

# **Carbon Footprints Application Design**

---

School of Electronics and Computer Science  
Pavlos Polianidis

# Table of Contents

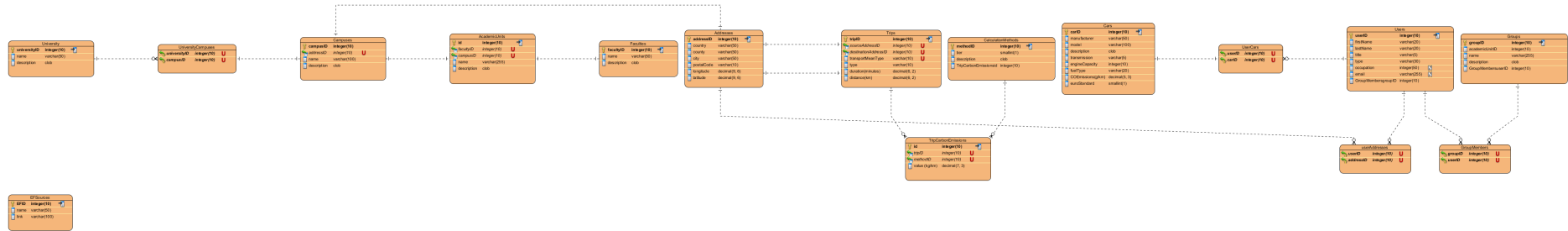
DataModel .....	4
-----------------	---

# Table of Figures

DataModel .....	4
-----------------	---

# Entity Relationship Diagram








## DataModel



Name	Value
Request Validate Snap To Grid	false
Name	DataModel
Data Model	Physical

## Summary

Name	Documentation
<a href="#">Cars</a>	Table containing some information about cars. The original data set is located in <a href="http://carfueldata.direct.gov.uk/">http://carfueldata.direct.gov.uk/</a>
<a href="#">Users</a>	Table with the system's users
<a href="#">Addresses</a>	A table containing details about addresses.
<a href="#">Trips</a>	
<a href="#">AcademicUnits</a>	Academic units of a faculty.
<a href="#">Groups</a>	Groups that exist in a university (e.g. research groups)
<a href="#">Campuses</a>	University campuses
<a href="#">CalculationMethods</a>	Table containing the different methods for calculating carbon emissions
<a href="#">University</a>	Table describing a university

 <a href="#">Faculties</a>	Faculties of a university
 <a href="#">UniversityCampuses</a>	Table containing the campuses of a university
 <a href="#">UserCars</a>	Table containing the cars that are owned by users
 <a href="#">TripCarbonEmissions</a>	Table containing the estimated carbon emissions of each trip.
 <a href="#">userAddresses</a>	
 <a href="#">GroupMembers</a>	It contains user's and the groups they are member of
 <a href="#">EFSources</a>	Table containing the sources for emission factors, which are used for in the carbon emission calculation formula.

## Details

---

### Cars

#### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
carID	integer(10)	PK	No	Record Id
manufacturer	varchar(50)		No	The manufacturer of the car
model	varchar(100)		No	The specific model of the car
description	clob		No	Some additional information about the car
transmission	varchar(5)		No	The car trasmission
engineCapacity	integer(10)		No	The car's engine capacity

fuelType	varchar(20)		No	The type of fuel that the car uses
COEmissions(g/km)	decimal(5)		No	The amount of carbon emitted by the car per km
euroStandard	smallint(1)		No	The euro standard



## Users

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
userID	integer(10)	PK	No	User Id
firstName	varchar(20)		No	User's first name
lastName	varchar(20)		No	User's last name
title	varchar(5)		No	User's title
type	varchar(30)		No	User's type. A user can be either a student or member of the staff.
occupation	integer(50)		Yes	This concerns the users who are members of the staff. It represents the member's occupation (e.g. professor)
email	varchar(255)		Yes	User's email address
GroupMembersgroupID	integer(10)		No	



## Addresses

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
addressID	integer(10)	PK	No	The address id
country	varchar(50)		No	The country of the address
county	varchar(50)		No	The county of the address
city	varchar(50)		No	the city of the address
postalCode	varchar(10)		No	The postal code of the address
longitude	decimal(9)		No	The longitude value of the address
latitude	decimal(9)		No	The latitude value of the address



## Trips

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
tripID	integer(10)	PK	No	The trip id
sourceAddressID	integer(10)	FK ( <a href="#">Addresses.addressID</a> )	No	The id of the address that represents the source of the trip (i.e. starting point)
destinationAddressID	integer(10)	FK ( <a href="#">Addresses.addressID</a> )	No	The id of the address that represents the destination of the trip

transportMeanType	varchar(10)		No	The id of the transport mean that was user during the travel
type	varchar(10)		No	The type of the travel (e.g. commuter, business travel etc)
duration(minutes)	decimal(6)		No	The duration of the trip
distance(km)	decimal(6)		No	The overall distance covered during the trip

## AcademicUnits

### Columns Summary

Name	Data Type	Constraints	Nullable	Documentation
id	integer(10)	PK	No	Academic unit id
facultyID	integer(10)	FK ( <a href="#">Faculties.facultyID</a> )	No	The id of the faculty, which the academic unit is member of
campusID	integer(10)	FK ( <a href="#">Campuses.campusID</a> )	No	The id of the campus where the academic unit is located in
name	varchar(255)		No	The name of academic unit (e.g. Electronics and Computer Science)
description	clob		No	Additional information about an academic unit

## Groups



## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
groupID	integer(10)	PK	No	Group id
academicUnitID	integer(10)		No	The academic unit which the group is part of
name	varchar(255)		No	The group's name
description	clob		No	Some additional information for a group
GroupMembersuserID	integer(10)		No	



## Campuses

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
campusID	integer(10)	PK	No	The campus id
addressID	integer(10)	FK ( <a href="#">Addresses.addressID</a> )	No	The id of the campus address
name	varchar(100)		No	The name of the campus (e.g. Highfield campus)
description	clob		No	Some additional information about the campus



## CalculationMethods

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
methodID	integer(10)	PK	No	Record id
tier	smallint(1)		No	The tier type of the method (refer to <a href="#">IPCC 2006</a> )
description	clob		No	Some additional information about the method.
TripCarbonEmissionsid	integer(10)		No	

## Comments

Note!	
Documentation	This table is still vague, since I haven't figured what does the term "method" means in the scope of carbon emissions calculation.
Author	Pavlos Polianidis
Date Time	9 #### 2012 7:36:35 μμ



## University

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
universityID	integer(10)	PK	No	University id
name	varchar(50)		No	The name of the university
description	clob		No	A brief description about the univeristy



## Faculties

## Columns Summary

Name	DataType	Constraints	Nullable	Documentation
facultyID	integer(10)	PK	No	Faculty id
name	varchar(50)		No	The name of the faculty (e.g. Faculty of Physics and Applied Sciences)
description	clob		No	Some additional information about the faculty

## UniversityCampuses

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
universityID	integer(10)	PK/FK ( <a href="#">University.universityID</a> )	No	The id of a university
campusID	integer(10)	PK/FK ( <a href="#">Campuses.campusID</a> )	No	The id of a campus

## UserCars

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
userID	integer(10)	PK/FK ( <a href="#">Users.userID</a> )	No	The id of the user who owns the car
carID	integer(10)	PK/FK ( <a href="#">Cars.carID</a> )	No	The id of the car that is owned by the user

## TripCarbonEmissions

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
id	integer(10)	PK	No	The record ID
tripID	integer(10)	FK ( <a href="#">Trips.tripID</a> )	No	The id of the trip that the carbon emission where made from
methodID	integer(10)	FK ( <a href="#">CalculationMethods.methodID</a> )	No	The id of the method that was used for calculating the co2 emissions
value (kg/km)	decimal(7)		No	The value of the carbon emission estimation as it was produced by a calculation method.

## userAddresses

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
userID	integer(10)	PK/FK ( <a href="#">Users.userID</a> )	No	User id
addressID	integer(10)	PK/FK ( <a href="#">Addresses.addressID</a> )	No	Address id

## GroupMembers

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
------	----------	-------------	----------	---------------

groupID	integer(10)	PK/FK ( <a href="#">Groups.groupID</a> )	No	Identification of a group
userID	integer(10)	PK/FK ( <a href="#">Users.userID</a> )	No	User identification. This represents a user is member of a group



## EFSources

### Columns Summary

Name	DataType	Constraints	Nullable	Documentation
EFID	integer(10)	PK	No	Record id
name	varchar(50)		No	The name of the source (e.g. organization providing emission facto data sets)
link	varchar(100)		No	The link to the source (e.g. web site, email etc.)