Object Design Document: Car Rental Service
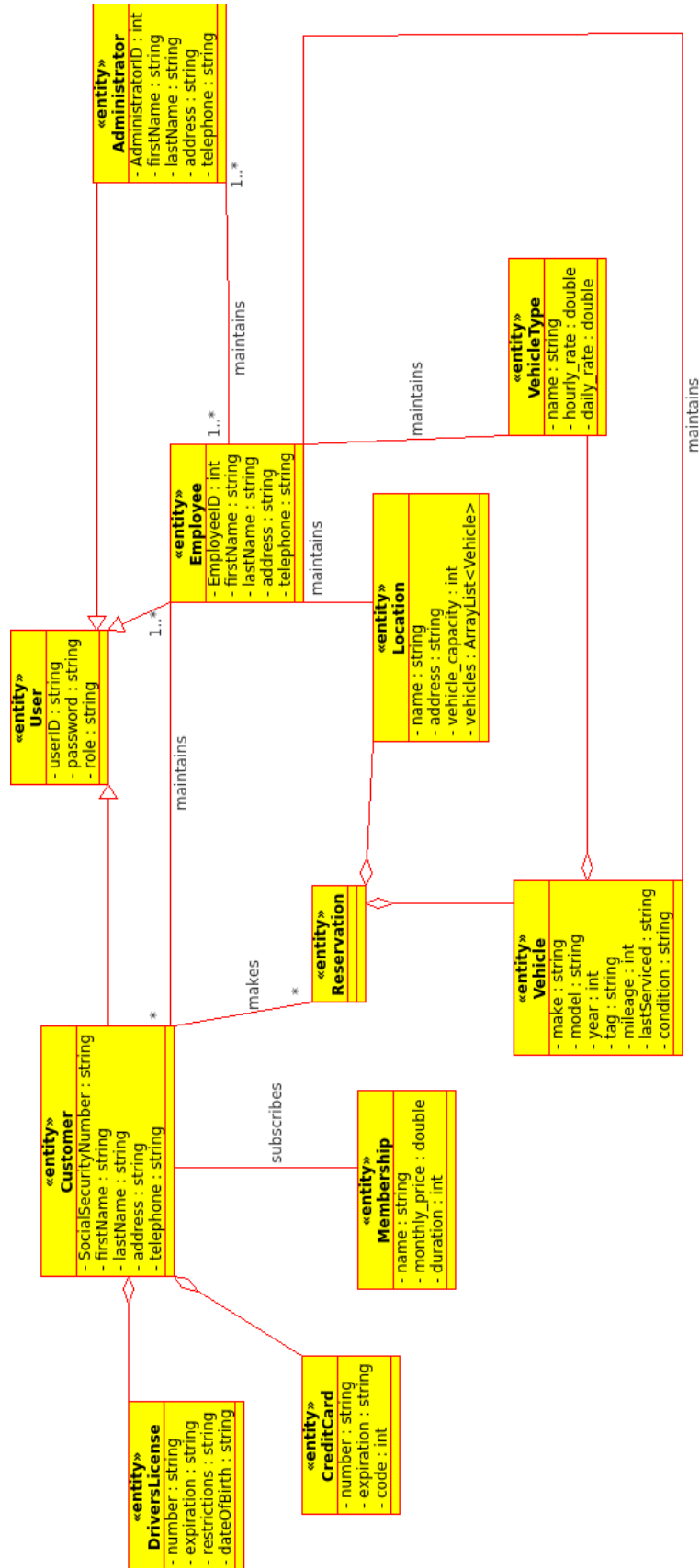
Group 4
CSCI 4050: Software Engineering
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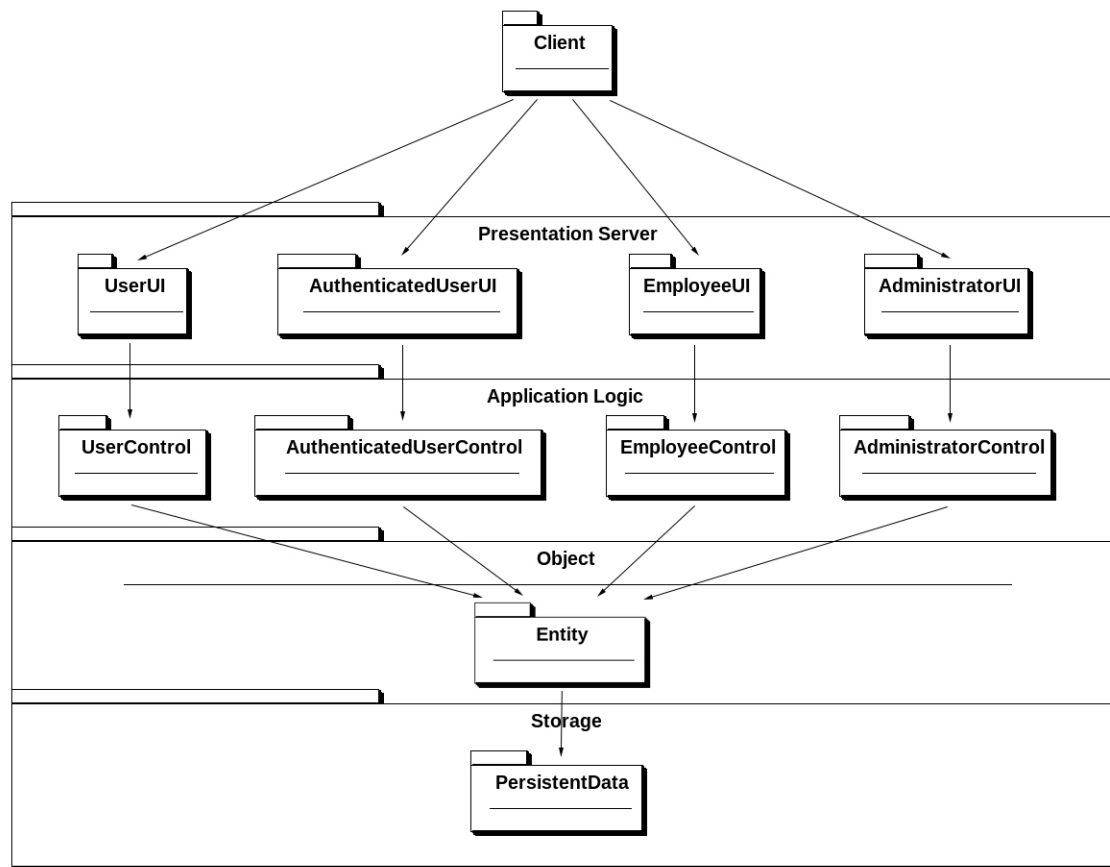
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3.1.1 Entity Package

ClassName	User		
Purpose	The generalize entity involved in a Car rental system transaction		
SuperClass	None		
SubClass	Administrator, Employee, Customer		
Attributes	Name	Type	Description
	userID	String	The ID of the User as defined by the System Registration
	password	String	The encryption on the user profile to be accessed
	role	String	The role of the user defined by the system
Operations	Name	Inputs	Description
	Login	userID, Password role	The login page allows users access to registered users within a system
	Logout		The logout page allows users currently login in to exit there current system profile
	updateProfile		The update profile operation allows for user to change and save their profile information
Relationships	Super class of Administrator, Employee, Customer		
Constraints			
Exception			

ClassName	DriversLicense		
Purpose	Provide driver's license information of Customer		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	number	String	The number on the license
	expiration	String	The expiration date
	dateOfBirth	String	The date of birth on the license

Operations	Name	Inputs	Description
Relationships	None		
Constraints			
Exception			

ClassName	CreditCard		
Purpose	Provide credit card information of Customer		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	number	String	The number on the card
	expiration	String	The expiration date
	code	Int	The CVC code
Operations	Name	Inputs	Description
Relationships	None		
Constraints			
Exception			

ClassName	Customer			
Purpose	The generalization of group of Users labeled Customers			
SuperClass	Users			
SubClass	None			
Attributes	Name	Type		Description
	Social Security Number	String		Customer social security information for verification
	firstName	String		Customer First name
	lastName	String		Customer Last name
	address	String		Customer Address
	telephone	String		Customer Telephone number
Operations	Name	Inputs	Outputs	Description
	ViewMyInfo		Personal	Displays all personal

			Information Display	information of the current logged in Customer
	ViewAvailbileCars	CarName CarLocation	Available Cars	Displays the Cars available for rental by location
	ViewMyRentalHistory		Rental History Report	Displays a current logged Customer rental history
	ViewMyBillingInfo		Billing Report	Displays Current logged Customer billing report
	ViewMyCarRental		Car Rental Report	Displays Customer past and present car rentals
	EditMyInfo	FirstName LastName Address Telephone #	Updated Personal Information	Allows Customers to edit their information as needed
Relationships	Subclass of the User A Customer can only rent 1 Car at a time A Customer can only edit personal information, but not vehicle information			
Constraints				
Exception				

ClassName	Employee			
Purpose	The generalization of group of Users labeled Employee within the Car rental System			
SuperClass	Users			
SubClass	None			
Attributes	Name	Type	Description	
	employeeID	Int	ID identifying the employee within the car rental system	
	firstName	String	Employee First name	
	lastName	String	Employee Last name	
	address	String	Employee Address	
	telephone	String	Employee Telephone number	
Operations	Name	Inputs	Outputs	Description

			Personal Information Display	Displays all personal information of the current logged in employee
	ViewMyInfo			
	ViewVehicles	CarName CarLocation	Available Cars including model, make year, vin number, and repair history reports.	Displays the Cars available within the Car rental system
	ViewRentalHistory	Customer Name	Rental History Report on any Customer within the system	Displays a rental history for all customer by name
	ViewBillingHistory	Customer Name	Billing Report	Displays all Customer History Billing reports
	ViewCarRentals	Customer Name	Car Rental Report	Displays All Customer Car rental reports
	EditVehicleInfo	Vehicle Name	Updated Vehicle Information	Edit Vehicle Information
	EditCustomerInfo	FirstName LastName Social Security Number	Update Customer Personal Information	Allows Employee to edit customer information as long as they have the following information
Relationships	Subclass of the User An Employee can edit Vehicle Information, and Customer information on Request			
Constraints				
Exception				

ClassName	Administrator
Purpose	The generalization of group of Users labeled Administrator within the Car rental System
SuperClass	Users

SubClass	None			
Attributes	Name	Type	Description	
	adminID	Int	ID identifying the Administrator within the car rental system	
	firstName	String	Employee First name	
	lastName	String	Employee Last name	
	address	String	Employee Address	
	telephone	String	Employee Telephone number	
Operations	Name	Inputs	Outputs	Description
	ViewMyInfo		Personal Information Display	Displays all personal information of the current logged in employee
	ViewVehicles	CarName CarLocation	Available Cars including model, make year, vin number, and repair history reports.	Displays the Cars available within the Car rental system
	ViewRentalHistory	Customer Name	Rental History Report on any Customer within the system	Displays a rental history for all customer by name
	ViewBillingHistory	Customer Name	Billing Report	Displays all Customer History Billing reports
	ViewCarRentals	Customer Name	Car Rental Report	Displays All Customer Car rental reports
	EditVehicleInfo	Vehicle Name	Updated Vehicle Information	Edit Vehicle Information
	EditCustomerInfo	CustomerName	Update Customer Personal Information	Allows Admin to edit customer information both adding and removing Customers
	EditEmployeeInfo	EmployeeName	Updates Employee	Allows Admin to edit Employee information

		Information within the system	within the system both adding and removing employees
Relationships	Subclass of the User An Employee can edit Vehicle Information, and Customer information on Request		
Constraints			
Exception			

ClassName	VehicleType		
Purpose	An entity class for storing information on vehicle types		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	name	String	The name of the vehicle type
	hourly_rate	Double	The hourly price of the vehicle type
	daily_rate	Double	The daily price of the vehicle type
Operations	Name	Inputs	Outputs	Description
Relationships	None		
Constraints			
Exception			

ClassName	Vehicle		
Purpose	An entity class for storing information on vehicles in the fleet		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	make	String	The make of the vehicle
	model	String	The model of the vehicle
	year	Integer	The manufacture year of the vehicle
	tag	String	The registration tag of the vehicle

	mileage	Integer	The current mileage of the vehicle	
	last_serviced	Date	The last date the vehicle was serviced	
	condition	String	The condition of the vehicle	
Operations	Name	Inputs	Outputs	Description
Relationships	A vehicle belongs to 1 location			
Constraints				
Exception				

ClassName	Location		
Purpose	An entity class for storing information on point of presence POP locations		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	name	String	The name of the location
	address	String	The address of the location
	vehicle_capacity	Integer	The capacity of the location
	vehicles	List<Vehicle>	The list of vehicles assigned to the location
Operations	Name	Inputs	Outputs	Description
Relationships	None		
Constraints			
Exception			

ClassName	Membership		
Purpose	An entity class for storing information on membership tiers		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description
	name	String	The name of the membership tier

	monthly_price	Double	The price of one month's service	
	duration	Integer	The length of membership in months	
Operations	Name	Inputs	Outputs	Description
Relationships	A customer belongs to 1 membership			
Constraints				
Exception				

3.1.2 user.control package

ClassName	User			
Purpose	This control class allows a User to complete actions associated with login and profile modification			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	login	username password		Logs the user in with the appropriate permissions
	logout			Logs the user out
	loadProfile	username		Gets all relevant information related to the username
	updateProfile	profile	Boolean	Updates profile information and returns confirmation with Boolean
	registerCustomer	username password address creditcard driverlicense	Boolean	Allows a User to register as a customer
	vehicleSearch	name		Performs a search of vehicles in the fleet
Relationships	None			
Constraints				
Exception				

3.1.3 user.boundary package

ClassName	LoginUI			
Purpose	This boundary class allows a User to log in			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	login	username password		Verify the user and logs the user with appropriate permissions
Relationships	None			
Constraints				
Exception				

ClassName	LogoutUI			
Purpose	This boundary class allows a User to log out			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	logout			Logs the user out
Relationships	None			
Constraints				
Exception				

ClassName	ChangeProfileUI		
Purpose	This boundary class allows a User to perform profile changes		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description

Operations	Name	Inputs	Outputs	Description
	updateProfile	profile		Updates the profile of a user
	saveProfile	profile	Boolean	Saves changes of profile change to data structure
Relationships	None			
Constraints				
Exception				

ClassName	RegisterUI			
Purpose	This boundary class allows a User to register as a customer			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	registerCustomer	username password address creditcard driverlicense	Boolean	Registers a customer
Relationships	None			
Constraints				
Exception				

ClassName	SearchUI			
Purpose	This boundary class allows a User to search the vehicle fleet			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description

	serach	keyword	List<Vehicle>	Gets a list of available vehicles based on keyword
Relationships	None			
Constraints				
Exception				

3.1.4 administrator.control package

ClassName	UserAdd			
Purpose	This control class allows Administrator to add users of all permissions			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	addUser	username password	Boolean	Adds a user to the database with Boolean confirmation
Relationships	None			
Constraints				
Exception				

ClassName	VehicleRemove			
Purpose	This control class allows Administrator to remove a vehicle from the system			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	removeVehicle	vehicleProfile	Boolean	Removes a vehicle from the fleet with Boolean conformation
Relationships	None			
Constraints				
Exception				

ClassName	VehicleTypeRemove			
Purpose	This control class allows a Administrator to remove a vehicle type from the system			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	removeVehicleType	vehicleType	Boolean	Removes a vehicletype from the database with confirmation
Relationships	None			
Constraints				
Exception				

ClassName	EmployeeRemove			
Purpose	This control class allows a Adminstrator to remove an employee			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	removeEmployee	userProfile	Boolean	Remove an employee from the system with Boolean confirmation
Relationships	None			
Constraints				
Exception				

3.1.5 administrator.boundary package

ClassName	UserAddUI
Purpose	This boundary class allows an Administrator to add a user to the domain
SuperClass	None

SubClass	None		
Attributes	Name	Type	Description
Operations	Name	Inputs	Outputs	Description
	addUser	username password	Boolean	Adds a user to the system confirmation
Relationships	None		
Constraints			
Exception			

ClassName	RemoveVehicleUI
Purpose	This boundary class allows Administrator to remove a vehicle from the fleet
SuperClass	None
SubClass	None

Attributes	Name	Type	Description

Operations	Name	Inputs	Outputs	Description
	removeVehicle	vehicleProfile	Boolean	Removes a vehicle from the fleet with conformation

Relationships	None
Constraints	
Exception	

ClassName	RemoveVehicleTypeUI
Purpose	This boundary class allows Administrator to remove a vehicletype from the system
SuperClass	None
SubClass	None

Attributes	Name	Type	Description

Operations	Name	Inputs	Outputs	Description

	removeVehicleType	vehicleType	Boolean	Removes a vehicletype from the site with confirmation
Relationships	None			
Constraints				
Exception				

ClassName	RemoveEmployeeUI			
Purpose	This boundary class allows Administrator to remove a employee from the system			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	removeEmployee	userProfile	Boolean	Remove an employee from the system with confirmation
Relationships	None			
Constraints				
Exception				

3.1.6 employee.control package

ClassName	Vehicle			
Purpose	This control class allows Employee to modify vehicle information			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	addVehicle	vehicleType make model year tag mileage	Boolean	Adds a vehicle to the fleet with Boolean confirmation

	last_serviced condition		
	modifyVehicle	vehicleProfile	Boolean	Modify's vehicle information with Boolean confirmation

Relationships	None
Constraints	
Exception	

ClassName	VehicleType			
Purpose	This control class allows Employee to modify vehicle type information			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	addVehicleType	name hourly_rate daily_rate	Boolean	Adds a vehicle type to the system with Boolean confirmation
	modifyVehicleType	vehicleType	Boolean	Modify's a vehicle type information with Boolean confirmation
Relationships	None			
Constraints				
Exception				

ClassName	UserList			
Purpose	This control class allows Employee view customer's information			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description

	listUser	keyword	List<User>	Returns a list of users based on keyword
Relationships	None			
Constraints				
Exception				

3.1.7 employee.boundary package

ClassName	VehicleUI			
Purpose	This boundary class allows an Employee to perform actions on the fleet of vehicles			
SuperClass	None			
SubClass	None			
Attributes	Name		Type	Description
Operations	Name	Inputs	Outputs	Description
	addVehicle	vehicleType make model year tag mileage last_serviced condition	Boolean	Adds vehicle to database with confirmation
	modifyVehicle	vehicleProfile	Boolean	Modifies vehicle information in the database with confirmation
Relationships	None			
Constraints				
Exception				

ClassName	VehicleTypeUI		
Purpose	This boundary class allows a Employee to perform actions on the vehicle types		
SuperClass	None		
SubClass	None		
Attributes	Name	Type	Description

Operations	Name	Inputs	Outputs	Description
	addVehicleType	name hourly_rate daily_rate	Boolean	Adds a vehicle type to the system with Boolean confirmation
	modifyVehicleType	vehicleType	Boolean	Modifies a vehicle type information with Boolean confirmation

Relationships	None			
ClassName	UserUI			
Purpose	This boundary class allows an Employee to view information on users			
SuperClass	None			
SubClass	None			

Attributes	Name	Type		Description

Operations	Name	Inputs	Outputs	Description
	listUser	keyword	List<User>	Lists users based on keyword match

Relationships	None
Constraints	
Exception	

3.1.8 customer.control package

ClassName	Membership			
Purpose	This control class allows a Customer to perform actions to their membership options			
SuperClass	None			
SubClass	None			

Attributes	Name	Type		Description

Operations	Name	Inputs	Outputs	Description
	terminateMembership		Boolean	Terminates a membership of a customer with Boolean confirmation

Relationships	None
Constraints	
Exception	

ClassName	VehicleReservation			
Purpose	This control class allows a Customer to preform actions related to renting a vehicle			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	reserveVehicle	vehicleProfile	Boolean	Reserves a vehicle with Boolean confirmation
	returnVehicle	vehicleProfile	Boolean	Checks a vehicle back into the fleet of available vehicles with Boolean confirmation
Relationships	None			
Constraints				
Exception				

3.1.9 customer.boundary package

ClassName	MembershipUI			
Purpose	This boundary class allows a Customer to terminate their membership			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	terminateMembership		Boolean	Terminates a customer's membership with conformation
Relationships	None			

Constraints	
Exception	

ClassName	ReservationUI			
Purpose	This boundary class allows a Customer to reserve a vehicle			
SuperClass	None			
SubClass	None			
Attributes	Name	Type		Description
Operations	Name	Inputs	Outputs	Description
	reserveVehicle	vehicleProfile	Boolean	Reserves a vehicle with Boolean confirmation
	returnVehicle	vehicleProfile	Boolean	Checks a vehicle back into the fleet of available vehicles with Boolean confirmation
Relationships	None			
Constraints				
Exception				