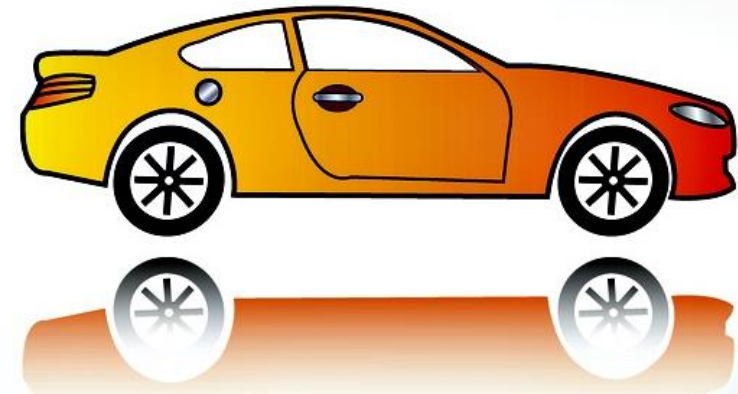


PROJECT OBJECTIVE



- Finding the best suitable car based on the user's preferences



Introduction

- Helps the user to find the best car based on his preferences.
- Excel-based program
- Has a big database of 50 cars
- Result is based on analysis with utility function and Monte Carlo simulation.
- Selects the best suitable car based on inputs as well as gives other car suggestions.

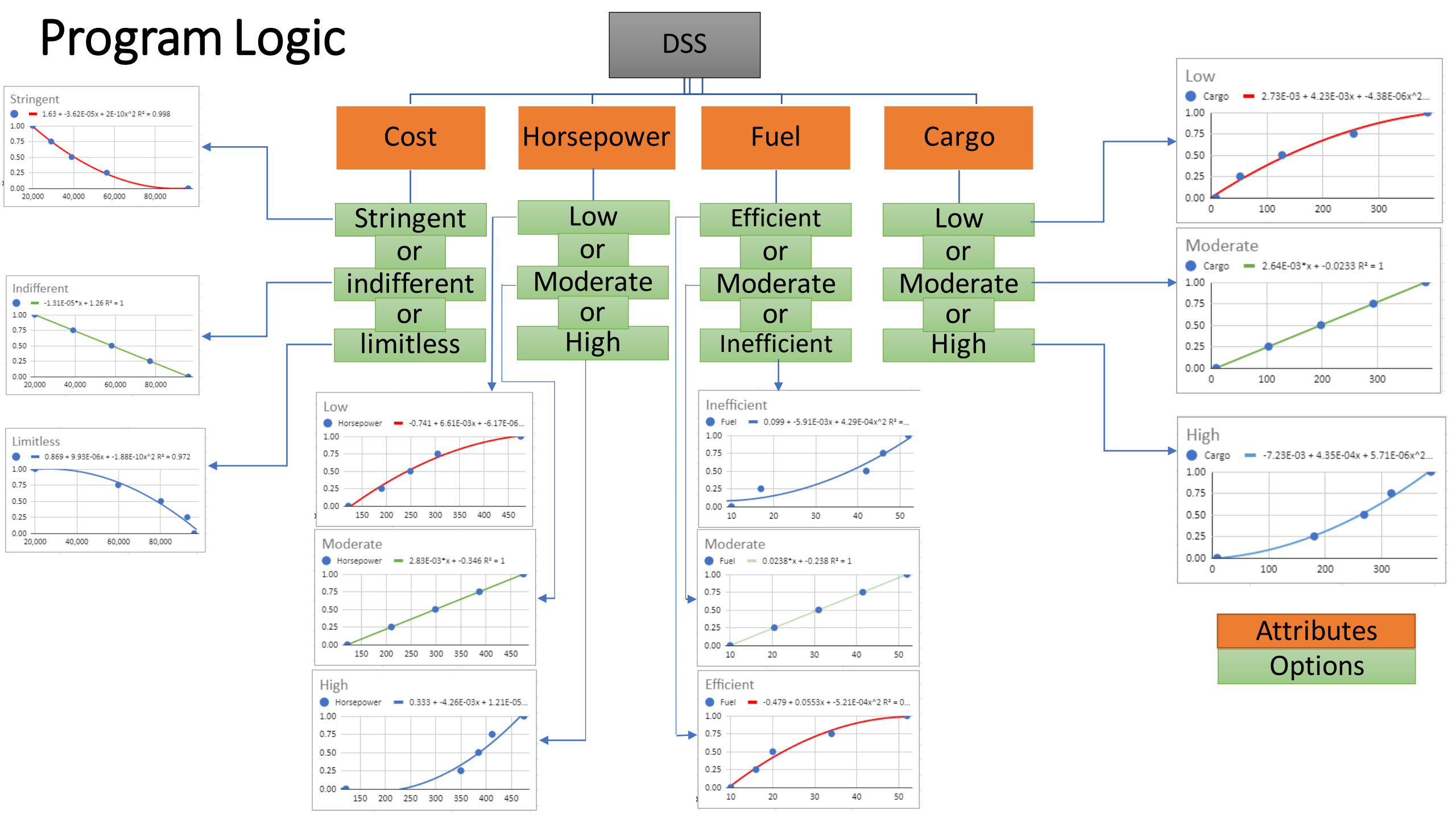




DSS FLOW CHART



Program Logic



DSS Working

- User Inputs and Preferences

User input		
Cost (\$)	MIN \$	50000
	MAX \$	70000
Type of Car		Sedan ▼
Rating on a scale from 1-10		Rating
Cost (\$)		7 ▼
Fuel economy (mpg)		10 ▼
Cargo capacity (cubic ft.)		5 ▼
Horsepower (hp)		10 ▼
Preferences		
What is your preference for cost		Stringent ▼
What is your preference for fuel economy		Efficient ▼
What is your preference for cargo capacity		Moderate ▼
What is your preference for horsepower		Low ▼

DSS Working

User input		
Cost (\$)	MIN \$	50000
	MAX \$	70000
Type of Car		Sedan ▼
Rating on a scale from 1-10		Rating
Cost (\$)		7 ▼
Fuel economy (mpg)		10 ▼
Cargo capacity (cubic ft.)		5 ▼
Horsepower (hp)		10 ▼
Preferences		
What is your preference for cost	Stringent	▼
What is your preference for fuel economy	Efficient	▼
What is your preference for cargo capacity	Moderate	▼
What is your preference for horsepower	Low	▼



Car model		Acura TLX	Genesis G80	Mercedes C class	Mercedes CLA	Audi A6
Cost		\$51,486	\$51,029	\$60,930	\$50,250	\$56,995
Fuel economy	min	22	22	25	25	23
	mode	26.5	27	27	30.5	27.5
	max	31	32	29	36	32
Cargo Capacity		13.5	13.1	8.8	11.6	13.7
Horsepower		272	300	255	221	261
Type of car		Sedan	Sedan	Sedan	Sedan	Sedan
Ratings		4.8	4.9	5	5	4.5
Utility		0.3208250883	0.351813808	0.276289526	0.2869599127	0.2961756066

Weights

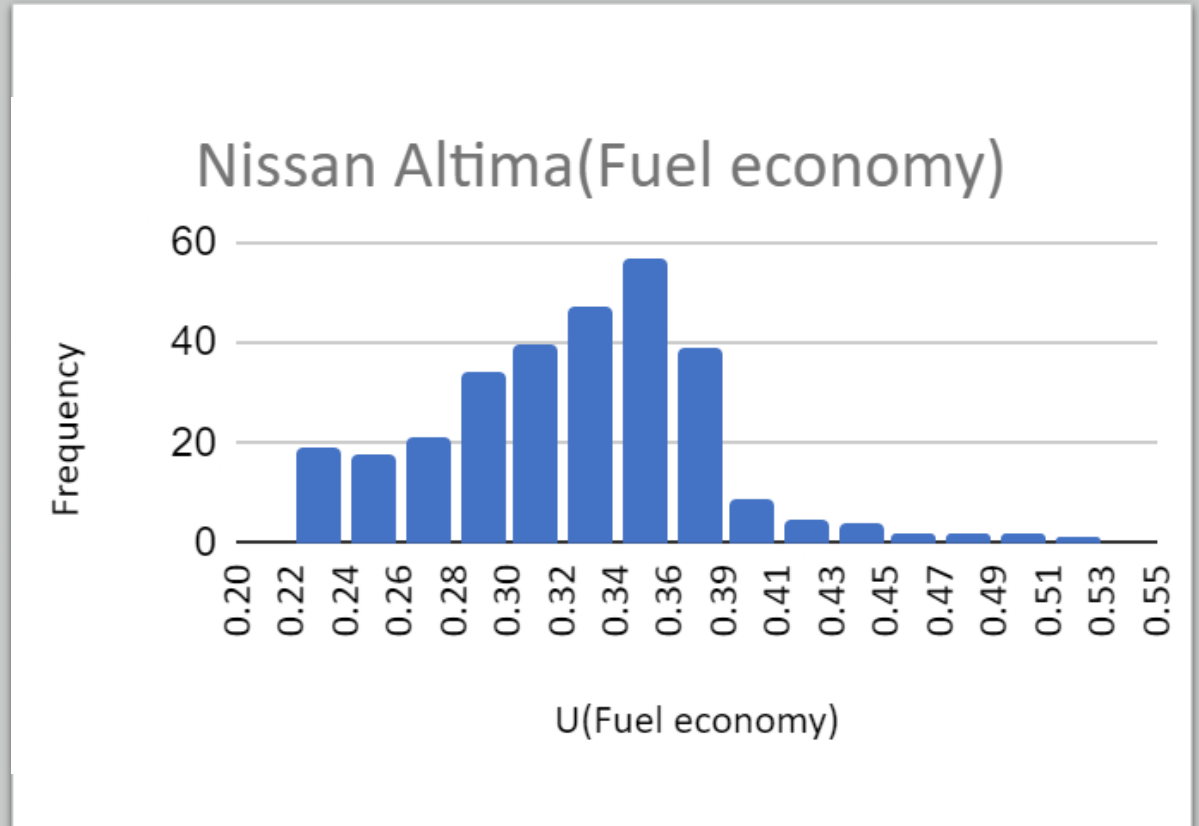


Based on the user preference, the values of the weights are calculated.

Weights table	Rate	Weight
Cost	8	0.3636
Fuel economy	7	0.3182
Cargo capacity	3	0.1364
Horsepower	4	0.1818
	22	

Monte Carlo Simulation

Alternative	Nissan Altima			Nissan Maxima		
min	28			20		
mode	33.5			25		
max	39			30		
Random	Static	Triangular Distribution	U(Fuel economy)	Static	Triangular Distribution	U(Fuel economy)
0.0741628932	0.9253163346	33.75396047	0.3882865982	0.876262334	24.43812833	0.2107789494
0.0343162378	0.6916288664	28.34003927	0.2760650752	0.8705587571	24.31138763	0.20887739
0.5770481421	0.0966496070	30.41811936	0.3161663063	0.4132907367	24.54582631	0.2124056323
0.3790764276	0.7274556217	28.97839317	0.2879892755	0.0179027780	20.94611781	0.1634278399
0.4232518186	0.6114351675	27.03395885	0.2527574887	0.0592279773	21.72087154	0.173030245
0.247692257	0.379727815	32.79307133	0.3665333397	0.7000252601	21.34011057	0.1682466834
0.8870317389	0.4376337119	33.14556504	0.3744213293	0.9181778907	25.47722128	0.2268887193
0.2341596829	0.7091443312	28.64720743	0.2817592138	0.9704457519	27.28180905	0.2570679666
0.9402946421	0.319257213	32.39489037	0.3577512055	0.4282229289	24.627218	0.2136415844
0.4971250358	0.1203086476	30.69790163	0.3218483408	0.7128401819	21.52710471	0.170580377
0.98219302	0.5161502812	25.64714932	0.2296113665	0.6899153228	21.19538932	0.1664611518
0.8290195214	0.7133109475	28.72162874	0.2831509838	0.537086136	19.24228342	0.1441219921
0.8856516314	0.338833959	32.52763233	0.360663798	0.4406194852	24.69371647	0.2146555982
0.936311167	0.3198213746	32.39877178	0.3578361559	0.8368967328	23.61440553	0.198666487
0.0148842168	0.4988108122	33.49345557	0.3823108395	0.3812874397	24.36627667	0.2096992282
0.5023784429	0.0879138750	30.30625008	0.3139131747	0.5508934877	19.40393337	0.1458466721
0.7742758738	0.9203756875	33.58321505	0.3843632701	0.3867929427	24.39768657	0.2101706825
0.9335858968	0.8229234976	30.92208621	0.3264497239	0.5760615133	19.70511672	0.1491198673



Total Utility

Selecting the best car as per the values of Utility

U(cost)	U(Horsepower)	U(fuel economy)	U(cargo)	UTILITY
0.6048516328	0.28360752	0.3285473651	0.017356	0.32557964
0.4266721768	0.6867	0.1906203715	0.014452	0.4294669159
0.986	-0.02641428	0.339598413	0.043492	0.3139380844
0.5683014248	0.715163	0.1474981426	0.2411224	0.5262645108
0.2963684392	0.60043872	0.212573655	0.01234	0.3569088994
0.1165603042	0.657003	0.1610214374	0.024484	0.3262672918
0.3035419682	0.6867	0.2209828078	0.011284	0.3954241414
-0.007847995	0.87009375	0.1558342711	0.004684	0.3742120865
0.3883382722	0.51880032	0.2077485371	0.052468	0.3576753408
-0.0016156832	0.78092175	0.235508663	0.015772	0.3478243768
0.3625932802	0.54334575	0.2548354016	0.00046	0.3534825527
0.16682698	0.54334575	0.2240358473	-0.000068	0.2937074189
0.2068163458	0.54334575	0.1857837849	0.02422	0.3072433121
-0.0028439192	0.84327852	0.1565422807	0.003364	0.364282597
0.3159625	0.41846103	0.2749749407	0.007324	0.2909549034
0.534102845	0.26634848	0.2104219523	0.039268	0.2924745258
0.216467005	0.56390343	0.2258976077	0.012868	0.3196016063
0.0201008992	0.97751088	0.1543613109	0.005476	0.4271632382

Results

- Based on the user's inputs, the best suitable car is then displayed with all its features.
- The DSS also offers recommendations for alternative vehicles.

Car selected

BMW 7 series

Specification

Cost	\$96,172
Fuel economy	25
	28
	31
Cargo Capacity	14.8
Horsepower	335
Type of car	Sedan
Ratings	4.2

Car suggestions

Acura MDX

Mercedes GLC

Chevrolet Tahoe

Chevrolet Suburban

Jeep Wagoneer

Test Drive

<https://docs.google.com/spreadsheets/d/1gZ90BXQeJ43GYHC42bz9Wjb1ZkFqrgJW/edit?usp=sharing&ouid=106767199560931433490&rtpof=true&sd=true>