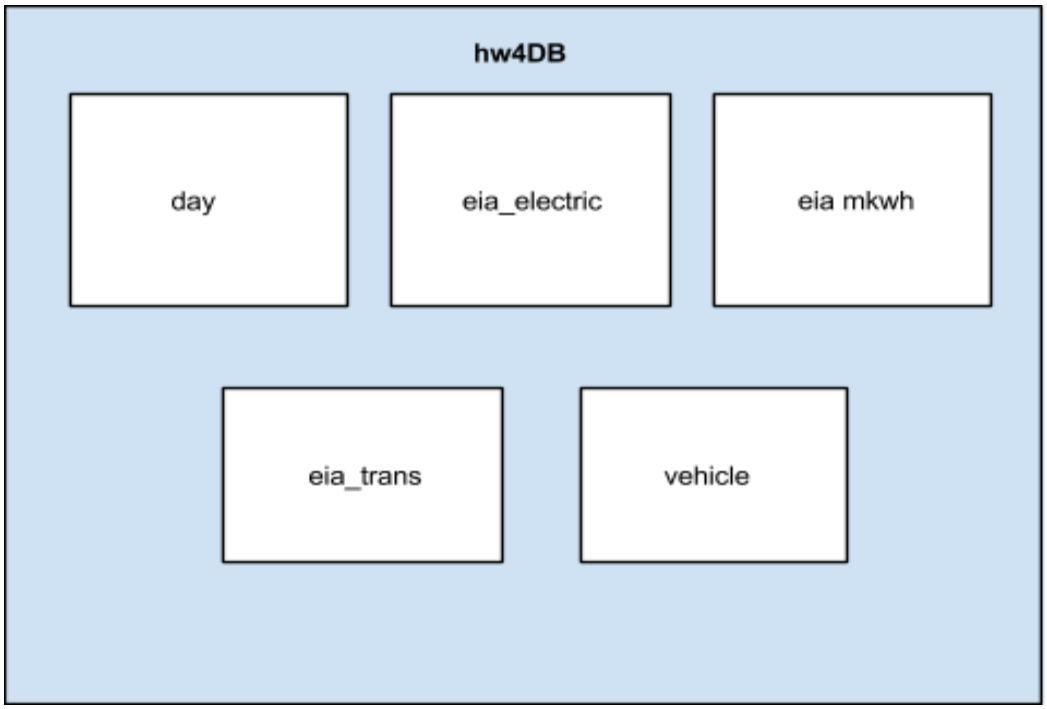
ECS165a Hw4

Problem 1:

Our database is called hw4DB.

hw4DB:



Relation	Attributes & Data Type	Reason
day	houseid character varying	One of the element of primary key
	personid character varying	One of the element of primary key
	strttime character varying	One of the element of primary key
	vehid character varying	One of the element of primary key
	tdtrpnum character varying	Potential future usage
	tdaydate character varying	One of the element of primary key
	trpmiles numeric(8,4)	To calculate travelled distances
	vmt_mile numeric(8,4)	Potential future usage
	vehtype character varying	Potential future usage

Relation	Attributes & Data Type	Reason
vehicle	houseid character varying	One of the element of primary key
	vehid character varying	One of the element of primary key
	hybrid character varying	Potential future usage
	tdaydate character varying	One of the element of primary key
	personid character varying	One of the element of primary key
	fueltype integer	Potential future usage
	gsyrgal integer	Potential future usage
	epatmpg numeric(5,2)	For calculating the fuel economy
	epatmpgf character varying	Potential future usage
	eiadmpg numeric(5,2)	Potential future usage
	vehtype character varying	Potential future usage

Relation	Attributes & Data Type	Reason
eia_electric	msn character varying	For differentiating between similar pieces of energy data
	yyyymm character varying	For getting date information
	value numeric(10,3)	Important data for calculations

Relation	Attributes & Data Type	Reason
eia_trans	msn character varying	For differentiating between similar pieces of energy data
	yyyymm character varying	For getting date information
	value numeric(10,3)	Important data for calculations

Relation	Attributes & Data Type	Reason
eia_mkwh	msn character varying	For differentiating between similar pieces of energy data
	yyyymm character varying	For getting date information
	value numeric(10,3)	Important data for calculations

For our database, we wanted to only import the attributes relevant to solving the problems. We determined that you could omit the data from files such as the Person file and the Household file. We only needed the information in the csv for Vehicles and Daytrips from the NHTS info and all of the EIA data except for the descriptions in the EIA files.
For future updates, we use triggers to prevent duplicate data from being entered. Then, in the future we can just simply run the csv parse and input program again to input the new data into the database.

Problem 2:

The programs are programmed in Python 3.4. the files are:

hw4parse_insert.py and hw4query.py.

hw4parse_insert.py parses the csv files and inputs them into the database based on some parameters, which are set my the user. You must go into the file itself and modify variables at the top of the file.

hw4query.py asks the user what part of problem 3 they want to solve and after taking in the user input, it outputs the results using queries to the database.

Problem 3:

a. % of individuals that travel less than X miles a day

X	5	10	15	20	25	30	35	40	45	50
%	12.62	23.2	35.35	43.88	52.98	58.97	65.3	69.56	73.99	76.91

X	55	60	65	70	75	80	85	90	95	100
%	80.07	82.09	84.39	85.88	87.45	88.58	89.74	90.57	91.45	92.05

b. The average fuel economy for individuals driving less than X miles a day

X	5	10	15	20	25	30	35	40	45	50
mpg	24.88	24.77	24.73	24.72	24.71	24.73	24.72	24.74	24.74	24.74

mpg	24.74	24.74	24.74	24.73	24.73	24.73	24.72	24.71	24.71	24.7
X	55	60	65	70	75	80	85	90	95	100

c. Percent of transportation CO_2 emissions attributed to household vehicles per months between 03/2008-04/2009:
yyyy/mm : %
2008/03 : 39.791%
2008/04 :46.098%
2008/05 : 43.553%
2008/06 : 45.729%
2008/07 : 46.309%
2008/08 : 46.365%
2008/09 : 47.508%
2008/10 : 44.077%
2008/11 : 46.895%
2008/12 : 45.889%
2009/01 : 45.679%
2009/02 : 51.472%
2009/03 : 47.606%
2009/04 : 50.917%

d. **Change of CO2 with 20 miles of electric range:**
yyyy/mm : (+/- change in metric tons of CO_2)
2008/03 : -0.718329482769801 metric tons of CO2
2008/04 : -20.168231849023623 metric tons of CO2
2008/05 : -36.30277828063232 metric tons of CO2
2008/06 : -36.08247547273179 metric tons of CO2
2008/07 : -42.40867337872511 metric tons of CO2
2008/08 : -47.26787381035466 metric tons of CO2
2008/09 : -43.69588819303316 metric tons of CO2
2008/10 : -46.929207392214984 metric tons of CO2
2008/11 : -48.33487900470575 metric tons of CO2
2008/12 : -47.91297846634529 metric tons of CO2
2009/01 : -46.90962954395921 metric tons of CO2
2009/02 : -40.507932209639876 metric tons of CO2
2009/03 : -48.39315644467626 metric tons of CO2
2009/04 : -32.561676610133176 metric tons of CO2

Change of CO2 with 40 miles of electric range:
yyyy/mm : (+/- change in metric tons of CO_2)

2008/03 : -0.8389599667960139 metric tons of CO2
2008/04 : -23.442282787430962 metric tons of CO2
2008/05 : -42.22452757025937 metric tons of CO2
2008/06 : -42.15135638754012 metric tons of CO2
2008/07 : -49.92913308446825 metric tons of CO2
2008/08 : -55.6763914074612 metric tons of CO2
2008/09 : -50.47177270636099 metric tons of CO2
2008/10 : -54.39543956591323 metric tons of CO2
2008/11 : -56.17689863655416 metric tons of CO2
2008/12 : -55.69813803525273 metric tons of CO2
2009/01 : -54.16038357000669 metric tons of CO2
2009/02 : -47.05259973973878 metric tons of CO2
2009/03 : -56.540797661482436 metric tons of CO2
2009/04 : -38.326456687675325 metric tons of CO2

Change of CO2 with 60 miles of electric range:
yyyy/mm : (+/- change in metric tons of CO_2)

2008/03 : -0.8783291944541751 metric tons of CO2

2008/04 : -24.640082645171727 metric tons of CO2
2008/05 : -44.52628337826248 metric tons of CO2
2008/06 : -44.629021920575376 metric tons of CO2
2008/07 : -53.027177890749684 metric tons of CO2
2008/08 : -59.13818169623318 metric tons of CO2
2008/09 : -53.018045356418405 metric tons of CO2
2008/10 : -57.26096268381454 metric tons of CO2
2008/11 : -59.38899033568558 metric tons of CO2
2008/12 : -58.61710776128191 metric tons of CO2
2009/01 : -56.926498150397904 metric tons of CO2
2009/02 : -49.4586716445779 metric tons of CO2
2009/03 : -59.8144845725662 metric tons of CO2
2009/04 : -40.66342110711208 metric tons of CO2