Database System Overview

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Database System Overview (Week 1)

The purpose of this assignment is to create a course of action to develop and implement a purposeful database management system for a fictional company of our choice. Throughout my time at Colorado Technical University, I've developed a fictional bookstore called Heartland Escapes. Previous projects include a migration plan from an on-premises system to an Azure Cloud environment, a system networking plan for cloud computing, and a system security management and maintenance plan. I think it's only natural to continue working with this fictional store here and develop a purposeful data environment for this business as well.

As stated previously, Heartland Escapes is a bookstore in Lincoln Nebraska with two locations. They have seen recent growth and consumer interest due to their growing presence in social media. Their business model is heavily centered around hosting events at their stores, including author meet and greets, summer reading programs, holiday-oriented events (like scary story readings on Halloween, Santa reads Christmas stories), and many others. Because of their marketing of these events, they've received a lot of local publicity and foot traffic in store. With the growth they've seen over the past year, Heartland Escapes would like to expand to two neighboring cities in Nebraska with a new location in Omaha Nebraska, and a new location in Beatrice Nebraska. To perform this feat, they have the desire to upgrade their existing technology to better support their employees and customers, which includes and improvement to their existing database management system and the development of an e-commerce marketplace.

Business Environment

Heartland Escapes started out as a form of community necessity. The public libraries were well stocked with books but lacked in providing young people with the spark to enjoy reading. The owners of the company are avid book readers themselves and have always enjoyed sharing their literary journeys

with other like-minded individuals. Heartland Escapes mission is to be a shared “Escape” for others to enjoy captivating stories and their love for books with each other. The first store opened in 2010, and it was a slow start to get people in the door with competing companies like Barnes and Noble around. As people began seeing the benefits of community-oriented storytelling, traction accrued to the point that Heartland Escapes had the financial stability to open a second store in 2017. The first year of the pandemic was difficult for the company, but after the guidelines loosened and the public started feeling more comfortable leaving their homes, business caught its stride once again. Since then, Heartland Escapes has seen nothing but growth and enthusiastic customers.

Both stores are equipped with 12 staff, 2 assistant managers, one manager, and one of the owners acts as a general manager of both locations. The other original owner is responsible for human resources and supports the GM with day-to-day operations. There are two additional stakeholders that fit the roles of chief financial officer and chief information officer.

When Heartland Escapes started their journey, they developed their own point-of-sale system and inventory management API. Married to these systems are the Accounting Database and the Inventory Database. Additionally, they have a public facing website that users can search store inventory with and see store hours and event schedules. These home-grown systems are all still being used to this day. As their store has risen in popularity, Heartland Escapes junior and senior staff have all began to feel growing pains. These pains include:

1. Customer Management
2. Inventory Control
3. System Documentation
4. Lack of Online Capabilities
5. Lack of Events Management

As stated previously, Heartland Escapes has the desire to offer e-commerce services to their customers, which will require customer data storage and management along with more robust inventory controls. In previous meetings with Heartland Escapes senior management, they've expressed the desire to offer subscription boxes to interested customers that contain Heartland Escapes books and merchandise. Additionally, the pandemic made stakeholders incredibly nervous. Foot traffic through the store is the main avenue through which Heartland Escapes makes its revenue. If customers had the ability to order books online, that may have lessened the financial impact of the pandemic on their stores.

Advancement in inventory controls would allow for optimal stock of products and automated re-stocking of books. With the impending expansion of their business, these functions will be crucial to maintain between all four stores. The original in-house software and database systems are not well documented, which makes maintenance and upgrades difficult to perform.

Because their business model is very event based, Heartland Escapes desires the ability to post events more easily on their website. As it is now, customers need to subscribe to Heartland Escapes social media channels to stay up to date with up-coming events. Although posts to their social media profiles will continue, having a central place to see all event schedules for each store would be incredibly helpful to their customers when Heartland Escapes opens their two new locations.

Database Goals and Objectives

A Database Management System's purpose is to support and serve the applications through which Heartland Escapes users interact. This is inclusive between all applications and individuals, administrators, customers, and staff. Our database goals for Heartland Escapes are to support their expansion interests in the best way we can. With this in mind, here is our list of objectives as database administrators:

1. Support an enhanced customer management system.
2. Support for subscription-based product management.
3. Support a flexible event management system.
4. Improve and automate replenishment and ordering processes.
5. Protect customer data using regulations provided by the Payment Card Industry Data Security Standard.
6. Architect our databases in such a way that they support scaling and growth.
7. Utilize industry data security standards using role-based access controls.
8. Facilitate data loss prevention through use of regular backup schedules and data replication processes.

How the proposed database system addresses business problem(s)

Heartland Escapes is seeing unprecedented growth in their business and feels that the best way to capitalize on this growth is to expand both physically, and technologically. With this expansion effort, they've verbalized their desire to support customer management, customer online sales, subscription-based products, smart and automated inventory management, and store-to-store event management. They've also expressed that their current inventory management system is lack-luster and fails to accommodate any of these features. Our database goals explicitly state the desire to support these efforts requested by Heartland Escapes stakeholders.

Mission and Goals Alignment

Heartland Escapes' primary mission is to provide their communities with a space for individuals to fall in love with reading. Within this larger mission statement lies many objectives and opportunities to better achieve this goal. In the eyes of Heartland Escapes stakeholders, the current optimal course of action is to provide a central area that customers can receive information about upcoming events, offer

consistent availability of books to customers, allow for customers to order books from the comfort of their own homes, and build customer engagement by offering subscription-based products. Our goals as database administrators are derived from the goals of Heartland Escapes, with our primary goal being to support Heartland Escapes in their current endeavor.

Analysis of how the project fulfills the mission/goals of the target organization.

In the Problem Based Learning scenario, the example company is looking to:

1. improve customer satisfaction by allowing them to order business products online.
2. Reduce employee turnover rate by improving system efficiency and useability (therefore also reducing customer complaints).
3. Take advantage of back-office system operation automation.
4. Improve back-office systems across the board.

I believe that the narrative I've written for the fictional Heartland Escapes business fully emulates the same (if not similar) concerns as the Problem Based Learning scenario. I also believe that the goals I've outlined for Heartland Escapes, and the goals I've expressed for the database administration team are in sync with one another. Later sections of this assessment will further explain how these goals will be achieved for Heartland Escapes.

Entity Relationship Model (Week 2)

Subjects of Interests

Business Rules

Entity Relationship (ER) Diagram

Table of Entities, Attributes (with data types), Relationships, and Cardinality Constraints

Analysis of how the project fulfills the mission/goals of the target organization.

Structured Query Language Scripts (Week 3)

DDL

DML

Reporting

Analysis of how the project fulfills the mission/goals of the target organization.

Database Administration Plan (Week 4)

Transaction Management Plan

Database Security procedure

Backup Plan and Recovery Procedure

Analysis of how the project fulfills the mission/goals of the target organization

Future Database System Implementation Plan (Week 5)

Database Differences

Changes needed to build a data warehouse/data mart.

Distributed Database Considerations

Business Intelligence

Data Warehouse Benefits

Return on Investment

Competitive Advantage

Increased Productivity

Data Warehouse Problems

Analysis of how the project fulfills the mission/goals of the target organization

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