COMP1350 2020 – ASSIGNMENT ONE

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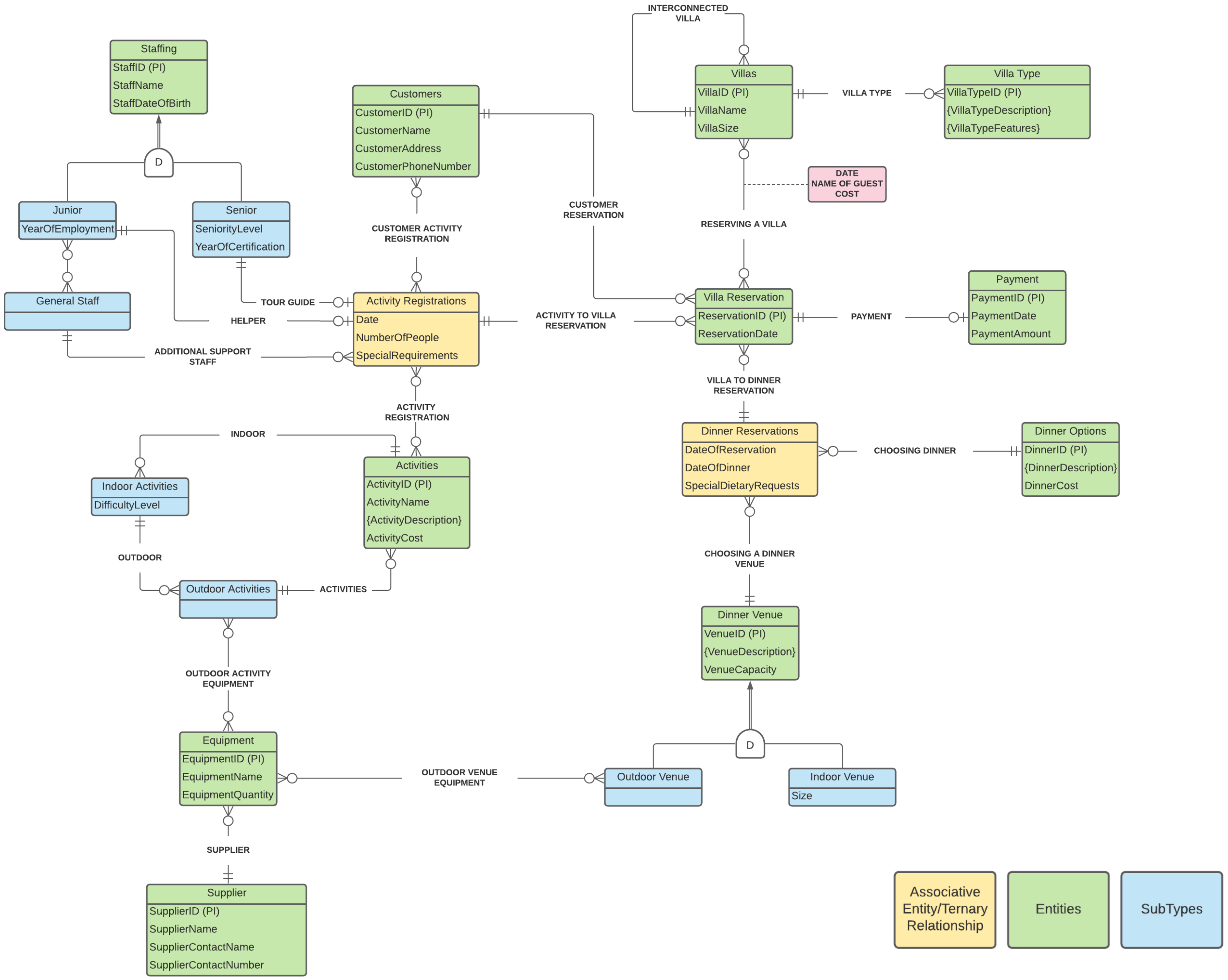

Staffing
StaffID (PI)
StaffName
StaffDateOfBirth
D
Junior
YearOfEmployment
Senior
SeniorityLevel
YearOfCertification
General Staff
TOUR GUIDE
HELPER
ADDITIONAL SUPPORT STAFF
Customers
CustomerID (PI)
CustomerName
CustomerAddress
CustomerPhoneNumber
CUSTOMER ACTIVITY REGISTRATION
CUSTOMER RESERVATION
Activity Registrations
Date
NumberOfPeople
SpecialRequirements
ACTIVITY TO VILLA RESERVATION
ACTIVITY REGISTRATION
INDOOR
Indoor Activities
DifficultyLevel
OUTDOOR
Activities
ActivityID (PI)
ActivityName
{ActivityDescription}
ActivityCost
Outdoor Activities
ACTIVITIES
OUTDOOR ACTIVITY EQUIPMENT
Equipment
EquipmentID (PI)
EquipmentName
EquipmentQuantity
OUTDOOR VENUE EQUIPMENT
SUPPLIER
Supplier
SupplierID (PI)
SupplierName
SupplierContactName
SupplierContactNumber
INTERCONNECTED VILLA
Villas
VillaID (PI)
VillaName
VillaSize
VILLA TYPE
Villa Type
VillaTypeID (PI)
{VillaTypeDescription}
{VillaTypeFeatures}
DATE
NAME OF GUEST
COST
RESERVING A VILLA
Villa Reservation
ReservationID (PI)
ReservationDate
PAYMENT
Payment
PaymentID (PI)
PaymentDate
PaymentAmount
VILLA TO DINNER RESERVATION
Dinner Reservations
DateOfReservation
DateOfDinner
SpecialDietaryRequests
CHOOSING DINNER
Dinner Options
DinnerID (PI)
{DinnerDescription}
DinnerCost
CHOOSING A DINNER VENUE
Dinner Venue
VenueID (PI)
{VenueDescription}
VenueCapacity
D
Outdoor Venue
Indoor Venue
Size
Associative Entity/Ternary Relationship
Entities
SubTypes

Assumptions, if any:

- **CUSTOMER -> VILLA RESERVATION**: One to Many Relationship, because multiple Customers can make a Villa Reservation.
- **VILLA RESERVATION -> VILLA**: Many to Many Relationship, because there can be multiple Villa Reservations for Multiple Villas.
- **VILLA -> VILLA TYPE**: One to Many Relationship, because there can be multiple Villas for each Villa Type, however each Villa can only have one Villa Type.
- **VILLA RESERVATION -> PAYMENT**: One to One Relationship, A single Payment with the cost of the Villa Reservations, the cost of all activity bookings, and the cost of dining from all dinner bookings can be made at the end for each Villa Reservation.
- **VILLA RESERVATION -> ACTIVITY REGISTRATION**: One to Many Relationship, because each Villa Reservation can store multiple Activity Registrations.
- **CUSTOMER –> ACTIVITY REGISTRATION**: Many to Many Relationship, because multiple Customers can register for multiple Activities.
- **ACTIVITY REGISTRATION -> ACTIVITIES**: Many to Many Relationship, because there can be multiple Activity Registrations for multiple Activities.
- **OUTDOOR ACTIVITIES-> EQUIPMENT**: Many to Many Relationship, because multiple types of Equipment can be used at multiple Outdoor Activities.
- **SUPPLIER -> EQUIPMENT**: One to Many Relationship, because one Supplier can supply multiple types of Equipment.
- **OUTDOOR VENUE -> EQUIPMENT**: Many to Many Relationship, because multiple Outdoor Venues can use multiple Equipment.
- **VILLA RESERVATION -> DINNER RESERVATION**: One to Many Relationship, because each Villa Reservation can hold multiple Dinner Reservations.
- **DINNER RESERVATION -> DINNER OPTION**: One to Many Relationship, because there are many Dinner Options to choose from, but Customers can only choose one Dinner Option when making a dinner reservation.
- **DINNER RESERVATION -> VENUE**: One to Many Relationship, because there are many Venues to choose from, but Customers can only choose one Venue when making a Dinner Reservation.
- **ACTIVITY RESERVATION -> SENIOR STAFF**: One to One Relationship, because every Activity Registration gets one tour guide, which is a Senior Staff.
- **ACTIVITY RESERVATION -> JUNIOR STAFF:** One to One Relationship, because every Activity Registration gets one helper, which is a Junior Staff.
- **ACTIVITY REGISTRATION -> GENERAL STAFF**: One to Many, because every Activity Registration can have multiple Support Staff.

- **VILLA -> VILLA**: **One to Many Relationship**, because there are many Villas, but some Villas could be interconnected to one other Villa.
- **ACTIVITIES -> INDOOR ACTIVITIES**: **One to Many Relationship**, because there can be multiple Indoor Activities to one Activity.
- **OUTDOOR ACTIVITIES -> ACTIVITIES**: **One to Many Relationship**, because there can be multiple Outdoor Activities to one Activity.
- **INDOOR ACTIVITIES -> OUTDOOR ACTIVITIES**: **One to Many Relationship**, because some Activities could be both Indoor and Outdoor.

TASK 2: LOGICAL TRANSFORMATION

STEP ONE: Strong Entities

- Customers (**CustomerID (PK)**, CustomerName, CustomerAddress, CustomerPhoneNumber)
- Villa Reservation (**ReservationID (PK)**, ReservationDate)
- Payment (**PaymentID (PK)**, PaymentDate, PaymentAmount)
- Dinner Options (**DinnerID (PK)**, DinnerCost)
- Dinner Venue (**VenueID (PK)**, VenueCapacity)
- Equipment (**EquipmentID (PK)**, EquipmentName, EquipmentQuantity)

STEP TWO: Weak Entities

- No weak entities.

STEP THREE: One to One Relationship

- Villa Reservation (**ReservationID (PK)**, ReservationDate, **PaymentID (FK)**)

STEP FOUR: One to Many relationship

- Customers (**CustomerID (PK)**, CustomerName, CustomerAddress, CustomerPhoneNumber, **ReservationID (FK)**)

STEP FIVE: Many-Many relationship

- No Many to Many Relationship

STEP 6: Multi-valued attributes

- DinnerDescription (**DinnerID (PK, FK)**, DinnerName (PK))
- VenueDescription (**VenueID (PK, FK)**, VenueName (PK))

STEP 7: Associative Entity/Ternary Relationship

- Dinner Reservations (**ReservationID (PK, FK)**, **DinnerID (PK, FK)**, **VenueID (PK, FK),** DateOfReservation, DateOfDinner, SpecialDietaryRequests.)

STEP 8a: Works for total/partial; overlap/disjoint- inherits just PK

- Outdoor Venue (**OutdoorVenueID (PK)**)
- Indoor Venue {**IndoorVenueID (PK)**, Size)

REPEAT STEP 2-7

STEP 2: Weak Entities

- No Weak entities

STEP 3: One to One Relationship

- No One to 0ne Relationship

STEP 4: One to Many Relationship

- No One to Many Relationship

STEP 5: Many to Many Relationship

- Dinner Venue (**Venue ID (PK, FK)**, VenueCapacity, **EquipmentID (FK)**)

STEP 6: Multi-valued Attributes

- No multi-valued attributes

STEP 7: Associative Entity/Ternary Relationship

- No associative/ternary relationship

FINAL TABLE LIST

- Customers (**CustomerID (PK)**, CustomerName, CustomerAddress, CustomerPhoneNumber, **ReservationID (FK)**
- Villa Reservation (**ReservationID (PK)**, ReservationDate, **PaymentID (FK)**)
- Payment (**PaymentID (PK)**, PaymentDate, PaymentAmount)
- Dinner Options (**DinnerID (PK)**, DinnerCost)
- Dinner Venue (**Venue ID (PK, FK)**, VenueCapacity, **EquipmentID (FK)**)
- Equipment (**EquipmentID (PK)**, EquipmentName, EquipmentQuantity)
- DinnerDescription (**DinnerID (PK, FK)**, **DinnerName (PK)**)
- VenueDescription (**VenueID (PK, FK)**, **VenueName (PK)**)

- DinnerReservation (**ReservationID (PK, FK)**, **DinnerID (PK, FK)**, **VenueID (PK, FK)**, DateOfReservation, DateOfDinner, SpecialDietaryRequests.)
- Outdoor Venue (**OutdoorVenueID (PK)**)
- Indoor Venue **IndoorVenueID (PK)**, Size)

APPLICATION OF 8b, 8c, 8d

8b: Only applies for total

- Outdoor Venue (**OutdoorVenueID (PK)**, VenueCapacity)
- Indoor Venue (**IndoorVenueID (PK)**, VenueCapacity, Size)

8c: Only applies for Disjoint

- Venue (**VenueID (PK)**, VenueCapacity, Size, VenueType)

8d: Only applies for Overlap and the Constraint is Overlap

- N/A

TASK 3: NOMALISATION

THIS TABLE IS 1NF BECAUSE THERE ARE NO MULTI-VALUED ATTRIBUTES

DinnerCode	MenuItemID	MenuItemName	DinnerCost	PortionSize	DressCode	DressCodeDescription
Din1	DESS1	Banoffee Pie	$125	2	D1	Formal Attire
Din1	ENTR1	Spring Roll	$125	1	D1	Formal Attire
Din1	MAINS1	Pumpkin Quinoa Salad	$125	2	D1	Formal Attire
Din2	DESS1	Banoffee Pie	$75	1	D2	Smart Casual
Din2	ENTR1	Spring Roll	$75	1	D2	Smart Casual
Din2	MAINS1	Pumpkin Quinoa Salad	$75	1	D2	Smart Casual

1NF -> 2NF

FD	DinnerCode	MenuItemID	MenuItemName	DinnerCost	PortionSize	DressCode	DressCodeDescription
PD1	DinnerCode			DinnerCost		DressCode	DressCodeDescription
PD2		MenuItemID	MenuItemName				

FD-PortionSize	DinnerCode	MenuItemID	PortionSize	
PD1-Dinner	DinnerCode	DinnerCosts	DressCode	DressCodeDescription
PD2-Menu	MenuItemID	MenuItemName		

2NF -> 3NF

PD1-Dinner	DinnerCode	DinnerCosts	DressCode	DressCodeDescription
TD1-Outfit	DressCode	DressCodeDescription		

Colour = Primary Key
Underline =Foreign Key

PD1-Dinner	DinnerCode	DressCode	DinnerCosts
TD1-Outfit	DressCode	DressCodeDescription	

3NF: Final Table

FD-PortionSize	DinnerCode	MenuItemID	PortionSize
PD1-Dinner	DinnerCode	DressCode	DinnerCosts
PD2-Menu	MenuItemID	MenuItemName	
TD1-Outfit	DressCode	DressCodeDescription	