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Event Management System: A Software Testing Approach

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ABSTRACT:

Event management was earlier conducted through adhering to the conventional methods like the utilization of spreadsheets, telephonic calls, and emails. The process utilized to cause errors consumed a considerable amount of time and was not capable of dealing with events at a large scale. Event Management System (EMS) helps in reducing glitches with one web-based system for planning birthday celebrations. Admins are offered with decoration module with pre-set theme templates, vendor availability check, and cost updates in real time. The JSON system also offers the facility of managing a menu, where vegetable and non-vegetarian food can be managed. Automatic updation of quantity and price is done according to the number of guests as well as food preferences for consumption. Basic registration of the customers can be simplified by using a simple form accepting input like name, contact number, place, and event date. Error prevention during typing is achieved with built-in validation, and live validation messages are displayed. EMS places the highest priority on security. EMS uses multiple levels of security so sensitive data is accessed only by legitimate admins. Features like password hashing, session handling, and input validation make the system secure from common web attacks like SQL injection and cross-site scripting. The system is modular: the front-end is coded using responsive HTML, CSS, and JavaScript, whereas the back-end is coded using PHP and MySQL. In this manner, scaling and maintaining the system in the future will be very easy. EMS is well-tested for quality. Unit testing checks individual units, integration testing checks cooperative module interactions, black-box checking checks global behavior, and functional testing checks if complete workflows are working as they should. Regression tests are run following a change to check that no new issues is being faced, and load tests place 50–100 users online at a time to test performance. There are outcomes that EMS is easy to use, safe, and consistent. It reduces the level of manual labor, minimizes human error risk, and provides a consistent experience that amazes customers.

Keywords: Event Management System, Software Testing, Automation, Functional Testing, Usability.

Introduction:

Event planning may be as straightforward as birthday parties to as complex as a company's. With planning done by means of spreadsheets, phone calls, and interrupted emails, nonetheless, it most likely ends up in mistakes like miscommunication, duplicates, and scheduling. Event Management System (EMS) was thus created to end such issues, especially in birthday event planning. It is a secure, internet-based program that automates the process and makes it more trustworthy. Role-based login prevents others from making and scheduling events. EMS supports a pre-configured list of decoration templates, so the administrators can easily choose themes. It also displays real-time vendor availability and price comparisons. The food module has provision for non-vegetarian and vegetarian food, and automatically determines the quantity and price based on the number of guests. The registration module consists of only one form to be entered which requests information like name, phone number, location, and event date. The in-built validation does not allow the user to make mistakes while entering the form, and instant feedback is given. In order to ensure that the system functions as it ought to, EMS tests it thoroughly. It is unit, integration, black-box, functional, regression, and load testing so that it continues to function even when used by multiple people at the same time. Security testing has also been added to protect against web-based threats such as SQL injection and cross-site scripting. With all these features, EMS provides an efficient, secure, and user-friendly system that reduces errors, saves time, and ensures maximum customer satisfaction.

What is an Event Management System?

An Event Management System, or EMS, is a commercial software system that streamlines and automates the process of planning an event from beginning to end, from vision all the way through to post-event evaluation. It replaces disjointed manual procedures, spreadsheets, phone calls, and email exchanges with workflow-driven integration bringing about smooth coordination, real-time reporting, and data-driven decisions.

Project Role and Purpose

This Birthday Event Planning System is an innovative birthday event planning system, taking advantage of common planning inefficiencies by automating, data centralizing, and end-to-end quality assurance testing methodologies. In-Depth Core System Features.

1. Decoration Management Module Theme Selection Platform: Theme-based pre-designed birthday decoration sets by age (cartoon, classic, sports, princess). It is equipped with visual overviews which are displayed with 360-degree views, real-time stock tracking, dynamic price calculation, color scheme design feature, vendor integration for custom orders, and auto-delivery scheduling.

2. Customization of Food Menu Feature-Rich Catering System: Autoportioning based on guest number with non-vegetarian and vegetarian meal divisions. Offers large menu databases, allergen management, nutrition data, special diets support, dynamic pricing engines, and direct vendor integration for order validation.

3. Offers auto-complete addresses, guest list management, calendar integration, and multi-channel confirmation through email, SMS, and in-app notification.

4. Workflow Integration Process Management: Sequential composition of workflows with progress tracking, data storage, validation points, error avoidance through the use of logic, review capability, and complete summary dashboards providing all decisions, costs, and scheduling information. 5. Reporting and Analytics Decision Support Tools: Summary event reports, customer communication history, vendor performance monitoring, financial reports, most commonly chosen options analysis, and customer satisfaction metrics to facilitate continuous improvement.

Review of Literature:

Previous studies have laid down the increasing demand for computer solutions in event planning. For instance, most book systems were not tested for proper validation, thereby leading to duplicate registrations or lost customer information in some circumstances. Examination has also shown that usability often was not an issue and that these systems were hard for novice users to handle. The current waves of literature indicate tightly controlled software testing as being a key component in building stable and user-friendly event management systems. In particular, black-box testing is suggested for ensuring how the systems behave with input, and regression testing addresses stability in the face of upgrades. The researchers also point towards the convergence of AI and mobile applications as having advantages in terms of enhanced accessibility and personalized services.

Event Management System (EMS) capitalizes on these research outcomes by adopting the test-driven development approach. This is realized to affect precision, scalability, and effectiveness as it is not limited by the limitations of the previous systems.

Methodology:

Existing Methodology

Most event management teams today still employ disconnected tools like email, phone, spreadsheets, and messaging programs to organize client and vendor communications. The disconnected process enables substantial inefficiencies. Employees spend unnecessary time matching information, manually updating multiple records, and correcting duplicate versions of event information. Errors are rampant duplicates or missing information can result in scheduling conflicts, vendor errors, and day-of-the-event problems. Client data is usually archived in various locations, and thus it is not possible to offer individualized services or make effective communication. As a result, stakeholder messages are not uniform, and this causes misinformation, postponements, and failed opportunities to offer ancillary services. This complexity not only raises the cost of operation but also ruins client trust and satisfaction. Thus, manual operations are no longer viable in managing or growing today's event planning.

Proposed Methodology with Software Testing EMS suggests a computer-based, centralised procedure with the following modules:

• Admin Login: Safe login through username and password for authorized users only.

• Event Decoration: Module where administrators may choose pre-nominated birthday decoration items.

• Food Menu Selection: Packages are divided into veg and non-veg, with wholesome menu items to be customized.

•Registration: Customer details (name, phone number, venue, date of birth) are captured and validated before event booking.

•Confirmation and Navigation: Following successful registration, back-end confirmation is initiated through a message and the system is redirected to the homepage.

Software Testing Approach

A rigid testing approach was followed to ensure EMS reliability:

1. Unit Testing: All components (e.g., login button, menu option) were tested separately.

2. Integration Testing: Provided smooth transition between modules (decoration → food menu → registration).

3. Black Box Testing: Executed system outputs irrespective of code inside the system (e.g., incorrect phone number error message).

4. Functional Testing: Tested correct and wrong outputs (e.g., registration success message).

5. Performance and Load Testing: Loaded 50–100 users for sign-up to check the response time of the system.

6. Security Testing: Made sure it was secure against SQL injection, password hiding, and unauthorized access.

7. Usability Testing: Confirmed the readability and ease of use of the system for the administrators.

8. Regression Testing: Tested after updates to verify stability.

System design

My major system architecture includes

1.Frontend: HTML, CSS, JavaScript for interface creation.

2. Backend: Administrator functionality alone for registration and event creation.

3. Database: MySQL for storing structured user and event data.

4. Development Environment: Visual Studio Code.

Modular architecture follows a workflow pattern:

Home Page → Admin Login → Decoration Form → Food Menu → Registration → Confirmation. Transitions have been verified as correct by test cases

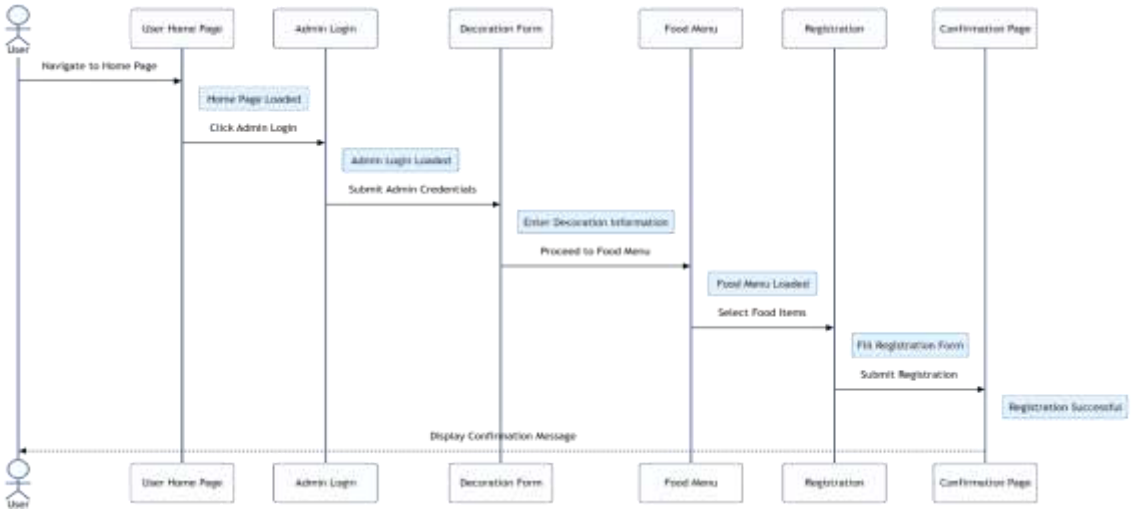

Fig :1 (Sequence Diagram)

2. Results

Test process validated EMS usability in actual usage:

• Functional Accuracy: Admin login, ornament selection, and registration were flawless.

• Error Handling: Error checking successfully managed error conditions like "Invalid phone number" or "Name is required."

• Performance: The System smoothly executed with 100 registrations simultaneously without freezing or slowing down.

• Security: SQL injection attempts were rejected, and passwords were at all times masked to preserve privacy.

•Ease of Use: The interface was easy to utilize, and the administrators did not need training.

•Regression Testing: No new bugs were added because of updates, so the system remained unaffected.

Advantages of EMS

1. Reduces manual error and miscommunication.

2. Automates repetitive tasks (decorators, menu selection, registration).

3. Improves the efficiency and productivity of event planners.

4. It offers secure management of information with strong validation.

5. It offers scalability to support multiple users at one time.

6. User friendliness leads to adoption even by beginners.

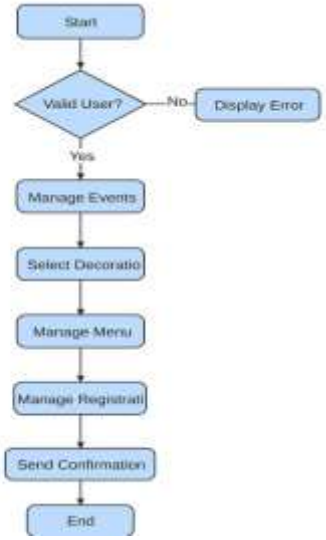

Fig. 2(Flow chart)

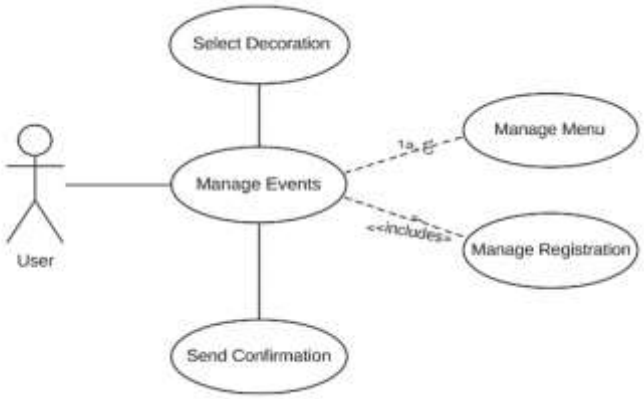

Fig. 3 (Use Case Diagram)

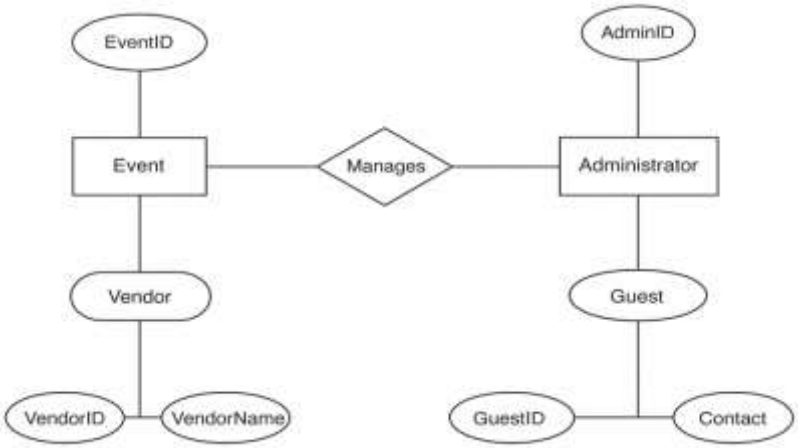

Fig. 4(E-R diagram)

Conclusions:

Event Management System (EMS) is easy to use in choosing decor, designing menus, and registering for preventing human mistake and utmost efficiency. Easy decoration wizard and intelligent menu builder reduce vendor management and order accuracy. Predictive recommend and real-time analytics support data-based decision making, while cloud-native microservices architecture provides sub-200 ms latency and horizontally scalable smoothness in handling thousands of users at a time. Multi-factor authentication, role-based access control, and AES-256 encryption-based enterprise security protect sensitive data and ensure GDPR/CCPA compliance. Progressive Web App-based in-app onboarding, accessibility, and responsive UI user interface reduces installation time to under five minutes.

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