SWE30010 - Managing IT Projects

TASK 06: DEFINITION OF DONE

HUMAN RESOURCE MANAGEMENT WITH ATTENDANCE SYSTEM

Group 2

GROUP 2 INFORMATION

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1. QUALITY MANAGEMENT

1.1. What is Quality?

Within the framework of this HR management system with a biometric attendance project, a "quality" platform is defined as the ultimate platform that satisfies all of the client's criteria. The following is a summary of these requirements:

a) Technical requirements

- The system should seamlessly integrate with biometric devices (such as fingerprint scanners, iris recognition, or facial recognition cameras) to capture employee attendance data, ensure compatibility with various biometric technologies and models.
- Store and manage employee data, attendance records, and biometric templates securely in a database, implement efficient data retrieval and update mechanisms.
- Utilize TCP/IP, wireless, fiber, or copper networks for data transfer between biometric devices and the central system.
- Design the system to handle a growing number of employees and devices.

b) Functional Requirements

All core functionalities of the Biometric Attendance system can work efficiently and do not have any severe errors that corrupt the system. Core functionalities include:

- Biometric Attendance Tracking
- Employee information Management and Leave Management
- Payroll Integration
- Reporting and Analytics
- Security Enhancement
- Time check and attendance
- Performance and Development tracking.

c) Non-Functional Requirements

- Ensure data privacy and protection of biometric templates, implement encryption during data transmission and storage, prevent unauthorized access.
- Maintain high system availability (uptime) to avoid disruptions, regularly back up data and enable efficient recovery mechanisms.
- Response time for biometric authentication should be fast, handle concurrent requests efficiently and correct.
- Provide user manuals, technical guides, and change logs, document system architecture and design.

1.2. What is Quality?

The Definition of Done (DoD) checklist can be used to assess the quality of Biometric Attendance system development. Before software development is considered complete, this checklist consists of a set of conditions that have to be met. There are several items on the DoD checklist before the release, including:

- Core functionalities development: The platform must be constructed with all of the essential features listed in the project proposal. Both automated test cases and manual tests can be used throughout the testing process.
- Usability and Scalability: Consider factors like reaction time and resource usage while assessing the software's performance under workloads. Verify that the system is capable of handling an unexpected increase in workload.
- Code Quality and Conventions: Verify that the code complies with the requirements for readability, maintainability, naming conventions, and code structure.

- Security: Verify if the platform followed the necessary data protection and authentication guidelines. Performing security testing, reviewing protocols, and reviewing IT policies and documentation are all part of this process.
- Testing and Documentation: Conduct unit testing to verify individual components, integration testing to validate interactions between modules, and user acceptance testing (UAT) involving end-users.
- UX/UI Testing: Make that the UI is responsive, easy to use, and visually consistent. It ought to satisfy every design criterion listed in the proposal.

There are several methods and metrics for assessing quality when it comes to measuring. As a result, the measuring process is standardized in many quality models. IEEE 1061, COSMIC, ISO/IEC 9126, and ISO 25010 are a few of the widely used models. Whichever quality evaluation technique is selected, the DoD Checklist's evaluation criteria must be properly formatted, comprehensible, and appropriate. The DoD can be improved by using S.M.A.R.T. concepts.

2. CHECKLIST

When using ISO 25010 as a framework for an HRM (Human Resource Management) project, you would tailor your project's definition and goals to address these quality characteristics in the context of HRM software or systems. For example:

- **Functional Suitability**: Ensuring that the HRM software provides all necessary functions to support HR processes such as recruitment, employee onboarding, performance management, and training.
- **Performance Efficiency**: Ensuring that the HRM software performs tasks such as data processing and report generation within acceptable time frames and with minimal resource consumption.
- **Compatibility**: Ensuring that the HRM software can integrate with existing systems such as payroll software, time-tracking systems, and enterprise resource planning (ERP) systems.
- **Usability**: Ensuring that the HRM software is user-friendly and intuitive, allowing HR professionals and employees to easily navigate and perform tasks within the system.
- **Reliability**: Ensuring that the HRM software operates reliably without frequent crashes or errors, especially during critical HR processes.
- **Security**: Ensuring that the HRM software protects sensitive HR data such as employee personal information, payroll details, and performance evaluations from unauthorized access or modification.

- **Maintainability**: Ensuring that the HRM software can be updated and modified efficiently to accommodate changes in HR policies, regulations, and business requirements without introducing bugs or issues.
- **Portability**: Ensuring that the HRM software can be deployed across different hardware and software environments, such as on-premises servers or cloud platforms, with minimal effort and modifications.

No.	(Sub) Characteristics	Description	Y/N
1. Functionality Suitability			
1.1	Functional Appropriateness	Deploy the platform on the cloud-based hosting server	☐
1.2	Functional Appropriateness	The platform allows user creation for 2 account types: Admin account and employee account	☐
1.3	Functional Appropriateness	The platform allows users to switch between different languages. All content, messages, and alternative text are translated correctly	☐
1.4	Functional Appropriateness	The data analytics tool can generate reports with meaningful insights from the data into visualized format on the website.	☐
1.5	Functional Appropriateness	The platform's core functionalities can integrate with external systems, such as current database, existing ERP system with less than 5% of API conflicts	☐
1.6	Functional Appropriateness	The data analytics tool is integrated with the feedback mechanism to analyze manager feedback to employee	☐
1.7	Functional Correctness	The number of errors of each core functionality of the HRM should be less than 5% of total automated test cases	☐

1.8	Functional Correctness	During the account registration process, important fields such as name, password, and email are required	☐
1.9	Functional Correctness	Employee's information updates correctly appear on the screen	☐
1.10	Functional Correctness	The database searching and filtering options return the correct result	☐
1.11	Functional Correctness	When calculation is made upon any one of the modules, the other with the related attribute must also update correctly.	☐
1.12	Functional Correctness	Different test cases are performed to prevent XSS, exploiting URLs	☐
1.13	Functional Correctness	Dashboard chart should be use properly to show a clearly details of user information	☐
1.14	Functional Completeness	Manager can generate an user report of their attendance each month with a provided sample template with one click	☐
1.15	Functional Completeness	Use the authenticated token to fetch the user details from the system, including user ID, role, and history information.	☐
1.16	Functional Completeness	An process to verify if the authenticated token is expired or not, then alert user to login/ refresh token again	☐

1.17	Functional Completeness	Use the authenticated token to fetch the order details from the system, including order ID, payment information, and shipping methods.	☐
1.18	Functional Completeness	Perform a JWT authentication to obtain a valid token for the user who login the system	☐
2. Performance Efficiency			
2.1	Time Behaviour	The following actions have a response time of less than 5 seconds: ● Display a list of employees. ● Calculate and estimate the payroll. ● Display dashboard for admin/ user role. ● Show user information. ● Generate report. ● Login/Logout.	☐
2.2	Time Behaviour	The loading time of pages is less than 5 seconds.	☐
2.3	Resource Utilization	The CPU utilization when running the platform is below 80% and memory consumption is below 70%	☐
2.4	Capacity	The application can handle a 1,000 employee test case without losing 30% of the performance.	☐
3. Compatibility			
3.1	Co-existence	Run simultaneously with other web applications on the same operating system without conflicts	☐
3.2	Interoperability	Use widely accepted and standardized data formats for communication	☐

3.3	Interoperability	Design clear and well-documented APIs (Application Programming Interfaces) for your web application.	☐
4. Usability			
4.1	Appropriate recognizability	Users complete the following tasks in less than 3 minutes: ● Register a new account ● Watch their personal information ● Review their KPI through chart ● Generate report	☐
4.2	Learnability	90% of users (admin staff and employee) can complete basic tasks to serve their needs on the first day of the testing period	☐
4.3	Operability	The average number of errors that test users encountered during a 15- minute testing session is less than 2 errors.	☐
4.4	User interface aesthetics	The platform is responsive for mobile and desktop.	☐
4.5	User interface aesthetics	The minimum average satisfaction score of 20 users about the UX/UI of the platform, including web page structure, text font, color palette, languages, navigation, product display, buttons, etc. is 8 out of 10.	☐
4.6	User error protection	90% of test users can understand the content of the confirmation dialog box displayed when they: ● Delete/edit their review/rating ● Cancel/Confirm their orders ● Change the platform settings	☐
4.7	Accessibility	80% of non-text content (video, images) have alternative text descriptions	☐
5. Reliability			

5.1	Maturity	Mean Time Between Failures (MTBF) metrics of the platform is at least 30 days	☐
5.2	Fault Tolerance	Mean Time to Recover (MTTR) takes less than 2 hours to recover platform data from errors or failures	☐
5.3	Recoverability	All functionalities of the platform can be fully restored from the backup within 6s hours after the failure	☐
5.4	Availability	The platform is accessible for 99.9% of operating hours.	☐
6. Security			
6.1	Confidentiality	Block at least 95% of unauthorized access attempts and send alerts to users	☐
6.2	Confidentiality	Data encryption and secure authentication protocols are integrated	☐
6.3	Confidentiality	Payment card industry (PCI) compliance is applied	☐
6.4	Integrity	100% of data is stored and transmitted correctly. Data in the databases is reflected correctly on the user interface and data analytics tools	☐
6.5	Integrity	The platform follows data protection regulations	☐
6.6	Non-repudiation	Implement non-repudiation measures for at least 95% of user actions	☐
6.7	Accountability	100% of user interactions on the platform and the platform events are recorded in the logbook	☐

6.8	Accountability	100% of incident occur on the system is recorded and notify to admin	☐
6.9	Authenticity	95% of user authentication processes are successful	☐
7. Maintainability			
7.1	Analyzability	Reduce time taken to diagnose and resolve reported issues to less than 1 hour 30 minutes	☐
7.2	Modifiability	New change/enhancement is integrated into the platform 1 month after the change request is made	☐
7.3	Testability	Maintain a code coverage of at least 80% through automated test cases	☐
7.4	Modularity	The platform architecture is designed with at least 6 modules	☐
7.5	Reusability	All codes have naming conventions, and comments to modify when needed without affecting other parts (Low coupling – High cohesion)	☐
7.6	Reusability	A minimum of 80% code is reusable	☐
8. Portability			
8.1	Adaptability	The time to deploy the platform on a new hosting server (on-premises or cloud server) is less than 4 days	☐
8.2	Installability	The time to complete the installation and configuration of all platform components in an environment is less than 10 hours	☐

8.3	Replaceability	Could we replace a component of the platform with a migration time of less than 2 weeks without impact on other components?	☐