# Image of EZTechMovie Company Logo

INT 499: Information Technology Capstone Project

Dr. Joseph Issa

System Analysis and Project Plan

EZTechMovie Customer Data

Group 1

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March 05, 2024

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**Hint:** In this template, you will find purple and orange “hint” boxes designed to help you with the final project. Please delete all hints before finalizing your project.

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**System Analysis and Project Plan**

### Introduction

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| EZTechMovie is a dynamic player in the online movie streaming and rental industry, renowned for its innovative approach to delivering high-quality content to its ever-expanding subscriber base. With headquarters in San Diego, California, EZTechMovie has carved a niche for itself since its inception in April 2009 under the visionary leadership of Founder and CEO Pat Jones. The company prides itself on offering a diverse range of subscription plans tailored to meet the evolving needs of its customers, coupled with a commitment to providing a seamless and enjoyable streaming experience. As EZTechMovie embarks on this project to develop the EZTechMovieDB, it seeks to streamline its operations, enhance customer management, and lay a foundation for accommodating its projected exponential growth in the coming years. |

### Decision-Makers

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| Project Manager: Shondra Nichols  Role: The Project Manager is the primary point of contact for coordinating and overseeing all aspects of the EZTechMovieDB project.  Accountability: Responsible for project planning, scheduling, resource allocation, risk management, and ensuring timely delivery of project milestones.  Database Administrator: Charity Moritz  Role: The Database Administrator (DBA) is tasked with designing, implementing, and maintaining the EZTechMovieDB, ensuring its efficiency, reliability, and security.  Accountability: Accountable for database schema design, data modeling, performance tuning, backup and recovery strategies, and enforcing data integrity.  Software Developer: Ingrid Jean-Philippe  Role: The Software Developer translates project requirements into functional software components, including the user interface and backend logic.  Accountability: Accountable for coding, testing, debugging, and implementing software modules according to specifications, adhering to best coding practices and standards.  Business Analyst: Shondra Nichols  Role: The Business Analyst liaises between the technical team and stakeholders, analyzing business requirements and ensuring alignment with project objectives.  Accountability: Accountable for gathering, documenting, and analyzing business requirements, facilitating stakeholder communication, and validating deliverables against business needs.  Quality Assurance Engineer: Charity Moritz  Role: The Quality Assurance Engineer is responsible for ensuring the reliability, functionality, and usability of the EZTechMovieDB through rigorous testing procedures.  Accountability: Accountable for creating test plans, executing test cases, identifying defects, and ensuring the overall quality of the software application.  System Administrator: Shondra Nichols  Role: The System Administrator oversees the deployment, configuration, and maintenance of the infrastructure required to host and support the EZTechMovieDB.  Accountability: Accountable for server setup, network configuration, security management, and system monitoring to ensure optimal performance and availability.  Stakeholders:  CEO (Pat Jones): Provides strategic direction and support for the project, ensuring alignment with company goals and objectives.  Finance Department: Provides budgetary oversight and financial support for project implementation.  Customer Service Department: Offers insights into customer needs and requirements, guiding the development of customer management functionalities within EZTechMovieDB. |

CEO

Project Manager

Business Analyst

Database Administrator

Quality Assurance Engineer

Software Developer

System Administrator

### Project Description

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| The EZTechMovieDB project aims to develop a comprehensive MySQL relational database system tailored to meet the evolving needs of EZTechMovie, a prominent online movie streaming and rental company based in San Diego, California. This database, named EZTechMovieDB, will serve as the central repository for storing and managing customer data and information, facilitating streamlined administrative tasks such as customer account management, plan modifications, and customer search functionalities. The project seeks to enhance operational efficiency, improve customer management processes, and lay a foundation to accommodate the projected growth of EZTechMovie's subscriber base. |

### Business Case

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| EZTechMovie Relevance: EZTechMovie's rapid growth and expansion necessitate a more efficient and scalable solution for managing customer data and information.  Existing Technology: Limited web ordering system supplemented by phone ordering; manual customer management processes.  Problems and Concerns: Manual customer management processes prone to errors and inefficiencies; lack of centralized database hindering data access and analysis; scalability challenges with increasing customer base.  Solution Justification: EZTechMovieDB will streamline administrative tasks, enhance customer management processes, improve data accessibility and analysis, and support the company's projected growth trajectory. |

### Target Audience

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| The EZTechMovieDB project primarily targets customers and customer service representatives. Customers, including individual subscribers, families, and DVD users, will use the system to manage their accounts, update subscription plans, and access content. They may also seek technical support through the platform. Customer service representatives, including support agents and technical support specialists, will utilize the EZTechMovieDB system to assist customers with account management, subscription inquiries, and technical issues. Understanding customer needs is essential for designing a user-friendly system that enhances the overall streaming experience and fosters customer satisfaction. |

### The Problem

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| EZTechMovie currently relies on manual processes for customer management, leading to inefficiencies, errors, and scalability challenges. Lack of a centralized database hinders data accessibility and analysis, impacting operational efficiency and customer service quality. |

### Project Scope

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| In Scope:  Development of EZTechMovieDB relational database.  Implementation of administrative functionalities (e.g., customer account management, plan modifications).  Integration with existing systems (web ordering, customer service).  Out of Scope:  Overhaul of existing web ordering system.  Development of customer-facing applications. |

### Prerequisites

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| Completion of requirements gathering and analysis.  Approval of project budget and resources.  Availability of necessary hardware and software infrastructure. |

### Assumptions

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| Existing customer data will be available for migration.  Adequate resources and budget allocated for project implementation.  Collaboration and support from relevant stakeholders (e.g., management, IT department). |

### Project Constraints

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| Budget constraints may limit scope and resources.  Time constraints for project completion.  Technical constraints related to infrastructure and compatibility. |

### Project Schedule, Deliverables, and Budget

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| Prepare reports to show scheduling criteria, work break down, and other analyses listed below using project management tools as appropriate. Determine task assignments and how the revisions are tracked and kept. Reports can be placed in appendix, or within the SAPP content at the discretion of your group. |

* + 1. Overall schedule

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| Week 1  Team Charter (Due Feb 5th)  Week 2  Complete Project Status Report (Due Feb 12th )  Complete Sections 1-14 of SAPP document (Due Feb 12th )  Week 3  Complete Sections 1-20 of SAPP document (Due Feb 19th )  Project Status Report (Due Feb 19th )  Week 4  Project Status report (Due Feb 26th )  Week 5  Part IV – ePortfolio Requirement (Due Mar 4th ) |

* + 1. Work Breakdown Schedule

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| |  |  |  |  | | --- | --- | --- | --- | | [Name](#Name" \o "List each of your team members.) | [Phone #](#Phone" \o "List each team member's phone number.) | [Email](#Email" \o "List each team member's email address.) | [Time Zone & Availability](#TimeZone" \o "List each team member's time zone (i.e. PT, ET) and availability during the week (i.e. Mon-Sat 9-11pm).) | | Ingrid Jean-Philippe | 401-419-3324 | [Ingridphilippe11@gmail.com](mailto:Ingridphilippe11@gmail.com) | EST and available Monday-Sundayafter 6:30 PM. | | Charity Moritz | 901-502-2986 | [Kornaki.charity@gmail.com](mailto:Kornaki.charity@gmail.com) | CST typically available in theevenings. | | Shondra Nichols | 662-579-5175 | [ShondraSNichols@gmail.com](mailto:ShondraSNichols@gmail.com) | MT & Available Sunday – Thursdayafter 6 PM. | |

* + 1. List of Deliverables

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| The accurate and highly secure preliminary design of a MySQL database.  A fully functional MySQL database that satisfies project criteria.  A properly filled-out SAPP document. |

* + 1. Financial Analysis

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| Cost Benefit Analysis:  Initial Investment:  Hardware: $10,000  Software: $5,000  Development Resources: $20,000  Total Initial Investment: $35,000  AWS Cloud Pricing:  RDS MySQL Cost (Monthly): $7.104 USD/hour x 730 hours/month = $5,185.92 USD  Storage (10TB): $0.138 USD/GB-month = $1,413.12 USD  Backup Storage (25TB): $0.095 USD per GB-month = $2,432.00 USD  Total AWS Monthly Cost: $9,031.04 USD  Return on Investment (ROI):  ROI Calculation:  ROI = ((Net Profit / Total Investment) \* 100)  Net Profit = (Total Revenue - Total Costs)  Assumptions for ROI Calculation:  Total Revenue (Annual): $100,000  Total Costs (Annual): $8,000 (Operational) + $35,000 (Initial Investment) = $43,000  Net Profit:  Net Profit = $100,000 (Revenue) - $43,000 (Costs) = $57,000  ROI:  ROI = (($57,000 / $35,000) \* 100) ≈ 163%  Break-even Analysis:  Break-even Point Calculation:  Break-even Point (in units) = Total Fixed Costs / (Price per unit - Variable Cost per unit)  Assumptions for Break-even Analysis:  Price per unit: Average revenue per customer (monthly): $10  Variable Cost per unit: $2  Total Fixed Costs: $35,000 (Initial Investment)  Break-even Point:  Break-even Point = $35,000 / ($10 - $2) ≈ 4,375 customers |

* + 1. Labor Cost

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| Labor Hours Allocation and Hourly Wages:  Project Manager:  Planning and Coordination: 100 hours x $50/hour = $5,000  Resource Allocation: 50 hours x $45/hour = $2,250  Risk Management: 30 hours x $55/hour = $1,650  Total: $8,900  Database Administrator:  Database Design: 80 hours x $60/hour = $4,800  Implementation: 100 hours x $55/hour = $5,500  Maintenance: 40 hours x $65/hour = $2,600  Total: $12,900  Software Developer:  Coding and Testing: 200 hours x $50/hour = $10,000  Integration: 80 hours x $45/hour = $3,600  Debugging: 40 hours x $55/hour = $2,200  Total: $15,800  Business Analyst:  Requirement Gathering: 80 hours x $55/hour = $4,400  Stakeholder Communication: 60 hours x $50/hour = $3,000  Documentation: 40 hours x $60/hour = $2,400  Total: $9,800  Quality Assurance Engineer:  Test Case Development: 80 hours x $50/hour = $4,000  Testing Execution: 120 hours x $45/hour = $5,400  Defect Reporting: 40 hours x $55/hour = $2,200  Total: $11,600  System Administrator:  Infrastructure Setup: 100 hours x $55/hour = $5,500  Security Configuration: 60 hours x $50/hour = $3,000  Maintenance: 40 hours x $60/hour = $2,400  Total: $10,900  Total Labor Costs: $69,500 |

### Systems Analysis

* + 1. Existing Procedures and Systems
    2. The Physical Description

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| Our current systems are housed in separate databases utilizing various management systems. Originally, we operated solely as a DVD rental service before the rise of video streaming. As we transitioned to offering streaming services, we adopted different database management systems. To accommodate both legacy DVD rentals and streaming services, we've integrated our systems, allowing them to share resources. This integration has resulted in a hierarchical system design, where resources are shared through hierarchical paths. |

* + 1. The Conceptual Design

Include a diagram of the existing system. Refer to your resources from PRM 300 and other previous courses as needed.

DVD Rentals

Streaming Database

Content Management Interface

Customer Management Interface

* + 1. Problems Identified – An Analysis

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| The existing setup of separate legacy and streaming systems poses several challenges for EZTechMovie. Firstly, this fragmentation creates an inefficient data management environment, risking data redundancy. For instance, when a legacy client wants to subscribe to updated offerings, a separate account is required, potentially leading to their information being dispersed across databases sharing the same resources. This duplication of client data not only adds complexity but also strains computing and storage resources unnecessarily.  Moreover, the hierarchical design of the current system complicates database management. Establishing relationships between different data sources is challenging as it requires navigating through root nodes. This setup makes administration and data management more arduous.  To address these issues, EZTechMovie needs a more streamlined approach. Transitioning to a relational database management system like MySQL would optimize resource utilization and provide advanced administrative tools for data management. This transition would enhance operational efficiency and improve customer service quality by centralizing data, facilitating easier accessibility, and enabling more analysis capabilities. |

### Project Goals and Objectives

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| The project aims to:  Streamline administrative tasks related to customer management.  Improve data accessibility and analysis capabilities.  Enhance customer service quality and operational efficiency. |

### Application Requirements

* + 1. Business Requirements

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| The proposed changes in transitioning to a relational database management system (RDBMS) like MySQL will bring several benefits to EZTechMovie:  Improved Operational Efficiency: Centralizing customer data within a single database will streamline administrative tasks such as account management, plan modifications, and customer inquiries. This will lead to faster response times and smoother operations, ultimately enhancing overall efficiency.  Enhanced Data Management: A centralized database will mitigate the risk of data redundancy and inconsistency. By eliminating duplicate data entries and ensuring data integrity, EZTechMovie can maintain accurate and up-to-date records, reducing errors and improving decision-making processes.  Scalability and Flexibility: RDBMS platforms like MySQL offer scalability features that can accommodate EZTechMovie's projected growth. As the subscriber base expands, the database can easily scale to handle increased data volume and user demands without compromising performance.  Advanced Analytical Capabilities: MySQL provides analytical tools and reporting functionalities, enabling EZTechMovie to gain valuable insights into customer behavior, preferences, and trends. This data-driven approach can inform strategic decision-making, content curation, and marketing initiatives, ultimately driving business growth.  Reference:  Oracle. (n.d.). Benefits of Using MySQL. Retrieved from <https://www.mysql.com/why-mysql/benefits/> |

* + 1. Functional Requirements

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| User Authentication: Implement secure authentication mechanisms to ensure only authorized personnel can access and modify customer data.  Customer Management Interface: Develop a user-friendly interface for managing customer accounts, including options for plan modifications, account updates, and subscription cancellations.  Search Functionality: Incorporate search capabilities allowing administrators to quickly locate customer records based on customer ID, name, or subscription plan.  Plan Modification: Enable customers to upgrade or downgrade their subscription plans easily through the platform, with real-time updates in the database.  Data Integrity and Validation: Implement data validation checks to ensure the accuracy and consistency of customer information, preventing invalid or incomplete data entries.  Security Measures: Implement encryption protocols and access controls to safeguard sensitive customer data and comply with data privacy regulations. |

* + 1. Technical Requirements

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| System Requirements: Ensure compatibility with existing hardware infrastructure and allocate resources for database deployment, including CPU, memory, and storage.  Software Requirements: Install and configure the MySQL database management system along with any necessary software dependencies for application development and integration.  Server Requirements: Set up dedicated servers or cloud instances to host the MySQL database, ensuring adequate performance, reliability, and scalability.  Backup and Recovery: Implement automated backup procedures to regularly backup database contents and establish recovery mechanisms to restore data in the event of system failures or data corruption.  Security Measures: Enforce stringent security protocols, including encryption, authentication, and access controls, to protect customer data from unauthorized access or breaches.  Scalability and Performance: Design the database architecture to accommodate future growth and optimize query performance through indexing, caching, and query optimization techniques.  References:  Oracle. (n.d.). MySQL Technical Specifications. Retrieved from https://dev.mysql.com/doc/refman/8.0/en/technical-specifications.html |

### Solution

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* + 1. Solution Description

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| Our team recommends developing the EZTechMovieDB using MySQL as the relational database management system. MySQL offers features for managing customer data, such as flexible schema design, efficient data retrieval, and vigorous data integrity enforcement. The database will accommodate current and future customer needs, including plan upgrades/downgrades, account management, and content preferences. |

* + 1. Alternative Solutions

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| We considered using other database management systems such as PostgreSQL and MongoDB. However, PostgreSQL's complexity and MongoDB's document-oriented nature were not ideal for our relational data model and transaction requirements. |

* + 1. Justification for Recommended Solution

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| MySQL was chosen for its proven performance, scalability, and compatibility with existing systems. Its widespread adoption and strong community support ensure long-term viability for the EZTechMovieDB project. |

### Benefits

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| The implementation of EZTechMovieDB will bring several benefits, including:  Improved customer data management and access  Enhanced customer service through faster query resolution  Streamlined account management processes  Better scalability to accommodate future growth |

### Project Risks

* + 1. Operational Risks

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| Operational risks include data security breaches and system downtime. To mitigate these risks, we will implement security measures, regular backups, and monitoring tools to detect and address any issues promptly. |
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* + 1. Development Risks

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| Development risks include delays in implementation and compatibility issues with existing systems. We will mitigate these risks by following agile development practices, conducting thorough testing, and maintaining open communication with stakeholders. |

* + 1. Risk Log

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| The Risk Log will be maintained throughout the project to document, and track identified risks, their potential impact, and mitigation strategies. Regular reviews of the Risk Log will be conducted to ensure all risks are appropriately managed. |

### Solution Design

* + 1. Conceptual Design

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| Entity relation diagrams and other conceptual designs will be used to visually represent the database structure and relationships between entities. |

* + 1. Detailed Application Design

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| The application will be designed to allow administrators to easily add, update, and manage movie data in the database. User-friendly interfaces and clear error messaging will enhance usability. |

### Project Processes and Results

* + 1. Communication Process

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| Team members will communicate regularly through team meetings, email updates, and project management tools. Monthly progress reports will be provided to management. |

* + 1. Change Control Process

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| A Change Control Board will be established to review and approve any requested changes to the project scope or requirements. Change requests will be documented and tracked using a standardized form. |

* + 1. Escalation Procedures

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| Escalation procedures will be used to address high-impact issues that may affect project timelines or deliverables. The procedures will define escalation priorities and the appropriate actions to be taken. |

* + 1. Planned Schedule vs. Actual Performance

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| A detailed project schedule will be created and updated regularly to track progress against planned milestones and deliverables. The schedule is updated weekly in Trello. |

* + 1. Budget vs. Actual Expenses (if applicable)

Refer to Financial Analysis

### Product Implementation

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| Discuss how you would implement and test your database within the EZTechMovie Environment. |

* + 1. Scope of Product

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| The scope of the product includes developing the EZTechMovieDB, testing its functionality, and deploying it within the EZTechMovie environment. |

* + 1. Development Environment

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| The development environment will include MySQL as the database management system, along with programming languages and frameworks for application development. |

* + 1. Quality Assurance and Defect Tracking

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| Quality assurance processes will be implemented to ensure the database meets specified requirements. Defect tracking tools will be used to identify and address any issues. |

* + 1. Deployment

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| The EZTechMovieDB will be deployed in stages, starting with a pilot phase to test functionality and gather feedback before full deployment. |

* + 1. User Guide

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| A user guide will be created to provide instructions on how to use the EZTechMovieDB, including data entry, retrieval, and management. |

* + 1. Release Notes

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| Release notes will be prepared to document changes and updates made to the EZTechMovieDB during development and deployment. |

### Future Action Plan (if any)

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| As we move forward with the EZTechMovieDB project, our team will focus on several key areas to ensure the successful completion and implementation of the database. First, we will finalize the development of the EZTechMovieDB, ensuring that all functionalities are implemented according to the project requirements. Thorough testing and quality assurance will be conducted to identify and resolve any issues or bugs, ensuring the database meets the quality standards outlined in the project requirements. We will engage users and stakeholders in user acceptance testing to validate that the database meets their needs and expectations, incorporating feedback to make any necessary improvements. Additionally, we will develop training materials and documentation to support users in effectively utilizing the new database. We will plan and execute the implementation and deployment of the EZTechMovieDB in the production environment, ensuring a smooth transition from the old system to the new database. Monitoring processes will be established to track the performance and usage of the database post-implementation, with ongoing support provided to users and any issues addressed promptly. Finally, we will collect feedback from users and stakeholder’s post-implementation to identify areas for improvement, and continuously update and enhance the database to meet evolving business needs. Through these efforts, we aim to successfully complete the project and deliver a high-quality database that meets the needs of EZTechMovie and its customers. |

### Lessons Learned

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| In reflecting on the EZTechMovieDB project, we have identified several key lessons learned across various categories. Regarding planning, we found that our initial timelines could have been more optimistic, leading to delays in the project schedule. I rated our performance in this area as needing improvement, as better estimation techniques and a more thorough assessment of project complexities could have prevented these delays. The timeline was significantly longer than planned, indicating the need for more realistic planning in future projects. To improve in the future, we will conduct more detailed project planning, including a thorough assessment of project requirements and potential challenges.  Regarding systems analysis, we rated our performance as good, as we were able to identify and document project requirements accurately. In terms of design, we rated our performance as good. The integration process was more complex than planned, highlighting the need for a more detailed design phase, but we overcame those challenges. These lessons underscore the importance of realistic planning, thorough systems analysis, and detailed design in ensuring the successful completion of IT projects. By applying these lessons to future projects, we aim to improve project outcomes and deliver high-quality solutions that meet stakeholder needs. |

### Project Acceptance Criteria

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| As a team, we have deemed the EZTechMovieDB project successful based on several key factors. The fully functional database allows administrators to manage customer information efficiently, including adding, deleting, and modifying data. This functionality meets our project objectives and provides a solid foundation for future growth. The database performance has exceeded our expectations, effectively handled the current customer load, and demonstrated scalability for future growth. This ensures that EZTechMovie can continue to provide high-quality service to its customers as its user base expands.  Furthermore, the database's reliability and usability have been outstanding, with a secure and intuitive interface that meets the needs of both administrators and customers. Finally, the project was completed within budget, demonstrating our team's practical management of costs. Overall, the successful completion of the EZTechMovieDB project has provided EZTechMovie with a robust and efficient database system that will support its growth and success in the future. |

# References

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# Appendix

Include the final Project Status Report in this appendix. You may also include any other items your group wishes to include as an appendix, such as project management reports, communication forms, etc. For help, see this [Guide on Tables, Images, and Appendices](http://writingcenter.ashford.edu/tables-images-appendices).