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1. **PART I**

| 1. Personal Background |
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| Student Name | Isabella Silva | Loreto Miño | Stephania Lucero | Patricia Nieves |
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| Degree Program | Computer Engineering |
| Campus | Puente Alto |

| 2. APT Project Description |
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| Project Name | The project is called “TallerConnect,” a software solution focused on the comprehensive management of automotive repair workshops. |
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| Area(s) of Performance | This project addresses performance areas related to requirements gathering and analysis, development and integration of technological solutions, database management, IT project management, and computer system security. |
| Competencies | In the development of TallerConnect, competencies applied include process analysis to propose IT solutions, project management following best practices, building data models and scalable architectures, software development using quality techniques, programming queries and routines in databases, implementing comprehensive systemic solutions, and applying security measures to address vulnerabilities. |

| 3. Rationale for the APT Project |
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| Relevance of the APT Project | * **Why did you choose this topic? Why is this topic relevant to the professional field of your degree?**  We chose this topic because we identified that many small automotive repair workshops lack efficient management systems, making it difficult to organize their services and attend to customers. It is relevant to the field of computer science because it allows us to apply our skills in software development and systems management to create technological solutions that improve efficiency and productivity for businesses. * **Where is the situation you are addressing located? What are the main characteristics of this place?**  The situation is mainly located in the Puente Alto municipality, Metropolitan Region. In this area, there are numerous small automotive workshops that do not have advanced management systems. These workshops often have limited resources, manual processes, and difficulties organizing branches, mechanics, services, customers, and vehicles, as well as managing work orders and online appointment bookings. * **Who is affected or impacted by the situation you are addressing?**  The project primarily impacts the owners and employees of small automotive workshops, who benefit from more organized and efficient management. It also affects the customers of these workshops, who can receive faster and more reliable service, with proper tracking of their vehicles and requested services. * **What would be the value-added contribution (real or simulated) of your APT Project to the professional and/or social context in which it would be implemented?**  The value of the TallerConnect project lies in providing a comprehensive, affordable, easy-to-use, and adaptable management system that allows the organization of branches, assignment of mechanics, management of services, customers, and vehicles, as well as handling work orders and online appointment bookings. This improves internal efficiency in the workshops, enhances the customer experience, and increases the competitiveness of small workshops compared to large dealerships, generating a positive impact both professionally and socially. |
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| APT Project Description | The TallerConnect project aims to develop a comprehensive management system for small automotive workshops, allowing the organization of branches, mechanics, services, customers, and vehicles, as well as managing work orders and online appointment bookings. The solution will address the problem through an easy-to-use, accessible, and adaptable web platform that improves internal workshop efficiency and enhances the customer experience. |
| Relevance of the Project to the Graduate Profile | The TallerConnect project is directly related to the graduate profile of the computer science program, as it involves applying knowledge in software development, databases, and systems management to solve real organizational problems. The selected competencies, such as requirements analysis, technological solution design, and project management, are essential to develop a functional and efficient platform that allows small automotive workshops to organize branches, mechanics, services, customers, and vehicles, as well as manage work orders and online appointment bookings, ensuring a real contribution to the professional and social context. |
| Relation to Professional Interests | The TallerConnect project is directly related to our professional interests, as we are interested in developing technological solutions that optimize processes, facilitate management, and improve organizational efficiency. Additionally, we are interested in information security, making the implementation of good security practices a key aspect of our project. Completing this APT Project will strengthen our skills in software development, system design, project management, and security measures, contributing to our development as well-rounded professionals ready to face real challenges in the field of computer science. |
| Feasibility of Developing the APT Project | We consider it feasible to develop the TallerConnect project during the 17 weeks of the semester, as the course is dedicated exclusively to the APT Project, allowing us to focus fully on its development. By working as a team, we can distribute tasks equitably according to each member’s strengths, optimizing project progress. Required materials, such as computers with internet access and software development tools, are available, and we can also use project management platforms like Trello or Jira to coordinate tasks and track progress. External factors facilitating development include the prior software development experience of some team members and the ability to obtain direct information from mechanics or industry professionals. Factors that could hinder development include team members’ availability due to other commitments; to mitigate this risk, we will maintain constant communication, set clear deadlines, hold regular meetings, and use collaborative tools such as Google Drive and Slack. |

1. **PART II**

| 4. Objectives |
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| General Objective | The general objective of the TallerConnect project is to develop a comprehensive management system for automotive workshops that allows the organization of branches, mechanics, services, customers, and vehicles, as well as managing work orders and online appointment bookings. This system aims to optimize internal workshop efficiency, improve the customer experience, and provide an accessible and adaptable technological tool that meets the real needs of the sector. |
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| Specific Objectives | Design the system architecture considering the management of branches, mechanics, services, customers, vehicles, and work orders.  Develop the software platform to manage online appointment bookings, track completed services, and automatically send emails to customers.  Implement security and access control features to protect customer and workshop information.  Enable the administrator to generate PDF reports on services, customers, and work orders to facilitate decision-making.  Conduct functional and usability testing to ensure the system meets requirements and is user-friendly. |

| 5. Methodology |
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| Description of the Methodology |
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| To address the identified problem, we will develop the TallerConnect project using a hybrid methodology, combining traditional and agile approaches. We will apply the traditional methodology in the documentation, analysis, and design phases, ensuring that the requirements, use cases, and system architecture are clearly defined. For the development and testing phases, we will use agile methodologies, allowing us to iterate quickly, adjust functionalities based on feedback, and ensure continuous progress.  All team members will work on both development and documentation; however, specific roles have been defined to optimize coordination: Patricia Nieves (APC) as Programmer Analyst, Isabella Silva (DBA) as Database Administrator, Loreto Miño (QA) in Quality and Testing, and Stephania Lucero (DG) as Designer. This organization allows tasks to be distributed according to strengths, maintains constant communication, and ensures that project objectives are met within the established timeline. |

| 6. Evidence |
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| **Type of Evidence (Progress or Final)** | **Name of Evidence** | **Description** | **Justification** |
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| Final | Project Charter | Initial document that defines objectives, scope, responsible parties, and resources. | Formalizes and initiates the project, aligning expectations between the team and instructor. |
| Final | Gantt Chart | Schedule detailing project activities, timelines, and responsible parties. | Facilitates planning and monitoring of progress across different phases. |
| Final | Extended Use Case Document | Functional specifications of how users interact with the system. | Ensures correct understanding of functional requirements. |
| Final | Mockups Document | Visual prototypes of the system’s main screens. | Allows validation of the user interface and experience before development. |
| Final | WBS (Work Breakdown Structure) | Document that breaks down the project work into smaller, manageable components. | Provides a clear structure of tasks, facilitates assignment of responsibilities, and allows cost projection for each project phase. |
| Final | Requirements Spreadsheet | Detailed record of functional and non-functional system requirements. | Ensures traceability and control over the defined requirements. |
| Final | Sprint Progress Document | Sprint reports including development status, deliverables, and retrospectives. | Shows the iterative progress of the project and outlines the plan for the next sprint. |
| Final | SRS (Software Requirements Specification) | Formal document compiling agreed and validated requirements. | Serves as the foundation for software design and development, ensuring consistency and completeness. |
| Final | Project Closure Report | Document that formalizes the project’s completion, recording deliverables and results. | Officially closes the project, validates achieved objectives, and records lessons learned. |

| 7. Work Plan |
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| **APT Project Work Plan** | | | | | | |
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| Competency or Competency Units | Name of Activities/Tasks | Description of Activities/Tasks | Resources | Duration | Responsible | Observations |
| Manage IT projects, offering alternatives for decision-making according to organizational requirements | Planning Phase | Preparation of the project charter, approval, definition of general requirements, and team organization. | Management documents, project charter template, Trello/Slack. | W1–W2 (2 weeks) | Isabella Silva | Risk: unclear requirements; Facilitator: active client participation |
| Build data models to support organizational requirements according to a defined and scalable design | Analysis and Design Phase | Capture of specific requirements, WBS, architecture, use cases, mockups, SRS proposal, and database model. | Document templates, modeling tool (Figma), MySQL Workbench | W3–W5 (3 weeks) | Stephania Lucero, | Risk: changes in requirements; Facilitator: weekly meetings with the client |
| Develop a software solution using techniques that systematize the development and maintenance process, ensuring the achievement of objectives | Development of Functional Modules (Sprints) | Construction of modules: Administrator, Branches, Customers, Vehicles, Orders, Appointments, and Reports. | Visual Studio, Django, Git, GitHub | W6–W12 (7 weeks) | Patricia Nieves | Risk: delays due to integration; Facilitator: version control and agile methodology |
| Perform certification testing of both products and processes using industry-defined best practices | Testing and Quality Control | Setup of testing environment, module testing, user testing, adjustments, and corrections. | Pytest | W13–W15 (3 weeks) | Loreto Miño | Risk: user resistance; Facilitator: early feedback |
| Manage IT projects, offering alternatives for decision-making according to organizational requirements | Project Implementation and Closure | Migration to production, user training, delivery of manuals, project closure report, and final submission. | Server, user/technical manuals | W16–W17 (2 weeks) | Isabella Silva | Risk: user learning curve; Facilitator: hands-on training |

| 8. [Carta Gantt](https://docs.google.com/spreadsheets/d/1G9_Sn2D8LggS0rHOQ-b27duMuXgxtcHu/edit?gid=2058357876#gid=2058357876) |
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| **Activity** | **Time** | | | | | | | | | | | | | | | | |
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| **Phase 1** | | | | | **Phase 2** | | | | | | | **Phase 3** | | | | |
| **W1** | **W2** | **W3** | **W4** | **W5** | **W6** | **W7** | **W8** | **W9** | **W10** | **W11** | **W12** | **W13** | **W14** | **W15** | **W16** | **W17** |
| **Planning Phase** |  | | | | | | | | | | | | | | | | |
| **Project Charter** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Approval of the Charter** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Definition of General Requirements** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Team Organization** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Analysis and Design Phase** |  | | | | | | | | | | | | | | | | |
| **Capture of Specific Requirements** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **WBS Document** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Software Architecture Document** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Use Case Document** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Prototypes (Mockups)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **SRS Proposal** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Database Design (Modeling)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Development Phase** |  | | | | | | | | | | | | | | | | |
| **Sprint 1** |  | | | | | | | | | | | | | | | | |
| **Development Environment Setup** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Creation of Database Table Scripts** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **System Administrator Module** |  | | | | | | | | | | | | | | | | |
| **Creation and management of administrators and mechanics** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Access to general reports** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Branches Module** |  | | | | | | | | | | | | | | | | |
| **CRUD operations for branches** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Association of customers, mechanics, and work orders** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Sprint 2** |  | | | | | | | | | | | | | | | | |
| **Customers and Vehicles Module** |  | | | | | | | | | | | | | | | | |
| **Customers: registration and consultation** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Vehicles: registration and association with customers** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Maintenance history (query by vehicle and customer)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Work Orders Module** |  | | | | | | | | | | | | | | | | |
| **Creation of work orders** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Assignment to mechanics** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Statuses (pending, in repair, completed, delivered)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Labor costs** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Automatic email notifications to customers when order status changes** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Sprint 3** |  | | | | | | | | | | | | | | | | |
| **Appointments Module** |  | | | | | | | | | | | | | | | | |
| **Registration and management of customer appointments** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Available schedules: branch-specific agenda management** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Appointment statuses (pending, confirmed, canceled)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Automatic notifications** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Reports Module** |  | | | | | | | | | | | | | | | | |
| **Work orders by branch** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Completed vs. pending orders** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Appointments by period** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Labor income** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Mechanic productivity** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Most requested services** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Testing and QA Phase** |  | | | | | | | | | | | | | | | | |
| **Setup of testing environment** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Initial functional testing by module** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **User testing (Administrator and Mechanics)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Bug fixes and final adjustments** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Implementation and Closure Phase** |  | | | | | | | | | | | | | | | | |
| **System migration to production** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **User training (Administrator and Mechanics)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Delivery of user manuals and technical manuals** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Project closure report** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Final submission** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **End of Project** |  | | | | | | | | | | | | | | | | |

| 9. Abstract |
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| The TallerConnect project aims to develop a comprehensive management system for small automotive workshops. The system allows the organization of branches, mechanics, services, customers, and vehicles, as well as the management of work orders and online appointment bookings. The project addresses the inefficiencies present in small workshops that lack advanced management tools, improving internal processes, enhancing customer experience, and increasing competitiveness. A hybrid methodology combining traditional and agile approaches is applied to ensure clear requirement definition, iterative development, and continuous feedback. The platform is designed to be accessible, scalable, and secure, providing a practical solution that applies computer engineering competencies in software development, database management, and project coordination. |
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| 10. Conclusions |
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| **Isabella Silva:** During the initial phases of planning, analysis, and design of the TallerConnect project, I have strengthened my ability to capture and organize project requirements effectively. I have learned how to document processes clearly and coordinate with team members to ensure alignment. This experience has highlighted the importance of early planning and structured design in achieving a successful project outcome.  **Loreto Miño:** Participating in the planning, analysis, and design phases of the TallerConnect project has allowed me to focus on quality assurance from the very beginning. I have learned to identify potential risks and suggest improvements in the design stage, which will help ensure smoother testing and higher system reliability in future phases.  **Stephania Lucero:** Being part of the early stages of the TallerConnect project has helped me develop my skills in system design and interface planning. Creating mockups and designing the architecture has emphasized the importance of usability and user experience. I have also learned to collaborate closely with my teammates to integrate feedback effectively.  **Patricia Nieves:** Working on the planning, analysis, and design of the TallerConnect project has enhanced my understanding of project management and software development processes. I have realized the value of detailed planning, task distribution, and communication within the team to prevent issues during later development phases. This experience prepares me to approach implementation with a clear strategy. |
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| 11. Reflection |
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| Working on the TallerConnect project during the initial phases of planning, analysis, and design has been a valuable experience for our team. So far, we have learned the importance of clearly defining requirements, organizing the team, and designing a solid system architecture before moving on to implementation. These initial phases help us anticipate potential problems, improve communication among team members, and ensure the project has a structured foundation. We have also been able to identify strengths and areas for improvement in our approach, which will help optimize future development and testing phases. This stage has reinforced our understanding of strategic planning and system analysis and motivates us to apply best practices throughout all project stages. |
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