

# Information Modelling Assignment

Financial Product: Car Insurance



## Introduction

For this financial product assignment I have chosen to model Car Insurance. I modelled the product using information found on the AVIVA Car Insurance website. The UML diagram image is displayed in landscape and portrait at the end of the document for ease of viewing.

## Information Research

### Car Insurance

Car insurance involves a policy purchased by a vehicle owner to aid in funding costs associated with getting into a car accident, and also any damage which occurs to the car. The driver would pay a premium each year to a car insurance company, the company then pays all or most of the costs associated with a car accident or other vehicle damage.

## Driver Information

### Driver

A driver is a possible/current customer of the car insurance company that holds a driver licence, and owns one or more cars. They can contact brokers, agents or look on the company website to get an insurance quote. Information such as their name, email, DOB and phone number are stored. They can hold a contract with the company for an insurance policy. Under this policy the driver can make a claim for an insurance payment.

### Driving Licence

A driving licence is a document permitting a person to drive a motor vehicle. The licence can be of varying types, for example provisional or full. A provisional licence is held by a driver that is in the process of learning the driving skill, and must be accompanied by a fully licenced driver at all times while driving a vehicle. A fully licenced driver has passed the relevant RSA driving test. Driving licences (for cars) are valid for 10 years, or for an alternative specified time limit due to an age restriction.

## Buying/Selling Insurance Process

### Broker

A driver may contact a broker to get car insurance quotes. A broker is a company registered as an adviser on matters of insurance, and as an arranger of car insurance cover with an insurer on behalf of a client. They provide the driver with possible quotes, if a quote can be provided by the insurance company, and secures the quote with a quote ID number in case the driver chooses to go ahead with it. The Broker has a broker business number, and has a unique name.

### Agent

A driver may contact an agent that works directly for the insurance company by phone or email to receive car insurance quotes. The agent works directly with the company to provide quotes to the driver for their car. An agent has a unique ID number assigned by the insurance company, and will have a name associated with that ID number. An agent will also have a commission rate, for each sale of insurance they will receive extra wages.

### Company Website

An insurance company usually has a website providing details about the company and also details about car insurance policies available and other car insurance FAQ. The website provides an application service for the driver to receive a quote online. The quote can be chosen and paid for online by the driver also, cutting out any middle man activity. The URL of a website is unique.

### Quote

A quote is an estimate of premium for the car insurance policy you selected and personal information you entered. A quote is not an offer for insurance or an insurance contract until you choose to go ahead with the quote. A driver can obtain many quotes from different sources, as they can vary in price. Each quote is given a quote ID as a reference if the driver wants to choose a specific quote to go into contract with.

### Insurance Policy

An insurance policy sets out the type of insurance coverage the driver has. Each individual policy has an ID number to distinguish between different driver's policies. The basic policy includes a maximum amount set out for car damage and injury to the other party, which are both covered in the event of a claim. An insurance policy is one of three types: third party; third party, fire and theft; and comprehensive. Each type of insurance policy has an option to add a named driver also.

### Third Party

This insurance policy only involves the basic coverage outlined for every insurance policy (car damage and injury to other party). This insurance is the basic legal requirement for a driver's car.

### Third Party, Fire and Theft

This insurance policy coverage, in addition to the basic coverage of an insurance policy outlined above, includes a maximum amount covered for loss of the driver's own property (car or belongings in the car), a maximum amount covered for damage to the driver's own car, all as a result of non-accidental fire or theft. Accidental damage to the vehicle is not covered.

### Comprehensive

This gives you third-party fire and theft cover but also allows you to claim for damage to your own car, no matter who is to blame. This policy adds coverage such as a maximum amount for windscreen damage, a maximum amount for a loss of driver's belongings, and a location range covered for breakdown assistance.

### Named Driver

A named driver on a policy is someone the policy holder chooses to be insured to drive their vehicle. Only the name and driving licence details of the named driver must be stored by the insurance company. The named driver must have a valid driving licence. A named driver may be also named on other driver's insurance policies, they are not restricted to just 1.

### Contract

A driver holds a contract for their insurance policy, which sets out the starting date of the policy, the expiry date of the policy, and also holds the driver's signature on it for comparison to the signature on future documents or claims for driver verification. The contract is drawn up by the insurance company when the driver decides to continue with a quote for an insurance policy.

## Paying For Car Insurance Policy

### Premium

An insurance premium is the amount of money that a driver must pay for an insurance policy. The premium starts with a basic rate, and is affected by loadings or discounts, which increase or decrease the basic rate, respectively. A premium can be made as one lump sum, or it can be divided into smaller instalments, which are a set percentage of the total premium, individualised to each driver. A premium is paid by the driver's debit or credit card.

### Discount

A premium may have many discounts that reduce the basic starting rate. Each discount type must have a discount ID to avoid confusion in calculations and on the company systems. A discount type may be applied to many driver's premiums. Each type of discount has an associated percentage, indicating the percentage of the basic rate that is to be discounted.

Some types of discounts are as follows:

- **Emergency Response** – this involves whether a car has a system that turns off fuel and locks doors when airbags deploy, or a system that alerts emergency services if an accident occurs.
- **Passive Restraint** – this involves whether a car has automatic seat belts, and driver-side/passenger-side airbags.
- **Anti-Lock Brakes** – this involves whether a car has ABS installed which prevents the car skidding by maintaining traction between the tires and the road.
- **Daytime Running Lights** – this involves whether a car has lights that run during the daytime, as they are seen to significantly increase the driver's safety, making them much more visible to other drivers and pedestrians than they would be without them.
- **Blind Spot Detection** – this involves whether a car lets the driver know when it senses an object in the car's blind spots.
- **Rear-view Camera** – this involves a screen which helps the driver see other vehicles or objects they might not be able to see in rear-view or side-view mirrors
- **Tire Pressure Monitor** – this involves whether a car has a system to alert the driver when the tire pressure is too low/too high, which would affect safe driving.
- **Anti-Theft** – this involves whether a car has devices such as alarms, which lessen the risk of the vehicle being stolen.
- **Stolen Recovery** – this involves whether a car has systems such as LoJack, which help police officers locate the vehicle after it has been stolen.
- **Multi Policy** – this involves whether the driver has other policies with the insurance company, for example health or home insurance, as some companies offer more than just car insurance.

- **No Claims Bonus** – this involves whether a driver has made any previous claims, if they have none then a discount is applied as it shows the driver is unlikely to make a claim. The discount is higher if the driver hasn't made claims in a longer period of time.

### Loading

A loading may be applied to a premium to increase the amount. Each loading type must have an ID to avoid confusion in calculations and on the system. Each loading also has the specified percentage that will be added to the basic premium rate for that loading.

Some loadings are as follows:

- **Accident** – this involves whether the driver's car has been in accidents previously, as this would indicate possible underlying car damage, making it more risky to drive.
- **Driver Age** – this involves increasing the premium due to the driver's age. A loading is added if the driver is quite young or old, which are the high risk categories.
- **Car Location** – this involves where the car is kept at night. For example, if the car is parked in a garage it is less likely to be damaged than when parked on a busy city street, so a lower loading would be applied.
- **Model** – this involves the car model specifications, for example if the engine size is large a bigger loading will be applied.

### Bank Card

A debit or credit card is usually used by a driver to pay an insurance premium. A debit card transfers the money directly from the driver's bank account at time of payment, whereas a credit card makes the payment instantly to the insurance company, but the driver pays the credit card company back at a later time. The name on card, card number, expiry date, and CVC (if required) are required by the insurance company.

## Claim Process

### Claim

A claim can be made by a driver following an accident, or following another damaging event that is covered by their policy. The claim must include information about the incident, such as claim cost, if the driver was at fault and the description of the event. Each claim is given a claim ID number. A driver can make as many claims as needed, or can make none.

### Payment

A payment to the driver, or to the other parties involved in the claim event, occurs after a claim has been made by a driver. The amount of the payment is specified. Also specified is the percentage of the payment that is awarded to the driver, and the percentage awarded to the other parties involved.

## Vehicle Information

### Car

A car which is owned by a driver, is a road vehicle, typically with four wheels, powered by an internal-combustion engine and able to carry a small number of people. A car is specifically registered to a driver, and has a unique Registration Plate Number. The car could have a private or business ownership type. The car has a specific model specification, as designed and built by the manufacturer.

### Model

A car has a specific model, which determines its bodywork, engine size, manufacturer and model name, amongst other details for this car design. A car can only be one specific model, but there can be many registered cars that are of the same model. The car model, in particular the engine size, is taken into account when insurance quotes are given to a customer.

### NCT Cert

Compulsory car testing was introduced in Ireland in January 2000. It is against the law to drive a car that has not passed a National Car Test. The NCT looks at the safety components of a car, to ensure the car is safe and fit for the road. Components such as brakes, exhaust emission, wheels and tyres, lights, steering and suspension, chassis and underbody, electrical systems, glass and mirrors, transmission, interior and the fuel system are tested. The NCT Cert will show a fail or a pass, but for insurance to be taken out on the car in question, it must have a valid NCT Cert with a pass result.

### Accident

An accident refers to any previous accidents the car in question may have endured, regardless of the driver's identity. Even if it was not the current owner of the car that was in the accident, the information is taken into account for insurance as it indicates the car may have outstanding underlying damage that makes the car unsafe to drive. An accident is an unintended collision of one motor vehicle with another, a stationary object, or person, resulting in injuries, death and/or loss of property. One or more cars can be involved in an accident.



## Data Dictionary

Name	Type	Description
Driver	Class	A person who drives a vehicle.
name	Attribute	The full name of the driver.
email	Attribute	The email address used by the driver.
phoneNo	Attribute	The mobile or landline phone number used by the driver.
dateOfBirth	Attribute	The date of birth of the driver.
Claim	Class	Made by a driver with an insurance policy for financial aid after an accident.
claimCost	Attribute	The total cost of the claim made.
otherPartiesInvolved	Attribute	A list of any other parties involved in the incident.
atFault	Attribute	A true or false value for if the driver was at fault or not.
descriptionOfEvent	Attribute	A description of the incident to be kept on file.
claimID	Attribute	A unique identifier assigned to the claim when it is made.
makes	Association	A driver may make a claim/claims, and a specific claim can be made by only one driver.
Payment	Class	A payment is a sum of money calculated to cover the costs of a claim, and is paid to the driver/other parties.
amount	Attribute	The amount of money the payment totals to.
percentageToDriver	Attribute	The percentage of the payment that is rewarded to the driver.
percentageToOtherParts	Attribute	The percentage of the payment that is rewarded to other parties involved.
results in	Association	Any claim made results in one payment.
Driving Licence	Class	A recognised certificate of a driving qualification, received after driving lessons and a test.
type	Attribute	The type of driving licence may vary, common types include provisional or full licences.
noPoints	Attribute	The amount of penalty points associated with a driving licence, earned by wrongdoings on the road.
startingDate	Attribute	The date the driving licence is valid from.
expiryDate	Attribute	The date the driving licence expires on and becomes invalid.

holds	Association (Composition)	A Named Driver or a Driver must hold one driving licence. The driving licence would not exist without the driver.
Company Website	Class	The company has an online website available to web users around the globe.
URL	Attribute	The unique web address given to the website upon establishment.
visits	Association	A Driver may visit the company website, which can also be visited by many other Drivers.
Agent	Class	An agent is a person that works for the company and sells car insurance to Drivers.
agentNo	Attribute	A unique identifier assigned to an agent upon employment.
name	Attribute	The name of the person working as an agent.
commissionRate	Attribute	The percentage of a sale that the agent receives as an extra wage bonus, it varies between agents depending on experience and time with the firm.
contacts	Association	A Driver may contact different Agents to get information on car insurance and various quotes. Many drivers may contact these Agents.
Broker	Class	A Broker is an unbiased company that deals with many different insurance companies to provide the Driver with the best quotes.
name	Attribute	The name of the registered Broker
brokerNo	Attribute	The unique identifier assigned to the broker as a registered business
contacts	Association	A Driver may contact different Brokers to get information on car insurance and various quotes. Many drivers may contact these Brokers.
Quote	Class	A figure calculated for a premium for a possible car insurance policy
quoteNo	Attribute	A unique identifier assigned to a quote upon calculation
gives	Association	An Agent, a Broker, or the Company Website give quotes for possible insurance policies to the Driver. They may give none if a quote cannot be given, or many can be given for different policy coverage criteria. A specific quote can only be given by one website/agent/broker.
Insurance Policy	Class	A policy created for a Driver which specifies the coverage included

policyNo	Attribute	A unique policy number assigned for a policy upon creation.
otherDamageMax	Attribute	A maximum amount for damage to the other party's vehicle specified to be covered under the policy.
injuryToOtherMax	Attribute	A maximum amount for injury to the other party specified to be covered under the policy.
for	Association	A Quote is set out for an Insurance Policy if the Quote was chosen to continue with by the Driver. The Quote may not be for any Insurance Policy, if the quote was disregarded.
binds	Association	A Contract binds an Insurance Policy, one Contract binds one Insurance Policy for a Driver.
Third Party	Class	A type of Insurance Policy that only gives the basic coverage. It is a legal requirement.
Third Party,Fire and Theft	Class	A type of Insurance policy that gives basic coverage and more.
lossOfOwnMax	Attribute	The maximum amount for loss of the driver's vehicle/belongings in vehicle specified to be covered under the policy.
damageToOwnMax	Attribute	The maximum amount for damage to the driver's own vehicle specified to be covered under the policy.
Comprehensive	Class	A type of Insurance policy that gives basic coverage and more.
lossOfOwnMax	Attribute	The maximum amount for loss of the driver's vehicle/belongings in vehicle specified to be covered under the policy.
damageToOwnMax	Attribute	The maximum amount for damage to the driver's own vehicle specified to be covered under the policy.
windscreenCoverMax	Attribute	The maximum number of replacements available for a driver's windscreen specified to be covered under the policy.
breakdownAssistance LocationRange	Attribute	The location range set out for emergency assistance coverage in the event of a vehicle breakdown.
Named Driver	Class	A person that holds a driving licence, and is legally allowed drive the Driver's car under their insurance policy.
name	Attribute	The name of the named driver.
contains	Association (Aggregation)	An Insurance policy may contain named drivers, and a named driver may be in many

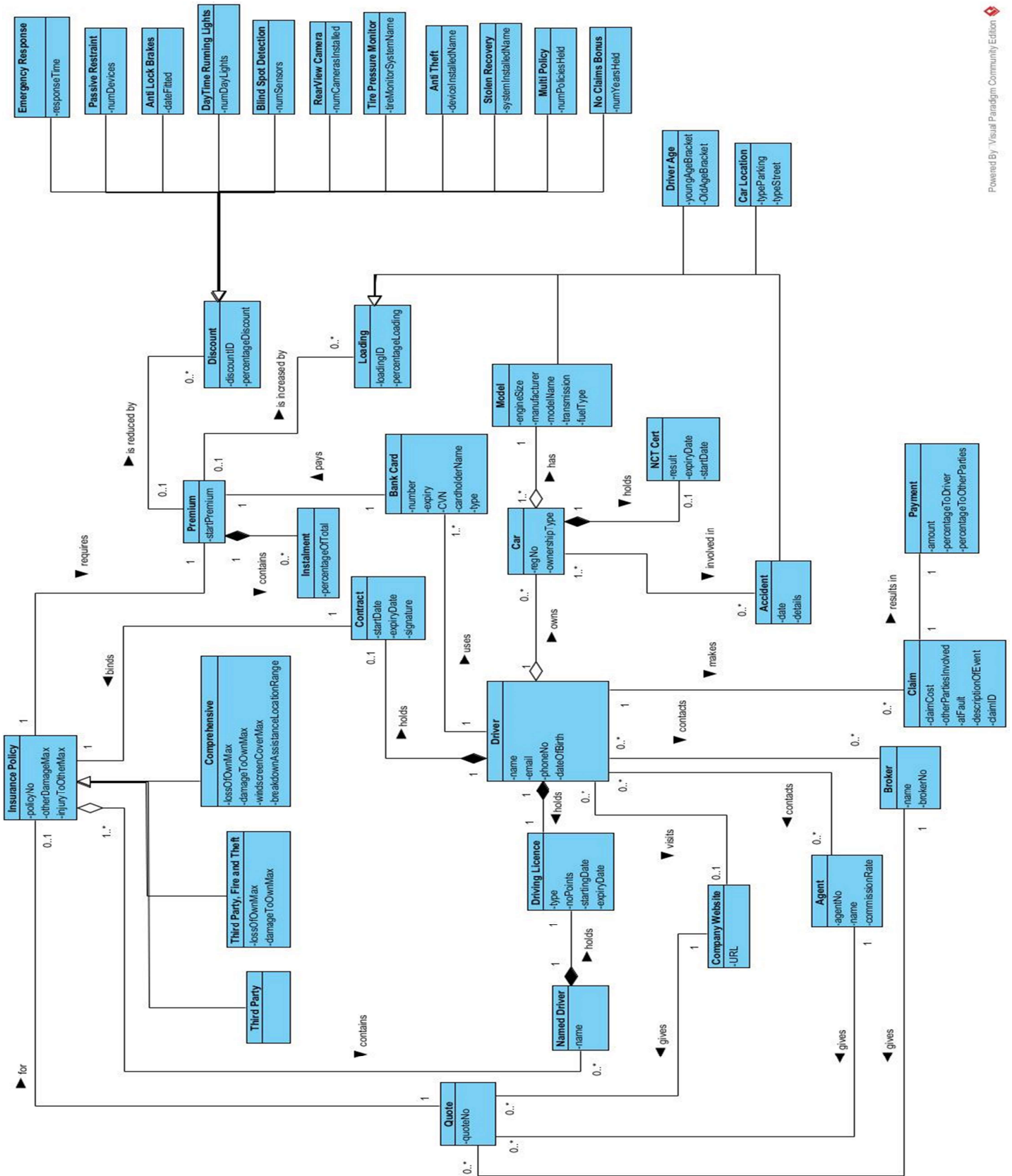
		insurance policies. A person is only considered a named driver if named on at least one policy. The named driver might still exist if the policy doesn't, as they may be on other policies.
Contract	Class	An agreement signed by the Driver that binds the insurance policy.
startDate	Attribute	The starting date of the contract/policy.
expiryDate	Attribute	The expiry date of the contract/policy.
signature	Attribute	The signature of the Driver must be present on a contract to make it legally valid.
holds	Association (Composition)	A Driver may hold one contract with an insurance company, and a contract can only be held by one Driver. The contract would not exist if the Driver didn't exist.
Premium	Class	An amount of money that is calculated to be paid by a Driver in return for the insurance coverage. It can be paid in one go or in instalments.
startPremium	Attribute	The starting rate for the relevant policy chosen.
requires	Association	An insurance policy requires a premium to be valid, and a certain individualised premium can only be required for one policy.
pays	Association	A Bank Card must pay one Premium, and a Premium must be paid by 1 bank card
Instalment	Class	This is a small portion of the Premium
percentageOfTotal	Attribute	This sets out the percentage of the total premium amount represented by each instalment
contains	Association (Composition)	A Premium contains no instalments if it is paid in one go, but can contain many instalments depending on instalment size. One individualised instalment can only be part of one Premium. An instalment would not exist if there was no Premium.
Bank Card	Class	A card used for payments.
number	Attribute	The unique identifier assigned to a bank card used for payments.
expiry	Attribute	The date the card will be unusable from.
CVN	Attribute	A security 3 digit number on the reverse of most cards to further validate a card's usage.
cardholderName	Attribute	The name printed on the card recognised as the legal cardholder.
type	Attribute	The type of card , can be debit, credit etc.

uses	Association	A Driver uses at least one bank card, but a bank card can only be used by the one registered legal cardholder (Driver).
Discount	Class	This reduces the basic premium amount for the insurance policy.
discountID	Attribute	A unique identifier assigned to a discount to avoid miscalculations.
percentageDiscount	Attribute	The percentage of the total premium that will be deducted as a result of that discount.
reduced by	Association	A Premium may be reduced by Discounts, but a specifically calculated discount may only reduce one Driver's Premium.
Loading	Class	This increases the basic premium amount for the insurance policy.
loadingID	Attribute	A unique identifier assigned to a loading to avoid miscalculations.
percentageLoading	Attribute	The percentage of the total premium that will be added as a result of that discount.
Is increased by	Association	A loading increases a Premium, and a Premium may be increased by many Loadings.
Emergency Response	Class	A discount relating to a car's inclusion of a system to automatically contact emergency services upon collision.
responseTime	Attribute	The average response time recorded for the system installed. Referring to how fast the car contacts services.
Passive Restraint	Class	This discount refers to a car's inclusion of systems such as seatbelts and airbags.
numDevices	Attribute	The number of restraint devices installed in the car.
Anti-Lock Brakes	Class	This discount refers to a car's inclusion of systems to restrict brake usage.
dateFitted	Attribute	The date the ABS system was installed.
DayTime Running Lights	Class	This discount refers to a car's inclusion of a system which runs lights during the day.
numDayLights	Attribute	The number of daytime lights installed on a car.
Blind Spot Detection	Class	This discount refers to a car's inclusion of a system to sense objects in the car's blind spots.
numSensors	Attribute	The number of sensors fitted on a vehicle.
RearView Camera	Class	This discount refers to a car's inclusion of a system that displays the view from the rear of the vehicle.

numCamerasInstalled	Attribute	The number of rear cameras installed on a vehicle.
Tire Pressure Monitor	Class	This discount refers to a car's inclusion of a system that alerts the Driver if tire pressure is not suitable.
tireMonitorSystemName	Attribute	The manufacturer specified name of the system installed on the vehicle.
Anti-Theft	Class	This discount refers to a car's inclusion of a system that prevents theft such as an alarm.
deviceInstalledName	Attribute	The manufacturer specified name of the system installed on the vehicle.
Stolen Recovery	Class	This discount refers to a car's inclusion of a system that allows police find the vehicle after being stolen.
systemInstalledName	Attribute	The manufacturer specified name of the system installed on the vehicle.
Multi Policy	Class	This discount refers to if a Driver has more policies with the company.
numPoliciesHeld	Attribute	The number of policies held by the Driver.
No Claims Bonus	Class	This discount refers to if a Driver has a no claims history.
numYearsHeld	Attribute	The number of years the Driver has had no claims.
Driver Age	Class	The age of the Driver.
youngAgeBracket	Attribute	The age bracket for a high risk young Driver.
oldAgeBracket	Attribute	The age bracket for a high risk older Driver.
Car Location	Class	This Loading refers to the location of the vehicle while stationary.
typeParking	Attribute	The type of parking the vehicle is in – public/private etc.
typeStreet	Attribute	The type of street the vehicle is parked on – city/town/estate etc.
Car	Class	A vehicle owned by a Driver, typically with four wheels, powered by an internal-combustion engine and able to carry a small number of people.
regNo	Attribute	The unique identifier assigned to a car when registered in a country.
ownershipType	Attribute	The type of ownership over the car – private/business.
owns	Association (Aggregation)	A Car is owned by one driver, and a driver may own many cars. The car will still exist if the driver does not.
Model	Class	This is the manufacturer's specifications of how they manufactured certain groups of cars.

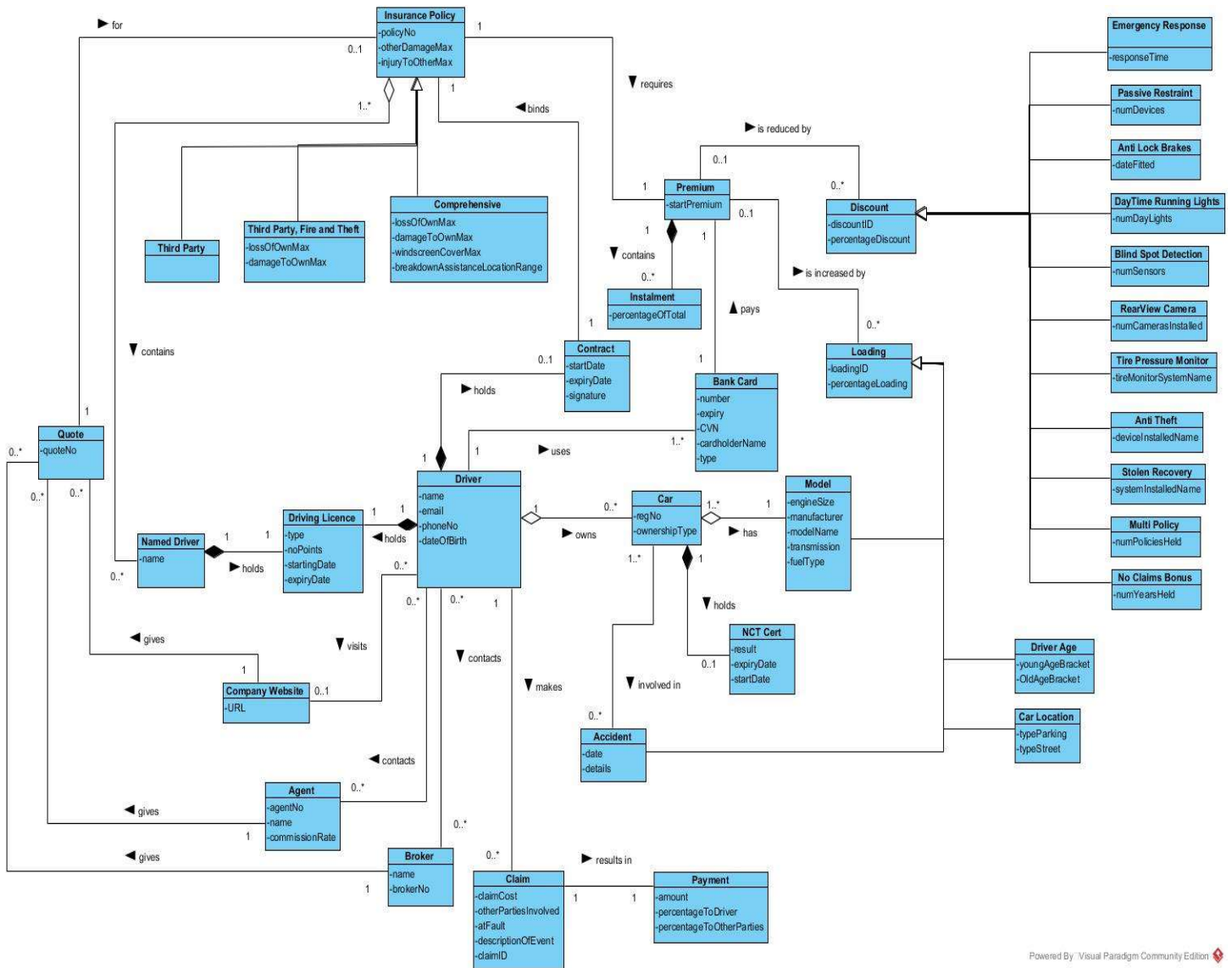
engineSize	Attribute	The specified litres capacitated by the vehicle engine.
manufacturer	Attribute	The name of the manufacturer of the vehicle.
modelName	Attribute	The name given to the particular model.
transmission	Attribute	The type of transmission of the vehicle model – automatic/manual.
fuelType	Attribute	The fuel type used by the engine in this model- petrol/diesel.
has	Association (Aggregation)	A car has one Model, and many cars may be a certain model type. A model still exists even if a specific car doesn't.
NCT Cert	Class	A certificate indicating the result following the vehicle taking the National Car Test.
result	Attribute	The result of the test.
expiryDate	Attribute	The expiry date of the valid NCT pass result.
startDate	Attribute	The start date of the NCT pass result.
holds	Association (Composition)	A Car may hold an NCT Cert, and an NCT Cert may only be held by the Car it is associated with. An NCT cert only exists if the car exists.
Accident	Class	An event that involves collision of a car with another vehicle, person or object.
date	Attribute	The date the accident occurred.
details	Attribute	The details of the incident.
Involved in	Association	A car may be involved in none or many accidents, and an accident may involve one or more cars.

## UML Class Diagram Landscape View





## UML Class Diagram Portrait View



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