P1: Data Management and Database Design

Project Group 9:

1. Harshitha Gowda
2. Avirat Gaikwad

Database Topic

Database design for News@Northeastern.

Mission Statement:

The mission for developing this database is to maintain a record of News@Northeastern for administrative and management reasons. The main purpose of News@Northeastern is to provide timely updates on what happens in the campus as well as throughout the world.

Objectives:

- To maintain (enter, update, and delete) data on Location.
- To maintain (enter, update, and delete) data on Employees.
- To maintain (enter, update, and delete) data on Subscribers.
- To maintain (enter, update, and delete) data on Salary Package.
- To maintain (enter, update, and delete) data on Package Perks.
- To maintain (enter, update, and delete) data on Delivery method.
- To maintain (enter, update, and delete) data on Social Media Outreach.
- To maintain (enter, update, and delete) data on News category.
- To maintain (enter, update, and delete) data on Show Schedule.
- To maintain (enter, update, and delete) data on Guest Speakers.
- To maintain (enter, update, and delete) data on Sponsor Information.
- To maintain (enter, update, and delete) data on Careers.
- To maintain (enter, update, and delete) data on Customer Support.

- To perform searches on Location.
- To perform searches on Employees.
- To perform searches on Subscribers.
- To perform searches on Salary Packages.
- To perform searches on Package Perks.
- To perform searches on Delivery method.
- To perform searches on Social Media Outreach.
- To perform searches on News Category.
- To perform searches on Show Schedule.
- To perform searches on Guest Speakers.
- To perform searches on Sponsor Information.
- To perform searches on Careers.

- To perform searches on Customer Support.

- To track News@Northeastern Subscribers.
- To track News@Northeastern Sponsors' Information.
- To track News@Northeastern Employees.
- To track News@Northeastern Careers.

- To report on Location.
- To report on Employees.
- To report on Salary Packages.
- To report on Package Perks.
- To report on Delivery Method.
- To report on Social Media Outreach.
- To report on News Category.
- To report on Show Schedule.
- To report on Guest Speakers.
- To report on Sponsor Information.
- To report on Careers.
- To report on Customer Support.

P2 & P3: Database Design Document

Key Database Design decisions:

List of all Entities:

- Offices
- Employees
- Subscribe
- Package/Perks
- Subscribers
- Show Schedule
- Careers
- News Categories
- Delivery Method
- Social Media Outreach
- Guest Speaker
- Customer Support
- Sponsor Information

Associative entities are developed in the database due to many to many relationship is established between 4 schemas namely

- Subscriber - Delivery Method:

Every subscriber can subscribe to many different delivery methods such as television show, Magazine etc. Similarly, every delivery method will have multiple subscribers.

- Offices - Employees

Due to offices present in 4 different locations, it can be safely said that every office hires multiple employees. However, News Reporters, Editors work for multiple offices and thus a many-to-many relationship is established between the two.

- Offices - Shows

This m: n relationship is since multiple offices can cast different Shows whereas, every Shows can be displayed in multiple offices.

- Office- Subscriber

Subscribers can subscribe to multiple offices and Offices can provide services to multiple subscribers due to which it has a m:n relationship

- Show – Sponsor

Multiple shows can be sponsored by a single entity whereas an entity can sponsor multiple show.

Business Rules:

- Offices is created as an entity because Northeastern has 4 different campuses namely Boston (main campus), Seattle, Charlotte and Silicon Valley. Every campus is assumed to have News@Northeastern.
- Every Customer Support person is an employee. However, not every employee is in customer support. Hence, a new entity customer support was created.
- Since many people contact Customer support. The single department has an one to many relationship with subscribers
- For simplicity, we consider that every Show has one and only one Category and is not involved in different categories.
- Moreover, Every Guest Speaker is called for just one Show. No Speakers can be act as a guest in multiple shows.
- It is assumed that the careers section only displays open internship positions. Every Intern has the same base pay package.

Entity/Attribute Table:

Data Object	Explanation
News@Northeastern Database	**This database contains all the tables and relations required for News@Northeastern**
Offices	**Contains all types of Office information**
Office_ID Office Address_1 City ZipCode Careers_ID Subscriber_ID	PRIMARY KEY: Each user has a unique user ID FOREIGN KEY: Associated with Primary key of 'Careers' table. FOREIGN KEY: Associated with Primary key of 'Subscriber' table
Employees	**Contains all the details of the Employees**
Employee_ID F_name L_name Date_of_Birth Position Package_ID	PRIMARY KEY: Each employee will have a unique ID Indicates the first name of the employee Indicates the last name of the employee Indicates the position/Job title of the employee FOREIGN KEY: Associated with Primary key of 'Packages/Perks' table.
Customer_Support	**Contains all the details of the employees in Customer Support**
Cust_Support_ID Contact Service_Name	PRIMARY KEY: Each Customer support employee will have a ID Whether the employee works in Husky Card Services, Res-net or ITS
PackagesPerks	**Contains all the details of the Packages offered to employees**
Package_ID Salary Paid_leave Insurance Travel_benefits Flex_Time	PRIMARY KEY: Each Package will have a unique ID Indicates the Salary/Stipend of every employee hired Travel benefits include conveyance fair, train passes etc. Indicates the minimum working time per day
Careers	**Contains all the details of the Internships posted**
Careers_ID Intern_position Duration_Internship Department_name	PRIMARY KEY: Each counsellor will have a unique ID Indicates the duration of internship (E.g.: 3 Months, 6 Months) Indicates the department in which the intern would function

Package_ID	FOREIGN KEY: Associated with Primary key of 'Packages/Perks' table
Subscriber	**Contains all the details of the Subscriber**
Subscriber_ID Subscriber_FName Subscriber_Lname Subscription_period Payment_method Cust_Support_ID	PRIMARY KEY: Each seminar has its unique ID Number of days of subscription paid for Indicates the mode of payment (E.g.: Cash, CC, Husky bucks) FOREIGN KEY: Associated with Primary key of 'Customer_Support'.
Show_Schedule	**Contains details about the schedule of shows broadcasted**
Show_ID Show_Name Show_Time Show_Day	PRIMARY KEY: Each Show has a unique ID Indicates the Dates/ month when the show was broadcasted Indicates the Broadcast time
Guest_Speaker	**Contains all the details of Guest Speakers**
Guest_ID Guest_FName Guest_LName Area_of_Expertise Phone_number Email_ID Show_ID	PRIMARY KEY, FOREIGN KEY: Associated with Primary key of 'Student' Indicates the field expertise of the Guest Speaker (For E.g.: Physics, Technology, Management) FOREIGN KEY: Associated with Primary key of 'Show_Schedule'.
Delivery_M	**Contains all the means of information delivery**
ID Delivery_mode Delivery_Date	PRIMARY KEY: Each record has its unique ID
Social_Media_Outreach	**Contains all information on the Social Media Activity**
Media_ID Media_type Media_Platform Media_Date	PRIMARY KEY: Each Media has its unique ID Indicates the type of media (E.g. :Internet, Paper copy) Informs on the type of social media website used (E.g.: Facebook, Twitter, Snapchat, Whatsapp)

ID	FOREIGN KEY: Associated with primary key of Delivery_M
Sponsor_Information	**Contains all information on sponsors for News@Northeastern**
Sponsor_ID Sponsor_Fname Sponsor_Lname Contact_Info Max_Amount	PRIMARY KEY: Each Media has its unique ID Indicates the maximum amount the sponsor can provide for the show/event.
Employee_Office	**Contains information about which office is assigned to each employee**
Employee_ID Ofice_ID	FOREIGN KEY: Associated with Primary key of 'Employees'. FOREIGN KEY: Associated with Primary key of 'Offices'.
Subscriber_Delivery	**Contains all information about subscribers subscribed to each channel**
Subscriber_ID ID	FOREIGN KEY: Associated with Primary key of 'Subscriber'. FOREIGN KEY: Associated with Primary key of 'Delivery_Method'.
Offc_Shows	**Contains all information about news broadcasted in each office**
Office_ID Show_ID	FOREIGN KEY: Associated with Primary key of 'Offices'. FOREIGN KEY: Associated with Primary key of 'Show_Schedule.
Show_Sponsor	**Contains all information about Shows and all the Sponsors.**
Sponsor_ID Show_ID	FOREIGN KEY: Associated with Primary Key of 'Sponsor_Information' FOREIGN KEY: Associated with Primary Key of 'Show_Schedule'
Off_Subscriber	**Contains all information about Subscribers related to different offices**
Office_ID Subscriber_ID	FOREIGN KEY: Associated with Primary key of 'Offices'. FOREIGN KEY: Associated with Primary key of 'Subscriber'.

Entity-Relationship Diagram

Subscriber

PK	Subscriber_ID
	Subscriber_Fname
	Subscriber_Lname
	Subscription_Period
	Payment_Method
FK1	Cust_Support_ID

Subscriber_Delivery

PK,FK1	Subscriber ID
PK,FK2	ID

Customer_Support

PK	Cust_Support_ID
	Contact
	Service_Name

Delivery_M

PK	ID
	Delivery_Mode
	Delivery_Date

Social_Media_Outreach

PK	Media_ID
FK1	ID
	Media_Type
	Media_Platform
	Media_Date

Offices

PK	Office_ID
	Office_Address 1
	City
	ZipCode
FK1	Careers_ID
FK2	Subscriber_ID

Employee_Office

PK,FK1	Employee_ID
PK,FK2	Office_ID

Off_Subscriber

PK,FK1	Office_ID
PK,FK2	Subscriber_ID

Offc_Shows

PK,FK1	Office_ID
PK,FK3	Show_ID

Package/Perks

PK	Package_ID
	Salary
	Paid_Leave
	Insurance_Name
	Travel_Benefits
	Flex_Time

Careers

PK	Careers_ID
	Intern_Position
	Duration_Internship
	Department_Name
FK1	Package_ID

Employees

PK	Employee_ID
	F_Name
	L_Name
	Position
FK1	Package_ID
	Date_Of_Birth

Guest_Speaker

PK	Guest_ID
	Guest_Fname
	Guest_Lname
	Areas_of_expertise
	Phone_No
	Email_ID
FK1	Show_ID

Show_Schedule

PK	Show_ID
	Show_Name
	Show_Time
	Show_Day

Sponsor_Information

PK	Sponsor_ID
	Sponsor_Fname
	Sponsor_Lname
	Contact_info
	Max_Amount

Show_Sponsor

PK,FK1	Sponsor_ID
PK,FK2	Show_ID