



EGE UNIVERSITY

FACULTY OF ENGINEERING

COMPUTER ENGINEERING DEPARTMENT

Fundamentals of Software Engineering

2023–2024 SPRING SEMESTER

TERM PROJECT

CONFERENCE MANAGEMENT SYSTEM

REQUIREMENTS (ANALYSIS) REPORT

DELIVERY DATE

25/03/2024

GROUP NUMBER 13

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1) Introduction

In the fast-paced world of academic and professional gatherings, the need for a robust and intuitive Conference Management System (CMS) has never been greater. Our CMS stands at the forefront of innovation, offering a seamless integration of all aspects of conference organization into one user-friendly platform.

In today's global environment, where knowledge exchange is paramount, our CMS emerges as the quintessential tool for orchestrating academic, professional, and corporate conferences with unparalleled efficiency and sophistication. Designed to manage the intricate tapestry of conference dynamics, our system is the key to unlocking a new realm of connectivity and engagement.

Main Purpose of the System

From the spark of an idea to the final applause, our CMS is engineered to support every phase of the academic conference lifecycle, ensuring a smooth and successful event. The System website will handle with creating event calling papers and review process in a excellent level as it needed. With cutting-edge tools for user entrance, conference customization, paper submissions, meticulous review processes, and insightful post-conference analytics, our CMS encapsulates the essence of a transformative conference experience.

Users of the system

Tailored experiences for conference chairs, reviewers, authors, presenters, and attendees alike, our platform guarantees role-specific functionalities that enhance participation and collaboration. Each stakeholder within the system is afforded comprehensive resources requisite for a consummate conference experience.

Financial Optimization

The CMS offers streamlined registration and fortified payment processes, not merely for convenience but as a strategic avenue for fiscal generation and meticulous financial stewardship.

Analytics-Driven Insights

Post-event analytics offer a deep dive into the event's success, providing valuable data to shape future conferences. With our system, you have the capability to dispatch feedback forms to attendees and members of the organization at any point during or following the event, irrespective of the time or day.

Conclusions

In conclusion, the implementation of our CMS product promises to revolutionize academic advancements globally, providing a seamless platform for scholars to share their ideas and expertise effortlessly. With the assurance of excellent process handling, stakeholders can trust in the reliability and efficiency of our system. Through collaborative efforts, we can facilitate faster knowledge sharing and contribute to positive transformations in the academic landscape. Together, we can make the world a more interconnected and innovative place.

2) Identification of Viewpoints

Principle Viewpoints of the System

Interactor Viewpoints:

- Author
- Organizer
- Conference Chair
- Reviewer
- Presenter
- Attendee

Indirect Viewpoints:

- Software Maintenance Engineer
- Financial Management
- Attendee Communication

Domain Viewpoints:

- Academic Publishing Standards
- Academic People
- Personal Data Protection Authority

Description of Each Viewpoint

Author : Individuals submitting papers for evaluation and presentation at the conference.

Organizer : Individuals responsible for organizing and managing the conference.

Conference Chair : Individuals responsible for the academic content of the conference and initial acceptance of papers.

Reviewer : Experts who evaluate, score, and provide feedback on submitted papers.

Presenter : Individuals presenting at the conference.

Attendee : Individuals participating in the conference.

Software Maintenance Engineer : The Software Maintenance Engineer Perspective focuses on improving the reliability, performance, and usability of software throughout its lifecycle. Maintenance engineers assess current software status, address user feedback, and continuously update and maintain the software to meet requirements and user expectations. This approach is essential for long-term software success, promoting communication and collaboration among stakeholders.

Financial Management : Individuals managing the financial affairs of the conference.

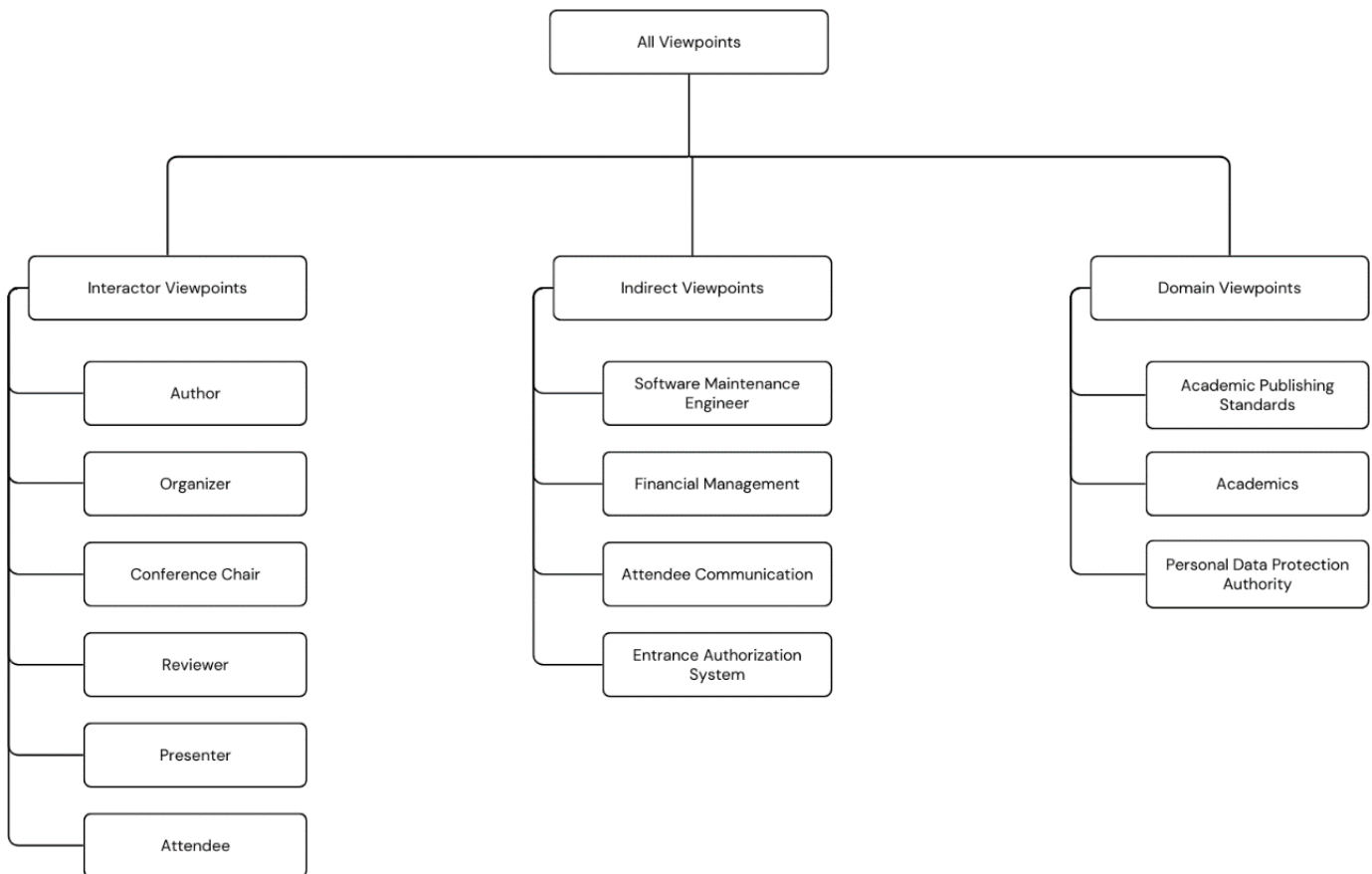
Entrance Authorization System(EAS) : Generates encrypted QR codes for event entry. These codes contain attendee information and are scanned at the event entrance for validation. The system allows authorized attendees to enter while preventing unauthorized access.

Academic Publishing Standards : Accepted standards for papers and content to be considered for evaluation.

Academic People : Individuals from the academic community such as academics, researchers, and faculty members.

Personal Data Protection Authority : Authority determining legal regulations for the protection of personal data.

Viewpoint Hierarchy Diagram



3) Requirements Definition / Considering Functionality /
Considering Lifetime

RequirementID	Viewpoint	Requirement Definition	Classification (Functional, Non- Functional, Domain)	Classification2 (Volatile, Enduring)
1.1	Author	The author should be able to create an article for the topic of the conference and upload it to the digital system.	Functional	Enduring
1.2	Author	Authors should have access to a web-based submission interface when uploading their articles.	Functional	Enduring
1.3	Author	The word limit in the title of the articles that the authors will upload to the system should be maximum 50 words.	Functional	Enduring
1.4	Author	The abstract of the articles that the authors will upload to the system should be maximum 300 words.	Functional	Enduring
1.5	Author	Authors should create at least 3 keywords for the articles to be uploaded to the system for ease of filtering.	Functional	Enduring
1.6	Author	Authors should use PDF format for the articles to be uploaded to the system.	Functional	Enduring
1.7	Author	Authors should be able to physically submit their articles.	Functional	Enduring
1.8	Author	Authors should receive a response from the system within a maximum of 10 seconds after submission.	Non- Functional	Volatile
1.9	Author	Authors should receive feedback from digital communication channels about the submission process after article submission.	Functional	Enduring
1.10	Author	Authors should be able to use the same upload platform for their revised articles and see their previous uploaded articles	Non- Functional	Enduring
2.1	Software Maintenance Engineer	The technology provider must support scaling without degradation of service quality during article submission.	Functional	Enduring
2.2	Software Maintenance Engineer	System downtime should not exceed 5 minutes between 07.00-22.00 hours.	Non- Functional	Volatile

2.3	Software Maintenance Engineer	System recovery time between 07.00-22.00 should not exceed 2 minutes.	Non-Functional	Volatile
2.4	Software Maintenance Engineer	The average response time of the system should be maximum 3 seconds according to the instantaneous user load.	Non-Functional	Volatile
2.5	Software Maintenance Engineer	The system should monitor the response rate to users' requests within a certain period of time and this rate should be above 95%.	Non-Functional	Volatile
2.6	Software Maintenance Engineer	The system should be able to support a certain number of users at the same time and response times should not exceed 150% of the average response time in case of heavy usage.	Non-Functional	Volatile
2.7	Software Maintenance Engineer	The system should provide 99% consistency across different devices and browsers.	Non-Functional	Enduring
2.8	Software Maintenance Engineer	The system should be scalable on a linear scale under increasing user loads, i.e. when the number of users doubles, the utilization of system resources should also double.	Non-Functional	Enduring
2.9	Software Maintenance Engineer	The system should provide 95% compatibility with popular browsers and operating systems of at least the last two major releases.	Non-Functional	Enduring
2.10	Software Maintenance Engineer	The system should perform a full backup every 24 hours to maintain data integrity and consistency. In addition, incremental backups every hour should be applied over the last full backup to capture real-time data changes.	Non-Functional	Enduring
2.11	Software Maintenance Engineer	In the event of data loss, system administrators should be able to restore data from the last intact backup point within 4 hours through a disaster recovery plan.	Non-Functional	Enduring

2.12	Software Maintenance Engineer	Each backup operation should be automatically verified for success status and integrity check. This guarantees the reliability of the backup and the availability of data in the recovery process.	Non-Functional	Volatile
2.13	Software Maintenance Engineer	The system must perform a security scan for vulnerabilities at least once a month and the scan results must be 100% complete.	Non-Functional	Volatile
2.14	Software Maintenance Engineer	The system must be designed in accordance with OWASP security standards and international information security management systems standards such as ISO/IEC 27001 and be subject to regular security audits.	Non-Functional	Enduring
2.15	Software Maintenance Engineer	The system should provide monitoring of key system resources such as CPU utilization, memory usage and network traffic, which will be presented in weekly reports.	Non-Functional	Enduring
2.16	Software Maintenance Engineer	The system should be able to accept additional users up to 20% of the current number of users and handle the transactions of these additional users smoothly.	Non-Functional	Enduring
2.17	Software Maintenance Engineer	New server additions should provide a 25% increase in system performance.	Non-Functional	Enduring
2.18	Software Maintenance Engineer	Interface design and user interaction should be optimized in accordance with HCI (Human-Computer Interaction) principles.	Domain	Enduring
2.19	Software Maintenance Engineer	Apply MIME type check to check the eligibility of the article uploaded by the author. Approve PDF type article submission and generate an error message for other types of documents.	Domain	Enduring
2.20	Software Maintenance Engineer	A ticketing system should be implemented to log and track user issues. Each ticket should include details such	Functional	Enduring

		as user information, issue description, severity level, and assigned technician.		
2.21	Software Maintenance Engineer	The system shall support multiple communication channels such as email, phone, and live chat for users to reach technical support.	Functional	Volatile
2.22	Software Maintenance Engineer	The technical support system staff shall communicate with users without accessing or viewing any private information.	Non-Functional	Volatile
2.23	Software Maintenance Engineer	The technical support system shall generate notifications and seek authorization from the conference organizer when users attempt to perform actions that may result in destructive consequences, such as deleting a conference.	Non-Functional	Enduring
2.24	Software Maintenance Engineer	The system shall ask to authorize when suspicious behaviors are performed.	Non-Functional	Volatile
3.1	Personel Data Protection Authority	To protect participant privacy, the ID system should associate IDs with only the necessary information and allow only authorized personnel access to ID data. Compliance with data protection laws is essential to protect participants' personal information.	Functional	Enduring
3.2	Personel Data Protection Authority	Users should be able to easily access their stored personal data, request corrections or delete their data from the system, in accordance with personal data protection authority regulations.	Non-Functional	Enduring
3.3	Personel Data Protection Authority	The system must be designed in compliance with local and international data protection laws such as GDPR, CCPA.	Domain	Enduring
3.4	Personel Data Protection Authority	The system should have the tools to make the necessary reporting to regulatory bodies.	Domain	Enduring

3.5	Personel Data Protection Authority	The system should only collect and process user data that is strictly necessary for service provision. The use of the collected data must be based on the informed consent of users and for specific, explicit and lawful purposes.	Domain	Enduring
4.1	Financial Management	Sources of income such as sponsorship revenues and participation fees should be recorded and monitored in the system.	Functional	Enduring
4.2	Financial Management	Financial reports should be produced on a regular basis (at least 2 times a week) to ensure that the organizers are informed about the financial status of the conference.	Non-Functional	Enduring
4.3	Financial Management	Financial reports should be regularly reviewed and recorded in accordance with appropriate auditing standards.	Domain	Enduring
4.4	Financial Management	Regular comparisons should be made between budget expenditures and revenues to ensure effective use of financial resources.	Functional	Enduring
4.5	Financial Management	Financial data must be secured and accessible only by authorized users.	Non-Functional	Enduring
5.1	System Security	The system must encrypt and secure billing and payment transactions using industry standard security measures such as SSL (Secure Sockets Layer) protocol.	Domain	Enduring
5.2	System Security	The system should be able to track past payment transactions under participant profiles.	Functional	Enduring
5.3	System Security	The system must perform data backups in every month to ensure data security and ensure the security of these backups.	Non-Functional	Enduring
5.4	System Security	The system must allow access only to authorized users using authorization and authentication mechanisms.	Non-Functional	Enduring
5.5	System Security	The system must provide secure access by reading QR codes and verify the user identities of these codes.	Functional	Enduring

6.1	Reviewers	Reviewers shall be assigned papers to review upon receiving the call for papers.	Functional	Enduring
6.2	Reviewers	Reviewers shall provide ratings and reviews for the papers they review.	Functional	Volatile
6.3	Reviewers	Reviewers are required to submit their review results upon completion.	Functional	Volatile
6.4	Reviewers	Reviewers shall be able to reject the paper from the conference	Functional	Volatile
6.5	Reviewers	Reviewers will get email notifications upon each assignment made to them.	Functional	Volatile
6.6	Reviewers	Upon assignment by the conference organizer, a user shall attain the role of "Reviewer" for the conference event. This role grants the user authorization to assess submissions or proposals pertinent to the conference.	Functional	Enduring
6.7	Reviewers	When a conference organizer assigns a user the role of "Reviewer" for the conference event, this authorization should be revocable by the organizer.	Functional	Enduring
7.1	Presenters	System should provide a platform for session presenters to upload their presentation materials (slides, posters, etc.).	Functional	Enduring
7.2	Presenters	Allow presenters to view and manage their presentation schedule.	Functional	Enduring
7.3	Presenters	Allow presenter to add notes to the session attendees. And make notification mail to the attendees.	Functional	Volatile
7.4	Presenters	Presenters shall be able to withdraw from the conference session.	Functional	Volatile
7.5	Presenters	Each change from presenter shall send a notification to the organization.	Functional	Volatile
7.6	Presenters	Allow presenters to make Q/A sessions and see the feedback.	Functional	Volatile

7.7	Presenters	Upon assignment by the conference organizer, an author can be a presenter.	Functional	Volatile
7.8	Presenters	When a conference organizer assigns a user the role of "Presenter" for the conference event, this authorization should be revocable by the organizer.	Functional	Volatile
8.1	Entrance Authorization System	EAS shall provide encrypted and unique QR codes for each attendee of a conference.	Functional	Volatile
8.2	Entrance Authorization System	The system shall have the capability to generate unique QR codes for each attendee and for each conference.	Non-Functional	Enduring
8.3	Entrance Authorization System	EAS shall validate the attendees' QR codes which they scanned in the entrance machine.	Functional	Enduring
8.4	Entrance Authorization System	The Validation shall be done in 4 seconds at most.	Non-Functional	Volatile
8.5	Entrance Authorization System	The validation process shall result in fewer than five errors per 1000 QR codes scanned.	Non-Functional	Volatile
8.6	Entrance Authorization System	No errors shall occur in encrypted messages.	Non-Functional	Volatile
8.7	Entrance Authorization System	The system shall make at least 10 validations concurrently.	Non-Functional	Volatile
8.8	Entrance Authorization System	The validation system shall provide the attendees name, unique user id and attend time to the CMS(Conference Management System) after decrypted QR code and its encrypted message.	Non-Functional	Enduring
9.1	Attendee Communication	Relevant information should be sent to the participants by e-mail after they register for the organization.	Functional	Volatile
9.2	Attendee Communication	Feedback should be collected through the survey in the e-mail sent to the participants at the end of the event.	Functional	Enduring

9.3	Attendee Communication	Analyses on various metrics should be provided to collect feedback through surveys and evaluate the success of the event.	Functional	Enduring
9.4	Attendee Communication	Feedback surveys should be activated up to 2 minutes after the end of the event.	Non-Functional	Volatile
9.5	Attendee Communication	The survey collection should be closed at the end of the time allotted for feedback surveys, which should not exceed 10 minutes.	Non-Functional	Volatile
9.6	Attendee Communication	For feedback surveys, an e-mail for the survey should be sent to the participants within 2 minutes after the end of the event.	Non-Functional	Volatile
10.1	Academic Publishing Standarts	Generally accepted standards and guidelines for scientific research must be followed by the system and users.	Domain	Enduring
10.2	Academic Publishing Standarts	In accordance with the principles of research ethics and scientific integrity, the quality and impartiality of paper review processes and published content should be ensured.	Domain	Enduring
11.1	Organizer	The organizer must establish a budget for the conference they intend to create.	Functional	Enduring
11.2	Organizer	Organizers should be able to utilize a financial management tool to record expenses and maintain the budget within specified limits.	Functional	Enduring
11.3	Organizer	Organizers can conduct real-time financial analysis through the system to effectively allocate resources to achieve budget goals.	Functional	Enduring
11.4	Organizer	The organizer needs to create a suitable environment to ensure the submission of papers relevant to the conference's scope and areas of interest.	Functional	Enduring
11.5	Organizer	Organizers shall select an appropriate and captivating title for the conference that reflects its theme or focus.	Functional	Enduring

11.6	Organizer	Organizers must provide a detailed and informative description of the conference, including its objectives, themes, and target audience to attract participants.	Functional	Enduring
11.7	Organizer	Organizers have the capability to set and adjust conference dates, considering factors like availability and scheduling conflicts.	Functional	Enduring
11.8	Organizer	Organizers have the ability to cancel the conference when it's necessary.	Functional	Enduring
11.9	Organizer	The organizer should choose a venue with a capacity suitable for the maximum number of attendees.	Functional	Enduring
11.10	Organizer	For online conferences, organizers may utilize suitable platforms.	Functional	Enduring
12.1	Attendees	The participant has to fill in the registration form with basic information.	Functional	Volatile
12.2	Attendees	Participants must pay the fee required to register for the event and payment must be processed securely.	Functional	Volatile
12.3	Attendees	The participant must consent to the use of his/her personal data for academic purposes in the analysis of post-conference questionnaires.	Functional	Volatile
12.4	Attendees	Attendee should have access to the content presented during the conference and be able to watch the relevant sessions.	Functional	Volatile
12.5	Attendees	Participants can cancel their participation in the conference no later than three hours before the start of the event.	Functional	Volatile
13.1	Conference Chair	Conference chair should be able to easily track key conference data such as presentations, attendees, and revenue and expenses.	Functional	Enduring
13.2	Conference Chair	The system must ensure that different conferences can be managed and customized at the same time, providing	Functional	Enduring

		flexibility to meet the needs of different organizations.		
13.3	Conference Chair	Conference chair pre-approves the submitted articles according to their suitability for the conference.	Functional	Volatile
13.4	Conference Chair	Conference chair is expected to interact with speakers to understand the content to be presented and determine the average duration required for presentations.	Functional	Volatile
13.5	Conference Chair	Conference chair shall create sessions based on the number of accepted papers and the topics of presentations by speakers, determining the duration of the conference.	Functional	Volatile
13.6	Conference Chair	Conference chair shall be able to create a survey to gather feedback from participants after the conference.	Functional	Volatile
13.7	Conference Chair	Conference chair should design questions to comprehensively evaluate participants' conference experience.	Functional	Volatile

4) Requirements Prioritization and Negotiation

Negotiations:

Conflict between 2,8 & 2,16:

While the system should scale linearly with increasing user load, it should also handle the operations of additional users smoothly. However, adding each new user may require additional resource utilization, contradicting linear scalability.

Alternative Solution:

While the system should scale linearly with increasing user load, it should also handle the operations of additional users smoothly. To address this contradiction, scaling strategies need to be defined, and additional resource allocation should be considered. Flexible solutions such as dynamic scaling and cloud-based services can be utilized. Additionally, techniques like load balancing and caching can help manage user requests more effectively.

Conflict between 2,4 & 5,3:

The system should respond quickly to user requests, but this requirement may contradict the need for regular data backups to ensure data security.

Alternative Solution:

The system must provide quick responses to user requests while ensuring data security through regular data backups. To reconcile this contradiction, backup operations should be performed in the background without adversely affecting system performance. Automatic backup processes and parallel operations can ensure fast responses to user requests while maintaining data security.

Conflict between 11,1 & 4,1:

The necessity for conference organizers to budget and monitor revenue sources may contradict the cost of additional resources required to enhance the quality of services and content provided.

Alternative Solution:

The requirement for conference organizers to budget and monitor revenue sources may contradict the need for additional resources to improve the quality of services and content provided. To address this, organizers should carefully plan budgets to prioritize expenses and balance revenue sources. Moreover, strategies such as sponsorship agreements and efficient spending can help reduce costs and increase revenue.

Priorization:

- 1) **High Priorization :** This category includes requirements that are absolutely necessary for the system's core functionality. Without these requirements, the system cannot achieve its fundamental objectives.
-Requirement ID's: 1.1, 1.2, 1.6, 6.1, 6.2, 6.3, 12.1, 12.2
- 2) **Medium Priorization :** This category includes requirements that will make the system operate more efficiently and effectively, but they are not absolutely necessary for core functionality.
-Requirement ID's: 2.20, 7.2, 8.2, 8.3, 13.1
- 3) **Low Priorization :** This category includes requirements that add additional value to the system and are not mandatory.
-Requirement ID's: 2.22, 2.23, 9.2, 9.3

5) Requirements Traceability Matrix

	1.1	1.6	2.23	3.1	6.1	6.2	6.3	6.4	6.5	6.7	8.2	9.2	9.3	11.10	12.1	12.2	13.3	13.5
1.1																		
1.6	D																	
2.23																		
3.1																		
6.1	D	D																
6.2	R	R			D													
6.3	D	D			D	D												
6.4	D	R			D	R	R											
6.6																		
8.2				R														
9.2				R														
9.3										R		D						
11.10																		
12.1				R														
12.2																		
13.3	D																	
13.5	R				D	D	D		R								D	

6) Use Cases of the Main Scenarios

Submission and Review:

Actors: Author, Reviewer

Inputs: Author details, paper title, abstract, keywords, file upload, reviewer information list, conference name, Reviewer's feedback.

Operation:

-The author accesses the Conference Management System and selects the option to submit a paper.

-The author inputs details of the paper (title, abstract, keywords) and uploads the paper file. The system validates the submission against the specified format and requirements.

-The system confirms the submission and assigns a unique submission ID to the author.

-The Conference Management System automatically assigns the paper to an appropriate reviewer based on the paper's topic and keywords.

-The reviewer receives a notification and reviews the submission, providing feedback, comments, and a recommendation (accept, revise, reject).

-The author receives the reviewer's feedback. If revision is requested, the author submits a revised version, which goes through a similar review process.

Outputs: Confirmation message for successful paper submission. Review scores, feedback, and recommendation status.

Exceptions: File upload failure or incomplete submission (e.g., incorrect file size, exceeding file size limit, assigning papers to the wrong reviewer, lack of available reviewers in a specific field).

Conference Setup and Management:

Actors: Organizers, Reviewers, Presenters.

Inputs: Organizer login, conference details (including participant limit, participant fee, participant type), accepted papers, speaker details.

Operation:

- The conference organizer accesses the Conference Management System and inputs details for a new conference including title, date, venue, and topics.
- The Conference Management System creates the conference and provides tools for the organizer to manage registrations, submissions, reviews, and program scheduling.
- Participants register for the conference through the Conference Management System, selecting sessions and workshops they wish to attend.
- The system confirms registrations and payments, if applicable.
- The organizer finalizes the conference program and schedule, which is then published on the Conference Management System for participants to view.

Outputs: Conference schedule and presentation details.

Exceptions: Scheduling conflicts, incomplete information during setup, issues with participant registration.

On-Site Management and Analysis :

Inputs: Attendee details, QR code technology, survey responses, attendance data, session feedback.

Actors: Analytics team or administrators.

Operation:

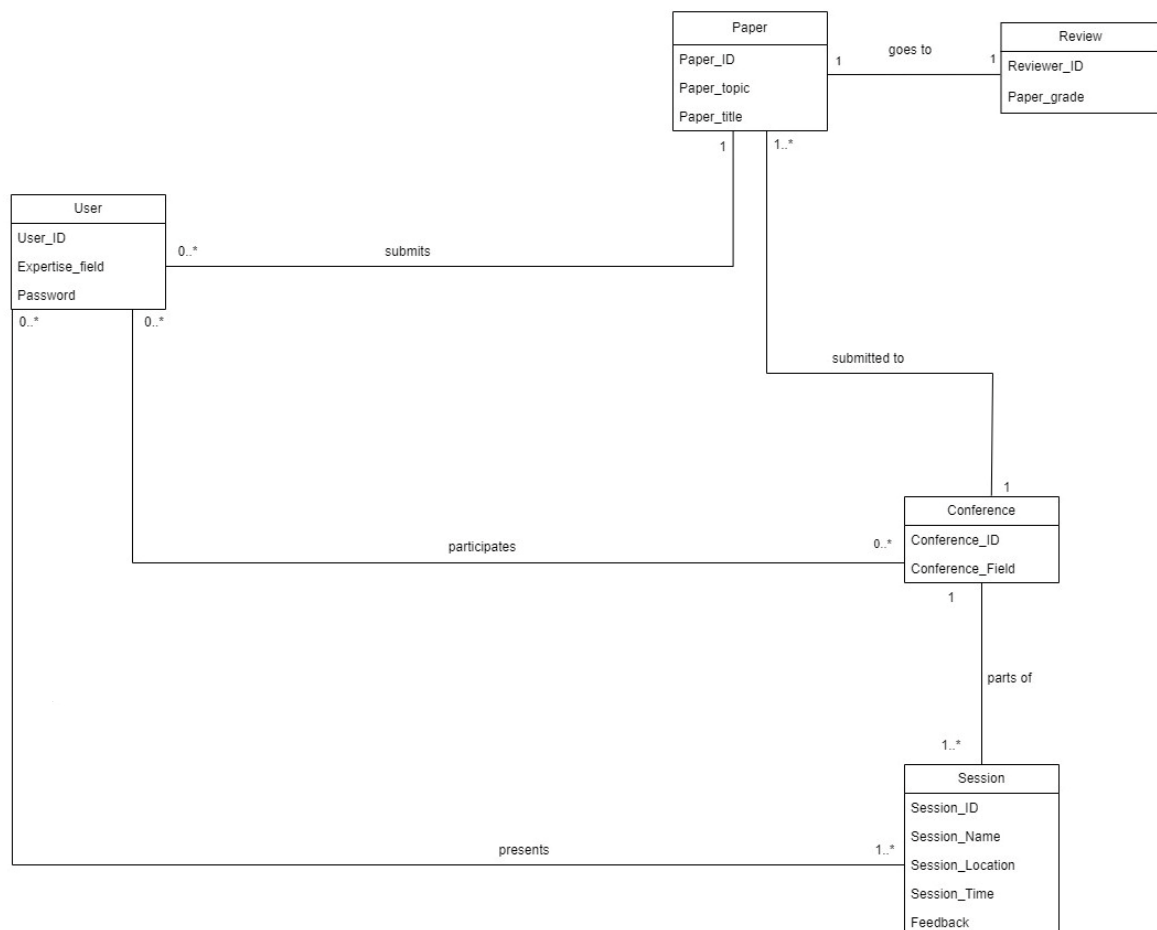
- Attendees check in at the conference venue using the Conference Management System, either through a kiosk or mobile app, by providing their registration details.
- The Conference Management System generates a badge with a QR code for each attendee, facilitating session access and attendance tracking.
- During the conference, organizers monitor session attendance in real-time using the Conference Management System, adjusting room allocations if necessary.
- Attendees submit feedback on sessions and the overall conference through the Conference Management System.

-After the conference, the organizer accesses analytical tools within the Conference Management System to review attendance data, feedback, and other metrics to assess the conference's success and areas for improvement.

Outputs: Confirmation of successful attendee check-in, analytical reports, areas for improvement.

Exceptions: Technical issues with QR codes, insufficient data for analysis.

7) Domain Model as a UML diagram



8) Conclusion

This requirements analysis report has presented a framework for a system development request aimed at simplifying the management of academic, professional, and corporate conferences. Our main goal is to make every aspect of the system, from planning to post-event analysis, easier and automated to meet the needs of organizers, reviewers, presenters, and participants.

The findings we obtained during the requirements analysis process helped us understand the project objectives and scope better. By clearly identifying users' needs and functional requirements, we created a strong list of requirements. Although we faced some challenges during the analysis process, effective communication and additional research helped us overcome them.

In conclusion, the requirements outlined in this report will provide a solid foundation for subsequent steps such as project planning, design, and implementation. These requirements are crucial for guiding the project's progress and are essential achieving successful outcomes. Each of these steps will shape the project's progression and provide guidance in reaching the desired results.