**ITAS 288 Assignment01**

**Data Modelling**

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**Introduction**

Databases are used to store, manipulate and retrieve data in nearly every type of organization, including business, health care, education, government and libraries. The world has become a very complex place. The advantage goes to the people and organization that collect, manage and interpret information effectively. Basically, we create make a Nanaimo sail charter rental company with a lot of table where we make the records of the rentals, equipment and maintenance etc.

**Responsibilities**

This project needs to complete as an individual project. Basically, we create sail charter company with a lot of database table with many cardinality and optionality. We also should able to find all the nouns in the case study with the description of all the nouns. We also make a lot of entity to group many nouns such as equipment, maintenance and services.

1. **CREATE A SIMPLE LIST SORTED ALPHABETICALLY**

**List of ALL Nouns / Noun Phrases**

Activities

Anchors

Available Repair Facilities

Bareboat

Bedding

Boat

Boat Owners

Book

CYA Certification

Charters

Charts

Compass

Consumable Equipment

Contact

Contracts

Cooking Utensils

Costs

Crew

Current Tables

Customers

Decision

Depth Meter

Dinghies

Dish Towels

Dishes

Dispatcher

Engine Oil

Equipment

Expense

Facility

Fee

Food

Hull Painting

Information

Instrumentation

Items

Itinerary

Lease

Life Preserves

Lines

Local Companies

Maintenance

Members

Navigation

Own Expense

Owner-Provided Equipment

Owners

Period

Permanently Installed Equipment

Person

Personnel

Quality

Radio

Reasons

Records

Refrigerator

Rental

Repairs

Request

Safety

Sailboat

Sails

Scheduled Maintenance

Service

Silver Ware

Similar Items

Skipper

Skipper Charter

Soap

Stove

Supplies

Tables

Tide

Time

Toilet Paper

Track

Type

Unscheduled Repairs

Weather Conditions

Work

**CREATE A SIMPLE LIST SORTED ALPHABETICALLY**

**Eliminations**

Anchors –It is used in the equipment

Available Repair Facilities – It is used in maintenance entity

Bareboat – we used boat for it

Bedding –It is used in the equipment

Boat Owners -we used owner for it

Navigation Book –It is used in the equipment

Charters – we used boat for it

Charts –It is used in the equipment

Compass –It is used in the equipment

Consumable Equipment – It comes under equipment

Contact - It is used in the unscheduled maintenance

Contracts - It is used in the NSC\_rental

Cooking Utensils –It is used in the equipment

Current Tables –It is used in the equipment

Customers - we used owner for it

Depth Meter –It is used in the equipment

Dinghies –It is used in the equipment

Dish Towels –It is used in the equipment

Dishes –It is used in the equipment

Dispatcher –It is used in the equipment

Engine Oil –It is used in the equipment

Expense - It is used in the maintenance

Facility - It is used in the maintenance

Fee - It is used in the NSC\_rental

Food –It is used in the equipment

Hull Painting –It is used in the equipment

Information - It is used in the NSC\_rental

Instrumentation –It is used in the equipment

Itinerary–It is used in the equipment

Lease - It is used in the NSC\_rental

Life Preserves –It is used in the equipment

Lines –It is used in the equipment

Local Companies - It is used in the Facilities

Members – we used Crew for it

Owner-Provided Equipment

Period- It is used in the NSC\_rental

Permanently Installed Equipment

Person -we used owner for it

Personnel – It is in the crew entity

Quality - It is used in the equipment

Radio –It is used in the equipment

Reasons – It is used in the damage

Records - It is used in the NSC\_rental

Refrigerator –It is used in the equipment

Rental - It is used in the NSC\_Rental

Repairs - we use maintenance for it

Request - It is used in the NSC\_rental

Safety- It is used in the Nsc\_rental

Sailboat - It is used in the boat

Sails –It is used in the equipment

Scheduled Maintenance - we use maintenance for it

Service – It is used in the maintenance

Silver Ware –It is used in the equipment

Similar Items –It is used in the equipment

Skipper – It is used in the skipper charter

Soap –It is used in the equipment

Stove –It is used in the equipment

Supplies –It is used in the equipment

Tide –It is used in the equipment

Time – It is used in the NSC\_rental

Toilet Paper –It is used in the equipment

Track – It is used in the NSC\_Rental

Type- It is used in the Boat

Unscheduled Repairs – we use maintenance for it

Weather Conditions - It is used in the NSC\_Rental

Work -It is used in maintenance entity

**CREATE A SIMPLE LIST SORTED ALPHABETICALLY**

**Entities to be Modeled**

NSC\_rental – It has the details of the lease period, commissions. It has also the details of the customer who owns the boat.

Boat- List of all the boat details and owner id . It also checks whether boat is a skippered or bare boat

Equipment- A list of all the equipment. It also checks whether the equipment belongs to owner or NSC. If there is a owner for the boat the owner id get onto the column. Therefore, we can track the owner of the equipment using the table.

Owner- The details of the owner

Damage – This track those customers who brought the damage to the equipment

Customer-Details of all the customer

Skippered\_charter - Tracks whether the boat is running on the skipper service or a crew member.

Crew- Details and position of the crew

Maintenance – Track of all the maintenance which should be done on the boat

Unscheduled Maintenance - Holds the information about the facilities

Scheduled Maintenance - IT holds the information about the local companies

Facilities – Details of the nsc dispatcher

**B. Prepare a list documenting the relationships between each of the entities.**

* **A NSC\_rental\_track must have a boat and cannot stand independent**
* **A NSC\_rental\_track can have a customer and stand independent without a customer**
* **A NSC\_rental\_track must have a boat and cannot stand independent**
* **A NSC\_rental\_track must have a owner and cannot stand independent**

**![A screenshot of a computer

Description automatically generated]()**

**NSC\_rental\_track** table is like a front desk management in the hotel. It tracks the commission that should be given to the owner and rent gave to the customer. The amount of the time leased by the customer. It also linked with the charter\_track table which tracks the weather condition and itinerary condition

* **A owner has zero or many boat**

**A boat must have a owner**

**![A screenshot of a cell phone

Description automatically generated]()**

The boat table a column has a foreign key for owner id which tracks which owner the boat belongs. The boat has two columns to check whether the boat is an skippered charter and bare boat. This has a crew id which means that if the boat is skippered charter which crew will accompany the customer.

* **A owner has zero or many equipment**

**An equipment has zero or one owner**

**A boat has zero or many equipment**

**An equipment must have a boat**

![A close up of a map

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The equipment table includes NSC equipment and owner equipment. There is a column called IS\_NSC which checks whether the equipment belongs to the NSC. If IS\_NSC is one and owner id is zero, it means it belongs to NSC equipment. If IS\_NSC is zero and has owner id, it means that the product belongs to the owner with that owner id. This can help us to track **which equipment belongs to which owner**

* **An equipment has zero or more damage**

**A damage must have an equipment and a customer**

**A customer has zero or more damage**

**A damage must have a customer**

![A screenshot of a cell phone

Description automatically generated]()

This damage table track the damage produced by each customer. The damage table have customer id and equipment id to track the damage made by the customer.

* **a boat can have zero or more maintenance**

**a maintenance must have a boat and cannot stand independent**

![A screenshot of a cell phone

Description automatically generated]()

This track the boats that require the maintenance and details of the maintenance. It also says that whether NSC dispatcher are required t solve the issue. This maintenance table also have the cost, expense and detail of the maintenance require.

* **A boat can or cannot have a skippered\_charter**
* **A skippered\_charter must have a boat**
* **A skippered\_charter must have a crew**
* **A crew can stand without skippered\_charter**

![A screenshot of a cell phone

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The boat table checks whether the boat is a skippered charter and bare boat. If the boat is a skippered charter, it goes to skipperd charter and checks whether the skippered charted have the skipper service. If ther is no skipper service, it will have a crew assigned to the skipped charter who have the cya\_certificate.

**Generalization and Specialization for maintenance**

**![A screenshot of a social media post

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Maintenance is the parrent class of two sub class named schedule\_maintenance and unschedule\_maintenance. Since all the boat requires maintenance, the maintenance can splited into schedule\_maintennace and unschedule\_maintenance. The schedule\_maintenance can be done by the local companied or NSC itself. Therefore, if it is unschedule maintenance, we have to call the facilites to do the maintenance for the emergency purpose which is a part of the NSC dispatcher.

**Conclusion**

Creating a database strcture form the case study was a new experience for both of us. Working with a SQL workbench, cardinality and optionality gave us a new knowledge about the database administartion and managament. Reading the entitys using the cardinity and optionality helped us to learn about the linking between the database table.