TAHOE TREETOP
Adventure Parks

Group Project
MIS 575
University of Michigan – Dearborn

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Introduction

Tahoe Treetop Adventure Parks is the first Aerial Adventure Park in California. It is made up of a series of courses linking tree platforms to a variety of bridges and zip lines. Each course starts with an initial tree platform and participants navigate through rope swings, wobbly bridges, swinging logs, tight ropes, cargo nets, horizontal climbing walls, and many more. This report was gathered to record the phases of creating a registration database for Tahoe Treetop Adventure Parks.

Problem Statement

Tahoe Treetop Adventure Parks has been using Microsoft Excel to manage their registration process. This method has been unsuccessful thus far; issues include redundancy and errors in information received. These issues have been leading to greater hindrances throughout the organization. This report will present the design and implementation of the database we have constructed to help the company control and oversee the entire customer registration process. The project is composed of 4 phases, which are conceptual design, logical design, physical design and implementation.

Information Requirements

The data required to be stored in this database was determined by Ends/Means Analysis. This approach was used as it was most suitable to the nature of Tahoe Treetop Adventure Parks. The organization provides assorted services; to carry out these services efficiently and effectively, there must an organized database in place. This database will need to contain information about all aspects of the organization from resources to processes, and manage them well.

Phase 1: Conceptual Data Modeling

During this phase, the management of Tahoe Treetop Adventure Parks was interviewed. Throughout the interview process, information about the current registration process and databases were discovered. Below is the registration process.
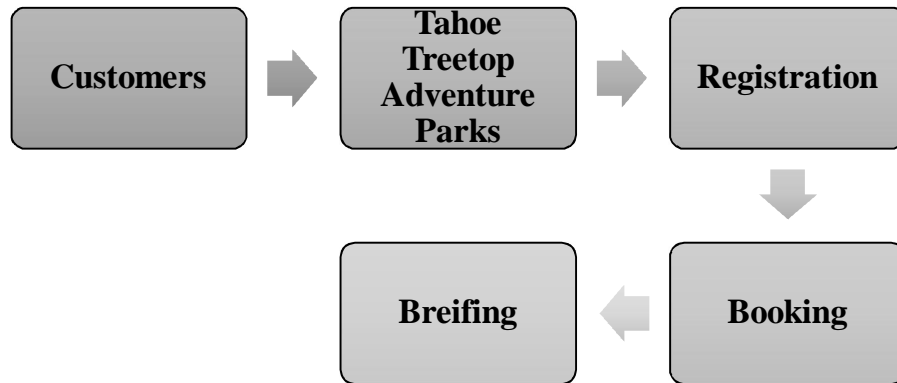
This process starts when customers register online and chooses the activity that they would like to experience. They get to choose any one of the activities that are shown on the website. The customer must give the details and the preferred date and time. The page takes them directly to the payment page and the booking process is complete.

Once the booking is done, the customer can go to the site. When they arrive, they will go through admission and be provided with the required safety equipment. There is an option of getting your own helmet if it meets the safety measures. Now, the customer is ready to begin their experience!

Services:

There are many services offered at the Tahoe Treetop Adventure Parks. They include:

- Tahoe City – Adult Climb

- Tahoe City – Kid Climb

- Tahoe City Climb Video

- Tahoe City Photography

Products:

- TT Media A

- TT Media B

- Traveler Coffee Mug

- Traveler Sipper

- TT Hoodie

- TT T-shirt

Customers have the option to purchase a variety of Tahoe Treetop products as a form of souvenir. For services and products, customers can choose to pay in the form of credit, debit, or cash. As for equipment used at the time of climb, Tahoe Treetop can provide harnesses to customers as part of the climb experience.

ER Diagram
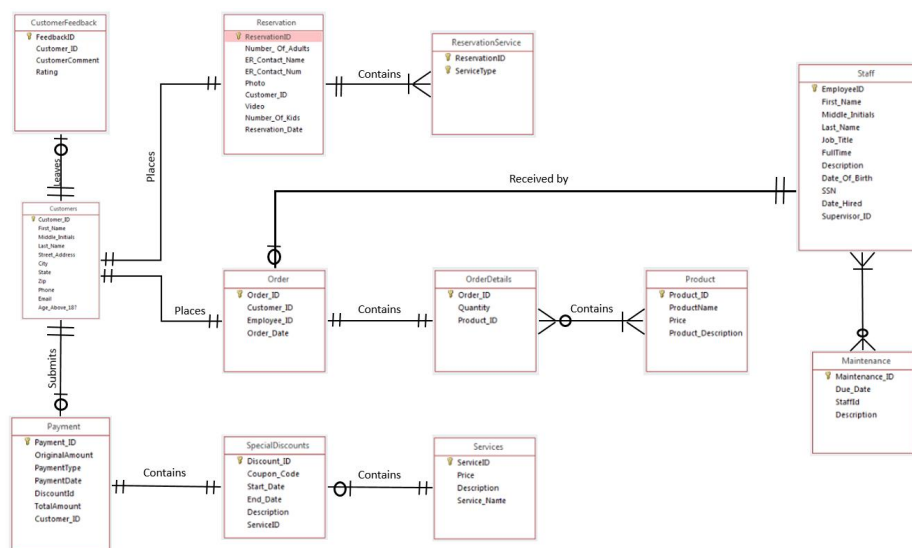
Phase 2: Logical Database Design

Normalized Relationship

- **CUSTOMER** (Customer_ID, First_Name, Middle_Initials, Last_Name, Street_Address, City, State, Zip, Phone, Email, 18_or_above)
- **CUSTOMER FEEDBACK** (Feedback_ID, Customer_ID, Customer_Comment, Rating)
- **Maintenance** (Maintenance_ID, Due_Date, Staff_ID, Description)
- **Order** (Order_ID, Customer_ID, Employee_ID, Order_Date)
- **Order Details** (Order_ID, Product_ID, Quantity)
- **Payment** (Payment_ID, Original_Amount, Payment_Type, Payment_Date, Discount_ID, Total_Amount)
- **Product** (Product_ID, Product_Name, Price, Product_Description)
- **Reservation** (Reservation_ID, Number_Of_Adults, ER_Contact_Name, ER_Contact_Number, Photo, Customer_ID, Video, Number_Of_Kids, Reservation_Date)
- **Reservation Service** (Reservation_ID, Service_Type)
- **Services** (Service_ID, Price, Description, Service_Name)
- **Special Discounts** (Discount_ID, Coupon_Code, Start_Date, Description, Service_ID)
- **Staff** (Employee_ID, First_Name, Middle_Initial, Last_Name, Job-Title, Fulltime, Description, Date_Of_Birth, SSN, Date_Hired, Supervisor_ID)

Phase 3: Physical Database Design

Integrity Constraints

In the physical design database, entity integrity is an automatic feature, enforced by Access among the tables upon definition of the primary key during table creation. Referential integrity is enforced separately through relationship design. Once a relationship is established, the referential integrity checks the value of the foreign key and makes sure it matches the primary key. Additional data types, domain constraint, and indexing can be found in attached appendices.

Below is a list of test data along with a description of the purpose of each piece of test data with violated constraints.

- Table: Customers

  - State Attribute is defined as the two-letter postal abbreviation for each state

- Test data to demonstrate violation of constraints. Entering any two letters not representing a state will result in an error message:
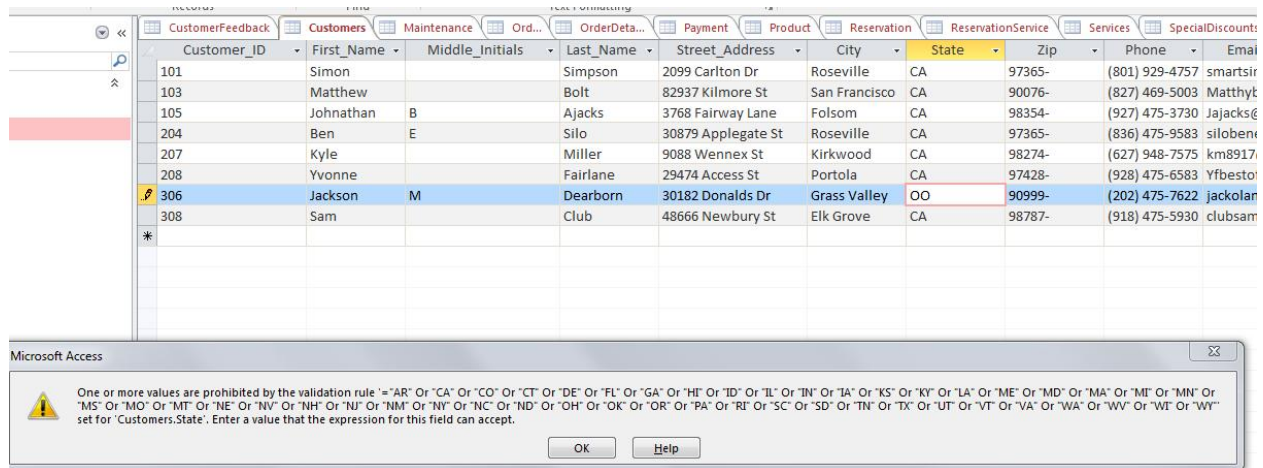
- From Table: Maintenance

  - All fields (attributes) must be filled in with data for a new Maintenance item to be defined

  - Test data: try to enter value in only one field, otherwise an error message will appear.
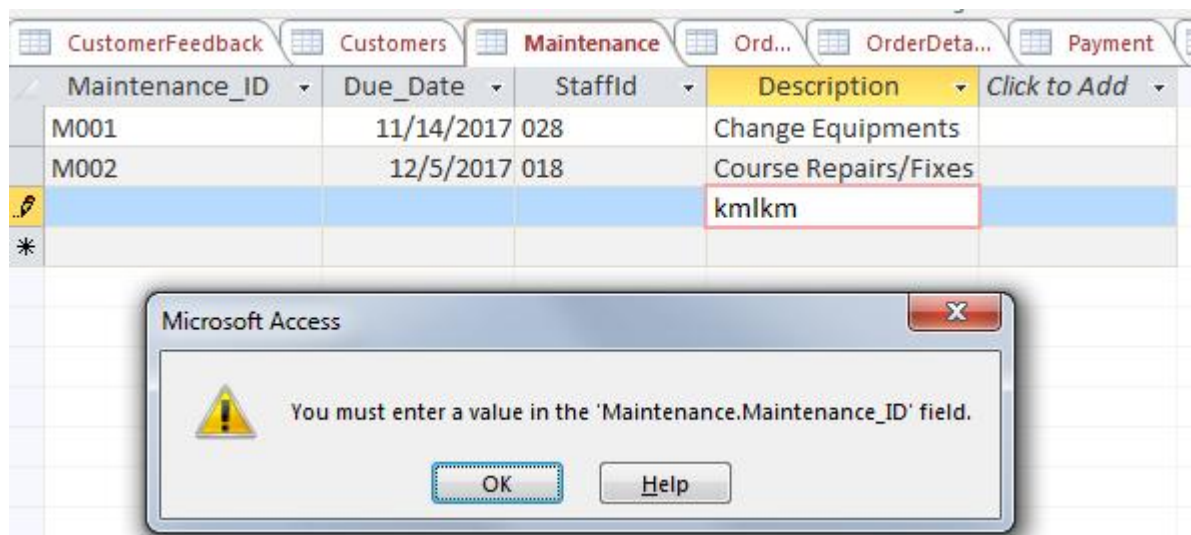
- From Table: Reservation

  - ER_Contact value must be a full ten-digit phone number, including area code.

  - Test data: try to enter only one number and the following error message will appear:
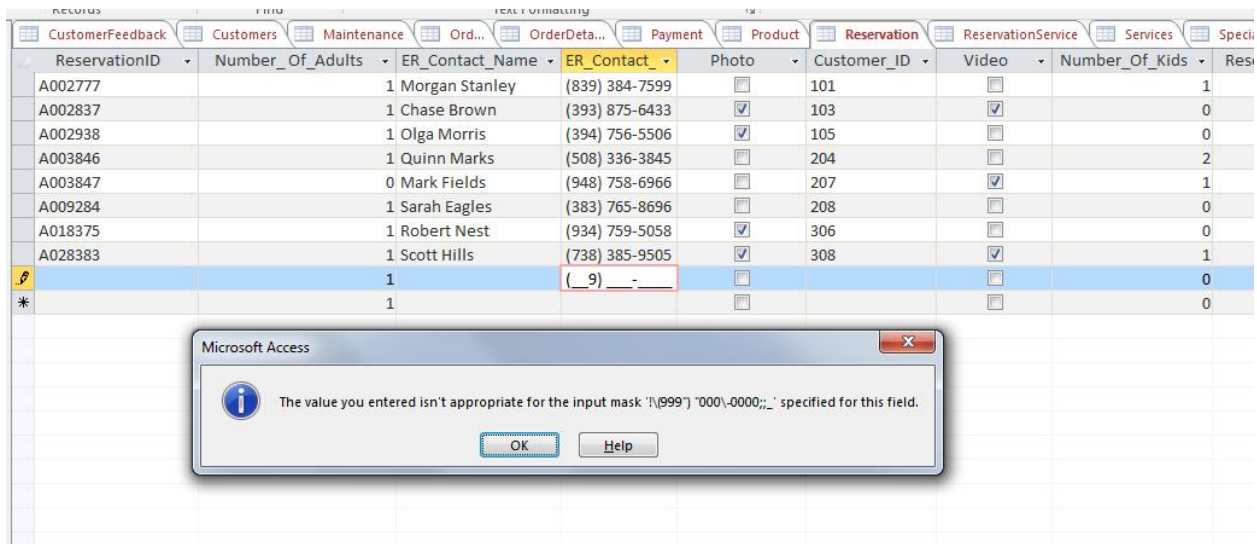
Phase 4: Database Implementation

Queries

Below are examples of five queries developed in the database:

Query 1: Customer Services

This query shows type of services customers selected.

Customer_ID	Adult Climb	Kid Climb	Photograph	Video
101	1	1		
103	1		1	1
105	1		1	
204	1	1		
207		1		1
208	1			
306	1		1	
308	1	1	1	1

Figure 4.1 Output Query 1

SQL Code

TRANSFORM Count(Reservation.Customer_ID) AS CountOfCustomer_ID

SELECT Reservation.Customer_ID

FROM Services INNER JOIN (Reservation INNER JOIN ReservationService ON

Reservation.ReservationID = ReservationService.ReservationID) ON Services.ServiceID

= ReservationService.ServiceType

GROUP BY Reservation.Customer_ID

PIVOT Services.Service_Name;

Query 2: Order Summary

This query shows the order summary for souvenirs Tahoe Treetop sells.

ProductName	Quantity
TT T-shirt	3
Traveler Sipper	2
TT Media B	1
Traveler Coffee Mug	1
TT Hoodie	1
TT Media A	1

Figure 4.2 Output Query 2

SQL Code

SELECT Product.ProductName, OrderDetails.Quantity

FROM OrderDetails INNER JOIN Product ON OrderDetails.ProductID = Product. Product_ID

ORDER BY OrderDetails.Quantity DESC;

Query 3: Reservation by Service

Query that categorize service type.

ServiceType	Service_Name	TotalReservation
1	Adult Climb	7
2	Kid Climb	4
3	Video	3
4	Photoghraphy	4

Figure 4.3 Output Query 3

SQL Code

SELECT ReservationService.ServiceType, Services.Service_Name, Count(*) AS

TotalReservation

FROM ReservationService INNER JOIN Services ON ReservationService.ServiceType

= Services.ServiceID

GROUP BY ReservationService.ServiceType, Services.Service_Name;

Query 4: Sales by Product

Below query reflects total sales for souvenirs available through Tahoe Treetop

ProductName	TotalSales
Traveler Coffee Mug	$15.00
Traveler Sipper	$50.00
TT Hoodie	$60.00
TT Media A	$20.00
TT Media B	$40.00
TT T-shirt	$90.00

Figure 4.4 Output Query 4

SELECT Product.ProductName, SUM([OrderDetails].Quantity*Product.Price) AS

TotalSales

FROM Product INNER JOIN OrderDetails ON

Product.Product_ID=[OrderDetails].ProductID

GROUP BY Product.ProductName;

Query 5: Sales by Services

Query showing total sales by service

Service_Name	TotalSalesFr
Adult Climb	$420.00
Kid Climb	$120.00
Photoghraphy	$120.00
Video	$150.00

Figure 4.5 Output Query 5

SQL Code

SELECT Services.Service_Name, Sum(Services.Price) AS TotalSalesFromService

FROM ReservationService INNER JOIN Services ON ReservationService.ServiceType

= Services.ServiceID

GROUP BY Services.Service_Name;

Reports

Below are five reports generated to represent the outputs from above five queries. The

reports provide a top view summary of operation status and enables management team to

make strategic decisions based on valuable data.

Report 1: Customer Services

Customer Services

Customer_ID	Adult Climb	Kid Climb	Photoghraphy	Video
101	1	1		
103	1		1	1
105	1		1	
204	1	1		
207		1		1
208	1			
306	1		1	
308	1	1	1	1

Report 2: Order Summary

Order Summary

ProductName	Quantity
TT T-shirt	3
Traveler Sipper	2
TT Media B	1
Traveler Coffee Mug	1
TT Hoodie	1
TT Media A	1

Report 3: Reservation by Services

Reservation By Services

ServiceType	Service_Name	TotalReservation
1	Adult Climb	7
2	Kid Climb	4
3	Video	3
4	Photoghraphy	4

Report 4: Sales by Products

Sales By Product	Thursday, November 02, 2017 10:16:31 AM
ProductName	TotalSales
Traveler Coffee Mug	$15.00
Traveler Sipper	$50.00
TT Hoodie	$60.00
TT Media A	$20.00
TT Media B	$40.00
TT T-shirt	$90.00

Report 5: Sales by Services

Sales By Services	Thursday, November 02, 2017 10:16:59 AM
Service_Name	Total_Sales
Adult Climb	$420.00
Kid Climb	$120.00
Photoghraphy	$120.00
Video	$150.00

Forms

Three forms were generated as part of the database implementation. First form is for customer feedback, second is for product ordering, and third is for reservation.
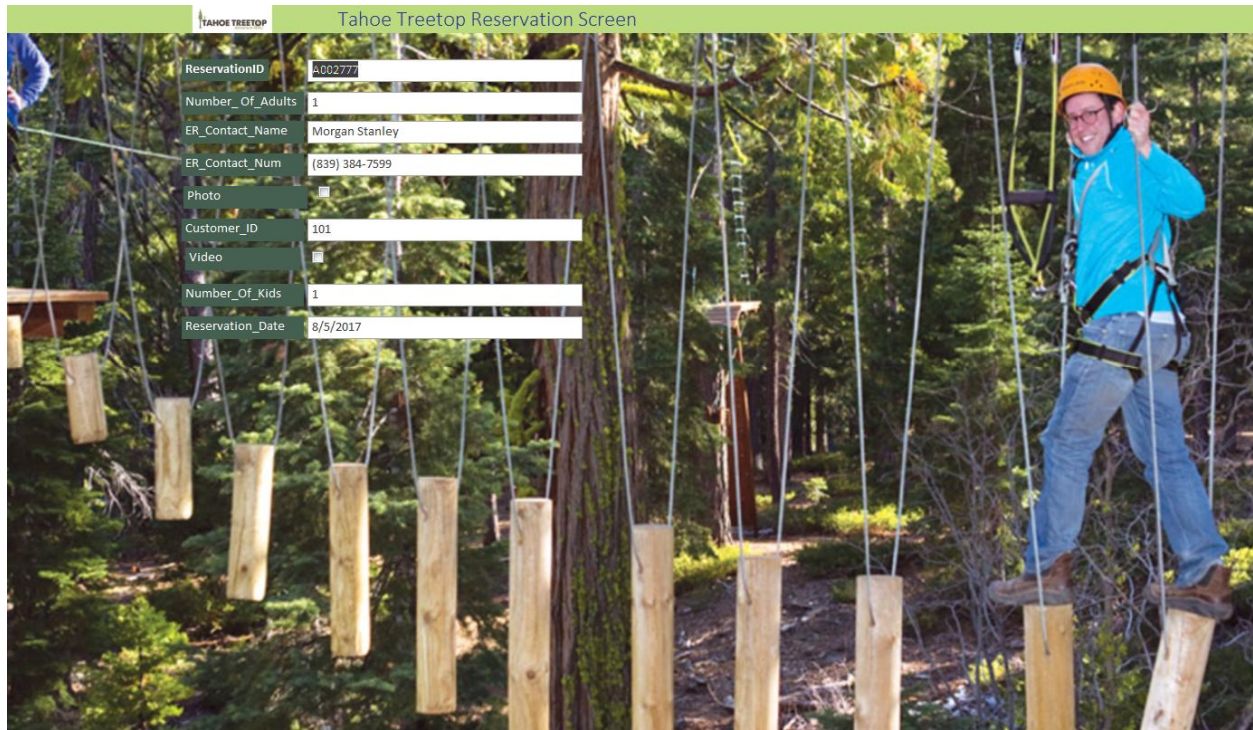
CustomerFeedback

FeedbackID: FD001

CustomerID: 101

CustomerComment: Great Experience

Rating: 4

Customer Feedback

Tahoe Treetop Product Order Form

Order_ID: OD0023

CustomerID: 204

EmployeeID: 009

Order_Date: 8/5/2017

Denormalization Decision

During the logical design phase, the team determined to not denormalize because there are no tables or queries with dependencies. Furthermore, the small database and queries are not resource intensive hence denormalization is not required.

Test Data

Below are sample test data. These data do not violate any integrity constraints.

Customers

First_Name	Middle_Initials	Last_Name	Street_Address	City	State	Zip	Phone	Email	Age_Above_1
Simon		Simpson	2099 Carlton Dr	Roseville	CA	97365-	(801) 929-4757	smartsimon93(	☑
Matthew		Bolt	82937 Kilmore St	San Francisco	CA	90076-	(827) 469-5003	Matthybotty@	☑
Johnathan	B	Ajacks	3768 Fairway Lane	Folsom	CA	98354-	(927) 475-3730	Jajacks@gmail.	☑
Ben	E	Silo	30879 Applegate St	Roseville	CA	97365-	(836) 475-9583	silobene@att.c	☑
Kyle		Miller	9088 Wennex St	Kirkwood	CA	98274-	(627) 948-7575	km8917@yaho	☑
Yvonne		Fairlane	29474 Access St	Portola	CA	97428-	(928) 475-6583	Yfbestofbest@	☑
Jackson	M	Dearborn	30182 Donalds Dr	Grass Valley	CA	90999-	(202) 475-7622	jackolantern@.	☑
Sam		Club	48666 Newbury St	Elk Grove	CA	98787-	(918) 475-5930	clubsam99@gr	☑

Maintenance

Maintenance_ID	Due_Date	StaffId	Description	Click to Add
M001	11/14/2017	028	Change Equipments	
M002	12/5/2017	018	Course Repairs/Fixes	

Reservation

ReservationID	Number_Of_Adults	ER_Contact_Name	ER_Contact_	Photo	Customer_ID	Video	Number_Of_Kids	Reservation_Date	Click to Add
A002777	1	Morgan Stanley	(839) 384-7599	☐	101	☐	1	8/5/2017	
A002837	1	Chase Brown	(393) 875-6433	☑	103	☑	0	9/16/2017	
A002938	1	Olga Morris	(394) 756-5506	☑	105	☐	0	9/24/2017	
A003846	1	Quinn Marks	(508) 336-3845	☐	204	☐	2	8/5/2017	
A003847	0	Mark Fields	(948) 758-6966	☐	207	☑	1	9/24/2017	
A009284	1	Sarah Eagles	(383) 765-8696	☐	208	☐	0	9/16/2017	
A018375	1	Robert Nest	(934) 759-5058	☑	306	☐	0	8/5/2017	
A028383	1	Scott Hills	(738) 385-9505	☑	308	☑	1	8/5/2017	
	1			☐		☐	0		