system should provide employees and administrators with notifications on incomplete punches, tardy arrivals, and pending leave approvals through various communication methods like email, SMS, and in-app alerts.

2) **Features:**

- Time Monitoring: The task involves accurately recording and monitoring the timings of employee check-in and check-out.
- Management of Leaves: The policy allows employees to track their leave balances and submit leave requests.
- Alternate Scheduling: The policy allows employees to check their leave balances and request leaves.
- Reporting: The task requires providing comprehensive reports on absenteeism, late arrivals, and attendance.
- Integration of Biometrics: The technology provides support for face recognition and fingerprint biometric authentication techniques.

3) **Qualities:**

- Updates in real-time: The proposal allows administrators and staff to access real-time changes in attendance data.
- Portal for Self-Service: The system allows employees to manage their attendance, request leaves, and manage their schedules.
- Audit Trail: Maintaining an audit trail for attendance activities is crucial for accountability and compliance.
- Employee Directory: Create a comprehensive directory for your staff, containing all necessary contact and other relevant information.
- Dashboard: The dashboard should display key attendance numbers and insights administrators can access.

The new attendance system aims to streamline attendance monitoring, reduce administrative stress, and enhance organizational efficiency by implementing specific system needs, functions, and features.

Implementation Plan.

Improving Attendance Tracking System.

In response to the identified issue of manual attendance tracking within JF & I Packing (PVT) Ltd, this documentation report aims to outline the problem, propose a solution via a solution provider, and detail the implementation plan for a new automated attendance tracking system.

Time Line
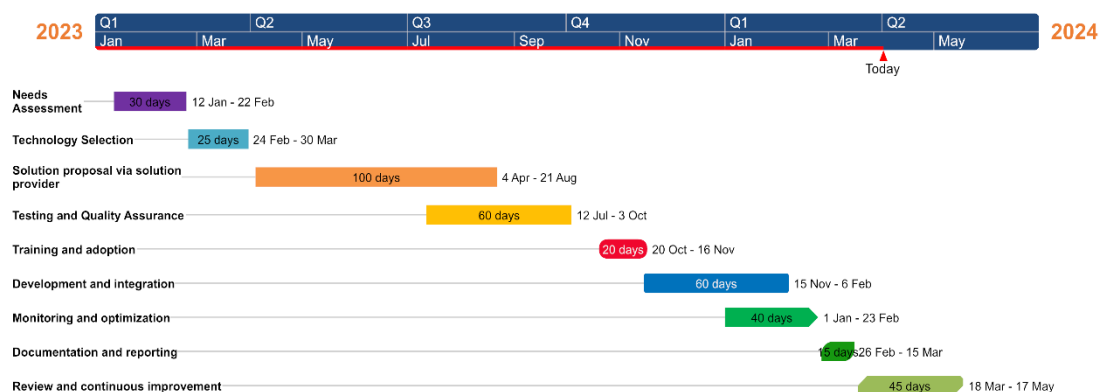
Needs assessment:

 Arrange for meetings with department heads and HR staff to discuss the shortcomings of the present attendance tracking system as well as the features that they would want to see included.

Collect needs for user interface choices, reporting capabilities, scalability, and integration with current systems.

Technology Selection:

 Look at providers and software programs for attendance tracking.

Consider factors like features, cost, support, and infrastructure compatibility when evaluating each alternative.

Choose the option that best satisfies the stated conditions.

System Development:

 Work together with the software development team or selected vendor to tailor the solution to the particular requirements of the business.

Describe the user roles, access rights, database structure, and system architecture.

Provide features including reporting capabilities, mobile app integration, and biometric identity.

Testing and Quality Assurance:

 Create test cases that address a range of situations, such as error handling, edge cases, and typical usage.

To make sure the system works as planned and satisfies quality standards, conduct thorough testing.

Resolve any problems or defects found during testing as soon as possible.

Training and Adoption:

Create instructional resources such as FAQs, video tutorials, and user manuals.

To acquaint management, staff, and HR people with the new system, schedule training sessions.

Assist with continued support and guidance to guarantee a seamless implementation and respond to any queries or worries from users.

Deployment & Integration:

 Work with IT personnel to implement the new system throughout the company.

Make sure that any existing payroll software or HRIS (Human Resources Information

System) integrates seamlessly.

To move employee data and attendance records to the new system, do compatibility checks and data migration, if needed.

Monitoring and Optimization:

Monitor system performance, usage metrics, and user feedback post-deployment.

Address any technical issues, performance bottlenecks, or user experience challenges promptly.

Continuously optimize the system based on feedback and evolving business requirements.

Documentation and Reporting:

Prepare comprehensive documentation, including system specifications, configuration guides, and troubleshooting tips.

Generate regular reports on attendance data, system usage, and key performance indicators (KPIs).

Share insights and findings with stakeholders to demonstrate the impact of the new attendance tracking system on organizational efficiency and employee productivity.

Review and Continuous Improvement:

Conduct periodic reviews to assess the effectiveness of the new attendance tracking system.

Solicit feedback from users and stakeholders to identify areas for improvement and enhancement.

Implement updates, new features, or process refinements to ensure the system remains aligned with organizational goals and evolving business needs.

Implementing a computerized attendance system for company employees offers several potential benefits, including:

- **Accuracy:** Computerized systems reduce the risk of human error in attendance tracking, ensuring accurate records of employees' working hours.

- **Efficiency**: Automating the attendance process saves time for both employees and administrators, as it eliminates manual data entry and paperwork.

- **Cost savings:** By streamlining attendance tracking processes, companies can save on labor costs associated with manual attendance management and reduce the risk of over or underpaying employees.

- **Data analysis:** Computerized systems provide valuable data that can be analyzed to identify attendance patterns, trends, and areas for improvement in workforce management.

- **Integration**: These systems can integrate with other HR software, payroll systems, and databases, simplifying overall HR management processes.

- **Remote access:** Employees can often access the attendance system remotely, enabling them to clock in and out from various locations, which is especially useful for remote or field workers.

- **Compliance:** Automated attendance systems can help ensure compliance with labor laws and regulations regarding work hours, breaks, and overtime.

- **Transparency**: Employees have access to their attendance records, promoting transparency and accountability in the workplace.

- **Security**: Computerized systems offer enhanced security features such as user authentication and data encryption, protecting sensitive employee information.

Overall, a computerized attendance system can contribute to increased efficiency, accuracy, compliance, and transparency in workforce management, ultimately leading to improved productivity and employee satisfaction.

Any associated challenges or risks.

Challenges:

1. **Need training**

   The employees and the administration need the required training in order to use the new system effectively and efficiently. It can be costly and time-consuming.

2. **Issues on the technical side**

   When implementing a new system, there can be technical challenges for example system downtime, software bugs and compatibility issues. This can disrupt the normal operations.

3. **Struggle to change**

   The third-party employees may struggle to accept the new attendance system if they are used to the old manual attendance system method.

4. **Data migration**

   By transferring the existing attendance data to the new system can be a complex process. If the data isn't handled properly then there can be inaccuracies which leads to data loss.

5. **Customization requirements**

   Off-the-shelf/ single solutions may not meet the unique requirements of the organization always.

   Requiring customization can increase the costs and complexity.

Risks:

1. **Rely on technology**

   Over-reliance on the systematized attendance system can lead to risk when there are technical failures which possibly lead to significant operational troubles.

2. **Concerns on privacy**

   The third-party employees might have concerns about their privacy. How their attendance data is collected, used and stored can lead to trust issue problems.

3. **Data security**

   When storing the sensitive attendance data of the employees in a centralized system will increase the risk of data breaches, unauthorized access and possible misuse of the information.

4. False reporting

The automated systems aren't open to manipulation or errors. There is a risk of employees when finding ways to exploit the system to falsely report their attendance.

Steps to mitigate:

1. Select a reliable technology

Need to choose a reliable and reputable attendance system provider with a proven track record in the industry.

2. Provide a complete training

Offer a complete training and support session to the third-party employees and administration to confirm that they understand how to use the system correctly, efficiently and effectively.

3. Use strong security measures

Can use encryption, regular security audits, and multi-factor authentication to protect sensitive data.

4. Stakeholders engagement

Engage the third-party employees and other stakeholders in the business in the planning and implementation process in order to gain their concerns perceptively

5. Usage of the audit and monitor system

Need regular monitoring and audit of the system to notice and discourse any issues and differences perceptively.

Conclusion

In conclusion, transitioning from manual attendance marking to an automated system presents significant advantages for companies like JF & I Packaging (Pvt) Ltd. The outlined proposal offers a comprehensive solution that addresses the challenges of manual attendance tracking and provides a structured implementation plan. By leveraging technologies such as biometric scanners and web-based applications, the proposed system aims to enhance accuracy, efficiency, and real-time data accessibility in attendance monitoring. Additionally, the recommendation of using a fingerprint scanner integrated with a free database aligns with the company's financial considerations while ensuring reliable attendance tracking. However, the implementation of any new system comes with its own set of challenges and risks, including training requirements, technical issues, and data security concerns. These challenges can be mitigated through thorough planning, stakeholder engagement, and the adoption of robust security measures. Overall, by embracing automation and investing in a modernized attendance tracking system, JF & I Packaging (Pvt) Ltd can streamline operations, improve productivity, and foster a culture of transparency and accountability in the workplace.