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**Cupon ME – Event and Membership Management System**

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# **1.- Abstract**

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| **ES** |
| Este Proyecto tiene como propósito el desarrollo de un Sistema de Gestión de Eventos y Socios, Cuyo propósito es optimizar la organización de eventos mediante la administración de cupos, asignación de eventos, inscripción de participantes y control de socios. La solución se implementará como una plataforma web full-stack, utilizando Next.js y TailwindCSS en el front-end y ASP.NET Core Web API con SQL Server en el back-end. Este proyecto contempla además mecanismo de seguridad con JWT y roles, así como pruebas de calidad y documentación técnica, con el fin de garantizar la confiabilidad y la mantenibilidad del sistema. Con este trabajo busco demostrar competencias técnicas, de gestión y transversales del perfil de egreso, aportando una solución tecnológica pertinente al campo laboral. |

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| **EN** |
| This project aims to develop an Event and Member Management System, whose purpose is to optimize event organization through quota management, event allocation, participant registration, and member control. The solution will be implemented as a full-stack web platform, using Next.js and TailwindCSS for the front-end and ASP.NET Core Web API with SQL Server for the back-end. The project also includes security mechanisms with JWT and role-based access, as well as quality testing and technical documentation to ensure the system’s reliability and maintainability. Through this work, I seek to demonstrate technical, management, and transversal competencies from the graduation profile, providing a technological solution relevant to the professional field. |

# **2.- Personal Background**

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| **1. Personal Background** |
| Below is a table where you must fill in the requested information. |

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| **Student Name** | **Jose Esteban Romero Huentrepan** |
| **Rut (ID Number)** | **20.995.186-K** |
| **Degree Program** | **Computer Engineering** |
| **Campus** | **Duoc UC San Joaquin** |

# **3.- APT Project Description**

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| **2. APT Project Description** |
| In the description, you must briefly state the name of your APT project and the graduate profile competencies you will put into practice. If your degree program defines areas of performance, also mention which areas of performance the project is linked to. |

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| **Project Name** | *CUPON ME* |
| **Area(s) of Performance** | *Software Development (Front-End and Back-End), Database Management and Persistence, Information Security and Authentication, Software Project Management, Quality Assurance (QA), Systems Architecture and Design, Support and User Experience (UX/UI).* |
| **Competencies** | *In this development, I will apply technical competencies such as full-stack development, SQL Server database management, information security with roles and encryption, and quality assurance through testing and risk control. I will also strengthen project management skills, such as phased planning and technical documentation, along with transversal competencies including critical thinking, problem solving, independent work, effective communication, and technological adaptability.* |

# **4.- APT Project Justification**

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| **3. APT Project Justification** |
| Below are different fields that must be completed with the requested information. This section is intended for you to describe your project in detail and justify its relevance and appropriateness. |

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| **Relevance of the APT Project** | *The project itself arises as a response to the lack of comprehensive platforms that allow efficient management of event organization, seat control, seat assignment, and participant or member management. Currently, most of these tasks are carried out manually or through fragmented systems, which generates errors, loss of information, and difficulties in concurrency control.*  *The relevance of this project in the professional field lies in its integration of different areas of professional performance, such as web application development, database management, information security, and user experience, thereby providing a concrete technological solution to a real market need.*  *This problem is situated in the Chilean context, particularly in institutions, organizations, and companies that hold events and require a reliable system to manage registrations, coupon sales, and user profiles. This project directly impacts event organizers, members, and participants by facilitating management and improving the experience of attendees.*  *The value contribution of this project, although developed as a Capstone, is real and transferable to the professional field, as it delivers a tool that optimizes administrative processes, ensures data integrity, and promotes digital transformation in event management. This reinforces my role as a computer engineer, as a professional capable of creating technological solutions that address social and organizational issues.* |
| **Description of the APT Project** | *The objective of this project is to develop an* ***Event and Membership Management System*** *that enables integrated management of event creation, seat control, seat assignment, and user management. The problem will be addressed through a Full-Stack web platform with* ***Next.js, ASP.NET, and SQL Server****, incorporating roles, security, and quality testing to optimize processes that are currently manual and fragmented.* |
| **Relevance of the Project to the Graduate Profile** | *This project is relevant to the graduate profile since it integrates key competencies such as full-stack development, database management, information security, and quality assurance—all necessary to solve the challenges of event management. These skills in planning, documentation, and communication practically reflect my professional abilities as a graduate entering the labor market.* |
| **Relationship with Professional Interests** | *This project is directly related to my professional interests in software development and technological solutions management, by applying competencies in full-stack programming, database management, and security. It allows me to create a tool that optimizes event and membership management processes, providing real value. Its development contributes to consolidating my knowledge and strengthening my preparation for the professional field.* |
| **Feasibility of Developing the APT Project** | *This project is feasible to develop within the semester, considering the hours assigned to the subject and the technological resources available, such as development environments, frameworks, and databases. Additionally, it is facilitated by my prior programming experience and access to documentation and academic support.*  *Potential challenges include time management and component integration, which I will address through clear planning and the use of agile methodologies that allow progressive and controlled progress.* |

# **5.- Objectives**

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| **4. Objectives** |
| In this section, you must define the general and specific objectives of the APT Project. It is important to note that objectives should be stated clearly and concisely without further explanations; in other words, they must be self-explanatory. It is suggested to write them using an infinitive verb, as this requires specifying concrete actions. |

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| **General Objective** | *To develop an Event and Membership Management System that enables efficient administration of event creation, seat control, and user management through a secure and functional web platform.* |
| **Specific Objectives** | * *To design the system architecture integrating Front-End, Back-End, and Database.* * *To implement a Front-End with Next.js and TailwindCSS focused on usability.* * *To build an API in ASP.NET Core with role control and JWT-based security.* * *To manage data in SQL Server by applying transactions and concurrency control.* * *To perform unit and quality testing to validate correct functionality.* * *To document the system and processes to ensure maintainability.* |

# **6.- Methodology**

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| **5. Methodology** |
| In the following section, you must describe the methodology, specific to your discipline, that you will use to carry out the APT project described above, including the stages and working methods. |

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| Description of the Methodology |
| *In this project, I will apply an* ***agile methodology****, based on short iterations that allow planning, implementing, and validating progress effectively. I have considered the following stages:*   * ***Requirements Analysis and Gathering****: Identification of functional and non-functional requirements.* * ***Architecture and Database Design****: Definition of the system structure and modeling in SQL Server.* * ***Front-End and Back-End Development****: Implementation with Next.js, TailwindCSS, and ASP.NET Core Web API.* * ***Integration and Testing****: Execution of unit, functional, and quality tests.* * ***Documentation and Final Delivery****: Preparation of manuals and project closure.*   *This project will be carried out individually, meaning that all functions and responsibilities (Analysis, Design, Development, Testing, and Documentation) will be assumed by me as the student.* |

# **7.- Evidence**

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| **6. Evidence** |
| Below, describe which evidence will be evaluated in the progress report and in the final report of your APT project. These pieces of evidence must be agreed upon with your instructor. Evidence is understood as the products developed during the project whose purpose is to make visible or document how the work has been implemented. |

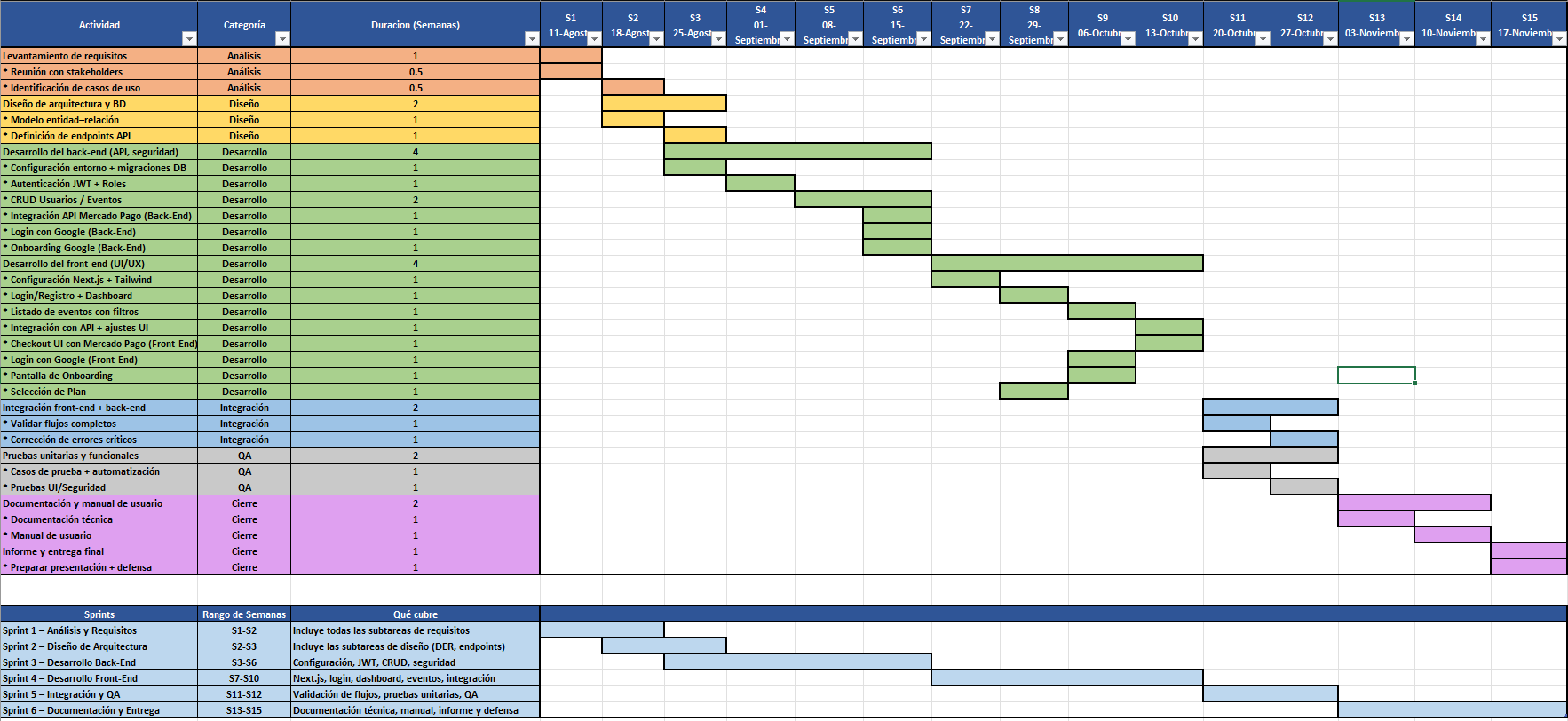
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Type of Evidence (Progress or Final)** |  |  | | --- | |  | | **Name of Evidence** | **Description** | **Justification** |
| **Progress** | |  | | --- | | **Requirements Document** |  |  | | --- | |  | | |  | | --- | | **Contains the functional and non-functional requirements gathered for the system.** |  |  | | --- | |  | | |  | | --- | | **Ensures that the project addresses the identified issues.** |  |  | | --- | |  | |
| **Progress** | |  | | --- | | **Architecture and Database Design** |  |  | | --- | |  | | |  | | --- | | **Architecture diagram and relational model in SQL Server.** |  |  | | --- | |  | | |  | | --- | | **Ensures the correct technical planning of the system.** |  |  | | --- | |  | |
| **Progress** | |  | | --- | | **Initial Functional Prototype** |  |  | | --- | |  | | |  | | --- | | **Preliminary version with login, roles, and basic event management.** |  |  | | --- | |  | | |  | | --- | | **Demonstrates progress and feasibility of development.** |  |  | | --- | |  | |
| **Final** | |  | | --- | | **Complete Web Platform** |  |  | | --- | |  | | |  | | --- | | **System implemented in Next.js, ASP.NET Core, and SQL Server with roles and security.** |  |  | | --- | |  | | |  | | --- | | **Reflects fulfillment of the project’s general objective.** |  |  | | --- | |  | |
| **Final** | |  | | --- | | **Testing and Risk Matrix** |  |  | | --- | |  | | |  | | --- | | **Record of unit tests, functional tests, and risk analysis.** |  |  | | --- | |  | | |  | | --- | | **Guarantees quality, security, and reliability of the system.** |  |  | | --- | |  | |
| **Final** | |  | | --- | | **Technical Documentation and User Manual** |  |  | | --- | |  | | |  | | --- | | **Final report with technical documentation and usage guide.** |  |  | | --- | |  | | **Facilitates maintainability and use of the system in a real or simulated context.** |

# **8.- APT Project Work Plan**

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| **7. APT Project Work Plan** |
| In the following table, define the planning of your APT Project according to the requirements. |

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| **APT Project Work Plan** | | | | | | |
| Competence or Units of Competenc | Name of Activities/Tasks | Description of Activities/Task | Resources | Duration | Responsible | Observations |
| |  | | --- | | *Full-Stack Application Development* |  |  | | --- | |  | | |  | | --- | | *Requirements Analysis and Gathering* |  |  | | --- | |  | | |  | | --- | | *Identify functional and non-functional system requirements.* |  |  | | --- | |  | | |  | | --- | | *PC, Internet, Duoc UC Guidelines* |  |  | | --- | |  | | *1 week* | *Jose Romero* | |  | | --- | | *Requirement accuracy may be difficult; facilitated by instructor feedback.* |  |  | | --- | |  | |
| |  | | --- | | *Systems Design and Database Management* |  |  | | --- | |  | | |  | | --- | | *Architecture and Database Design* |  |  | | --- | |  | | |  | | --- | | *Create diagrams and relational model in SQL Server.* |  |  | | --- | |  | | *SQL Server, Draw.io, Visual Studio Code.* | *1 week* | *Jose Romero* | |  | | --- | | *Facilitated by previous experience in database modeling.* |  |  | | --- | |  | |
| |  | | --- | | *Secure Software Development* |  |  | | --- | |  | | |  | | --- | | *Back-End Implementation* |  |  | | --- | |  | | |  | | --- | | *Build API in ASP.NET Core with JWT authentication and role management.* |  |  | | --- | |  | | *Visual Studio, .NET Core SDK, SQL Server.* | *2 weeks* | *Jose Romero* | |  | | --- | | *Security integration may be difficult, but solvable with iterative testing.* |  |  | | --- | |  | |
| |  | | --- | | *User Interface and User Experience Development* |  |  | | --- | |  | | |  | | --- | | *Front-End Implementation* |  |  | | --- | |  | | |  | | --- | | *Develop interface in Next.js and TailwindCSS for event and member management.* |  |  | | --- | |  | | *VS Code, Next.js, TailwindCSS.* | *2 weeks* | *Jose Romero* | |  | | --- | | *Easy due to prior knowledge of web technologies.* |  |  | | --- | |  | |
| |  | | --- | | *Quality Assurance* |  |  | | --- | |  | | |  | | --- | | *Testing and Validation* |  |  | | --- | |  | | |  | | --- | | *Conduct unit and functional tests and prepare risk matrix.* |  |  | | --- | |  | | |  | | --- | | *Postman, Jest, technical documentation* |  |  | | --- | |  | | *1 week* | *Jose Romero* | |  | | --- | | *Time constraints may affect coverage, but critical cases will be prioritized.* |  |  | | --- | |  | |
| |  | | --- | | *Technical Documentation and Project Management* |  |  | | --- | |  | | |  | | --- | | *Documentation Preparation* |  |  | | --- | |  | | |  | | --- | | *Draft technical documentation, user manual, and final report.* |  |  | | --- | |  | | |  | | --- | | *Word/Docs, Duoc UC templates* |  |  | | --- | |  | | *1 week* | *Jose Romero* | |  | | --- | | Facilitated by the provided templates. | |

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| **8. Gantt Chart** |
| Find a Gantt Chart format that suits you and organize the planned activities from the previous section, considering the period assigned for the development of your APT Project. You must maintain the timeline of the academic period across the three phases included in the Capstone Portfolio Course. |



# **9.- Conclusión individual**

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| **EN** |
| In conclusion, the development of this project allows me to apply and strengthen my knowledge in full-stack development, database management, security, and quality assurance. By integrating these competencies, I can design a technological solution that addresses a real problem in event management. This project not only helps me enhance my technical skills but also improves my planning, documentation, and adaptability, which are essential for my professional growth as a future computer engineer. |

# **10.- Reflexión**

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| **EN** |
| Working on this project will represent a valuable experience that connects my academic learning with professional practice. Through it, I understand the importance of integrating technical, management, and transversal competencies in order to create a complete solution. It also allows me to reflect on the challenges of time management, security implementation, and system integration, which are common in the IT industry, as well as the need for adaptability to new technologies. This process will strengthen my motivation and discipline to pursue a career in software development and will prepare me to face real-world challenges with confidence and responsibility. |

# **11.- References**

* Microsoft. (2024), ASP.NET Core documentation. <https://learn.microsoft.com/en-us/aspnet/core/?view=aspnetcore-9.0&WT.mc_id=dotnet-35129-website>
* Microsoft. (2024), SQL Server documentation. <https://learn.microsoft.com/en-us/sql/sql-server/?view=sql-server-ver17>
* Next.js. (2024), Next.js Documentation.

<https://nextjs.org/docs>

* Tailwind Labs, (2024). Tailwind CSS Documentation. Tailwind CSS. <https://tailwindcss.com/docs/installation/using-vite>
* Methodologies agile and Good Practices

<https://document360-com.translate.goog/blog/agile-documentation/?_x_tr_sl=en&_x_tr_tl=es&_x_tr_hl=es&_x_tr_pto=tc>