Project 1

**Database Management Design- Project 1**

For this Project I chose Southwest Airlines, Astoria Bank, Kayak travel reservations and Stony Brook Hospital as the 4 enterprises that I will be creating databases for. The purpose of a practical real world database will be created and used for Information Systems Management. The employees of each organization will need these databases to make sure the day to day operations of each enterprise are run smoothly and without incident. Databases need to be secure while also being a convenient way to accessing data and information that is needed. Each database created will contain entities, ER diagrams, attributes, relationships, domain values, primary and foreign keys for each enterprise. Enterprises like Astoria Bank and Kayak travel reservations will have three way relationships within their ER models.

**Southwest Airlines**

**Entities**:

-Airplanes

-Pilots

-Passengers

-Airports

-Flights

-Flight Attendants

-Ticket Agents

-Hangar Employees

-Flight Leg

-Loading Crew

- Air Crew

**Entity Attributes:**

Airplanes: Air Id, Model No., Airplane type, Airplane passenger capacity

Airports: Airport Id, Name, City, State, Country

Hangars: Hangar No, Location, Size, Hangar Id

Hangar Employees: Employee Id, Last name, First name, House address, Phone number, Email address

Pilots: Pilot Id, Last name, First name, Air Crew Id

Flight Attendants: Attendant Id, Last name, First name, Air Crew Id

Ticket Agent: Ticket Agent Id, Last name, First name, Air Crew Id

Flight Leg: Leg No., Flight No., Destination, Airport Name

Passenger: Passenger Id, Last name, First name, House address, Phone Number, Email address

Flight: Flight No., From, To, Departure date, Arrival date, Departure time, Arrival time

Loading Crew: Loading Crew Id, Last name, First name, House address, Phone number, Email address

Air Crew: Air Crew Id, Last name, First name, Position, House address, Phone number, Email address

**Entity Relationships**:

Passenger

Collects From

Ticket Agent

Flight

Legs

Flight Legs

Airplane

Travels In

Passenger

Passengers

Transports

Flight

Airplane

Packs

Loading Crew

Hangar

Manages

Hangar Employees

Airport

Arrives At

Flight

Airplane

Operates

Air Crew

Hangar

Stored In

Airplane

Passenger

Assists

Flight Attendant

Airplane

Assigned to

Flight Attendant

Airport

Can land in

Airplane

Airplane

Fly

Pilots

**DOMAIN VALUES:**

Airplanes:

(Air Id INT (6),

Model No. INT (25),

Airplane type VARCHAR (30),

Airplane Name VARCHAR (30),

Passenger capacity INT (450)

PRIMARY KEY (Air Id)

Pilots:

(Pilot Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

Air Crew Id INT (6),

PRIMARY KEY (Pilot Id)

Passenger:

(Passenger Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

House address VARCHAR (205),

Phone Number INT (30),

Email address VARCHAR (250),

PRIMARY KEY (Passenger Id)

Airports:

(Airport Id INT (6),

Name VARCHAR (50),

City VARCHAR (35),

State VARCHAR (35),

Country VARCHAR (35)

PRIMARY KEY (Airport Id)

Flight:

(Flight No. INT (6),

From VARCHAR (35),

To VARCHAR (35),

Departure date INT (8),

Arrival date INT (8),

Departure time INT (4),

Arrival time INT (4),

PRIMARY KEY (Flight No.)

Flight Attendants:

(Attendant Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

Air Crew Id INT (6),

PRIMARY KEY (Attendant Id)

Ticket Agent:

(Ticket Agent Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

Air Crew Id INT (6),

PRIMARY KEY (Ticket Agent Id)

Hangar Employees:

(Employee Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

House address VARCHAR (205),

Phone number INT (30),

Email address VARCHAR (250),

PRIMARY KEY (Employee Id)

Flight Leg:

Leg No. INT (6),

Flight No. INT (6),

Destination VARCHAR (50),

Airport Name (30),

PRIMARY KEY (Leg No.)

Loading Crew:

Loading Crew Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

House address VARCHAR (205),

Phone number INT (30),

Email address VARCHAR (250),

PRIMARY KEY (Loading Crew Id)

Air Crew:

Air Crew Id INT (6),

Last name VARCHAR (25),

First name VARCHAR (25),

Position VARCHAR (25),

House address VARCHAR (205),

Phone number INT (30),

Email address VARCHAR (250),

PRIMARY KEY (Air Crew Id)

**Astoria Bank**

**Entities**:

-Employees

-Bank Branches

-Loans

-Customers

-Companies

-Accounts

-Transactions

-Departments

-Email Tracking

-Job Titles

**Entity Attributes:**

Employees: Employee Id, Last name, First Name, Department, Salary

Bank Branches: Bank Id, Branch Name, Country, City, Phone, Manager Id

Loans: Loan Id, Interest Rate, Duration by months, Start date

Customers: Customer Id, Last name, First name, House address, Phone number, Email address

Companies: Company Id, Company Name, Phone, Email, Contact Title

Accounts: Account Id, Branch Id, Customer Id, Account type, Balance, Rate, Status

Transactions: Account Id, Date, Time, Loan Id, Credit/Debit

Departments: Department Id, Department Name, Head of Department, Employee Id

Email Tracking: Email Id, Sender, Receiver, Date, Time, Subject

Job Titles: Title Id, Title Name, Employee Id

ATM: ATM Id, Location, ATM available, Branch Id

Credit Card: Credit Card No., Credit Card Limit, Expiration Date, Customer Id

**Entity Relationships**

Employees

Hires

Bank Branch

Job title

Earn

Employees

Loans

Borrows

Customer

Loan

Grants

Bank Branch

Customers

Assist

Employees

Department

Heads

Employee

Payment

Make

Customers

ATM

Have

Bank Branches

Transaction

Makes

Customer

Bank Branch

Works for

Employee

Credit Card

Owns

Customer

**Domain Values**

Employees:

Employee Id INT (6),

Last name VARCHAR (30),

First Name VARCHAR (30),

Department VARCHAR (30),

Salary INT (7)

Bank Branches:

Bank Id INT (6),

Branch Name VARCHAR (30),

Country VARCHAR (30),

City VARCHAR (30),

Phone INT (11),

Manager Id INT (6)

Loans:

Loan Id INT (6),

Interest Rate DECIMAL (20, 3),

Duration by months INT (8),

Start date INT (8)

Customers:

Customer Id INT (6),

Last name VARCHAR (30),

First name VARCHAR (30),

House address VARCHAR (205),

Phone number INT (11),

Email address VARCHAR (250)

Companies:

Company Id INT (6),

Company Name VARCHAR (100),

Phone INT (11),

Email VARCHAR (205),

Contact Title VARCHAR (25)

Accounts:

Account Id INT (6),

Branch Id INT (6),

Customer Id INT (6),

Account type VARCHAR (35),

Balance DECIMAL (20, 3),

Rate DECIMAL (20, 3),

Status VARCHAR (25)

Transactions:

Account Id INT (6),

Date INT (8),

Time INT (4),

Loan Id INT (6),

Credit/Debit VARCHAR (7)

Departments:

Department Id INT (6),

Department Name VARCHAR (205),

Head of Department VARCHAR (25),

Employee Id INT (6)

Email Tracking:

Email Id INT (6),

Sender VARCHAR (25),

Receiver VARCHAR (25),

Date INT (8),

Time INT (4),

Subject VARCHAR (25)

Job Titles:

Title Id INT (6),

Title Name VARCHAR (25),

Employee Id INT (6)

ATM:

ATM Id INT (6),

Location VARCHAR (200),

ATM available VARCHAR (205),

Branch Id INT (6)

Credit Card:

Credit Card No. INT (16),

Credit Card Limit INT (100),

Expiration Date INT (8),

Customer Id INT (6)

**Kayak Travel Reservations**

**Entities**:

-Reservation

-Passenger

-Flight Schedule

-Seat

-Airplane

-Payment

-Employees

**Entity Attributes:**

Reservations: Reservation Id, Ticket type, booking date, Customer Id

Passenger: Passenger Id, Last name, Middle name, First name, House address, Phone number, Date of Birth, Gender

Flight Schedule: Schedule Id, Aircraft Id, Flight No., Departure Date & Arrival Date, Arrival time and Departure Time, Arrival and Departure Gate No.

Airplane: Airplane Id, Airplane Capacity, Model No., Airplane type,