

In this work, it was necessary to create a set of 25 rules of all combination of {*speed = very slow, slow, medium, fast, very fast*} and {*distance = very short, short, medium, long, very long*} and *logically brake*.

The table should be completed with more points e.g. speed = {0, ..., 20} and distance = {0, ..., 1000}. The number of combinations should not be less than 54.

Then two metro should be controlled by this table. Show 5 typical snapshots from 2 metro animation. The value of speed, distance, brake of both trains should be included.

25 Rules					
IF	X=Very slow	AND	Y=very short	THEN	Z=weak
IF	X=Very slow	AND	Y=short	THEN	Z=weak
IF	X=Very slow	AND	Y=medium	THEN	Z=very weak
IF	X=Very slow	AND	Y=long	THEN	Z=very weak
IF	X=Very slow	AND	Y=very long	THEN	Z=very weak
IF	X=slow	AND	Y=very short	THEN	Z=medium
IF	X=slow	AND	Y=short	THEN	Z=weak
IF	X=slow	AND	Y=medium	THEN	Z=weak
IF	X=slow	AND	Y=long	THEN	Z=very weak
IF	X=slow	AND	Y=very long	THEN	Z=very weak
IF	X=medium	AND	Y=very short	THEN	Z=strong
IF	X=medium	AND	Y=short	THEN	Z=medium
IF	X=medium	AND	Y=medium	THEN	Z=weak
IF	X=medium	AND	Y=long	THEN	Z=very weak
IF	X=medium	AND	Y=very long	THEN	Z=very weak
IF	X=fast	AND	Y=very short	THEN	Z=very strong
IF	X=fast	AND	Y=short	THEN	Z=strong
IF	X=fast	AND	Y=medium	THEN	Z=medium
IF	X=fast	AND	Y=long	THEN	Z=weak
IF	X=fast	AND	Y=very long	THEN	Z=weak
IF	X=very fast	AND	Y=very short	THEN	Z=very strong
IF	X=very fast	AND	Y=short	THEN	Z=medium
IF	X=very fast	AND	Y=medium	THEN	Z=medium
IF	X=very fast	AND	Y=long	THEN	Z=very weak
IF	X=very fast	AND	Y=very long	THEN	Z=very weak

Table de-fuzzified brake value for all combination of (speed = 0, 4, 8, 12, 16, 20 and distance = 0, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 950, 1000) => 120 combinations

x(Speed)	y(Distance)	z(Balance)
0	0	3.000
0	50	3.000
0	100	3.000
0	150	3.000
0	200	3.000
0	250	2.286
0	300	1.667
0	350	1.214
0	400	0.875
0	450	0.875
0	500	0.875
0	550	0.875
0	600	0.875
0	650	0.875
0	700	0.875
0	750	0.875
0	800	0.875
0	850	0.875
0	900	0.875
0	950	0.875
0	1000	0.875
4	0	3.625
4	50	3.625
4	100	3.625
4	150	3.625
4	200	3.000
4	250	2.063
4	300	1.667
4	350	1.667
4	400	1.667
4	450	1.667
4	500	1.667
4	550	1.350
4	600	0.875
4	650	0.875
4	700	0.875
4	750	0.875
4	800	0.875
4	850	0.875
4	900	0.875
4	950	0.875
4	1000	0.875

8	0	5.375
8	50	5.375
8	100	5.375
8	150	4.500
8	200	3.625
8	250	3.625
8	300	3.625
8	350	3.333
8	400	3.000
8	450	2.063
8	500	1.667
8	550	1.350
8	600	0.875
8	650	0.875
8	700	0.875
8	750	0.875
8	800	0.875
8	850	0.875
8	900	0.875
8	950	0.875
8	1000	0.875
12	0	7.867
12	50	7.867
12	100	7.867
12	150	7.278
12	200	5.375
12	250	4.850
12	300	4.500
12	350	4.150
12	400	3.625
12	450	2.773
12	500	2.267
12	550	1.783
12	600	0.875
12	650	0.875
12	700	0.875
12	750	0.875
12	800	0.875
12	850	0.875
12	900	0.875
12	950	0.875
12	1000	0.875

16	0	8.636
16	50	8.636
16	100	8.636
16	150	7.278
16	200	5.375
16	250	5.375
16	300	5.375
16	350	5.083
16	400	4.500
16	450	2.688
16	500	2.083
16	550	1.600
16	600	0.875
16	650	0.875
16	700	0.875
16	750	0.875
16	800	0.875
16	850	0.875
16	900	0.875
16	950	0.875
16	1000	0.875
20	0	8.636
20	50	8.636
20	100	8.636
20	150	7.533
20	200	4.500
20	250	4.500
20	300	4.500
20	350	4.500
20	400	4.500
20	450	3.050
20	500	2.083
20	550	1.393
20	600	0.875
20	650	0.875
20	700	0.875
20	750	0.875
20	800	0.875
20	850	0.875
20	900	0.875
20	950	0.875
20	1000	0.875

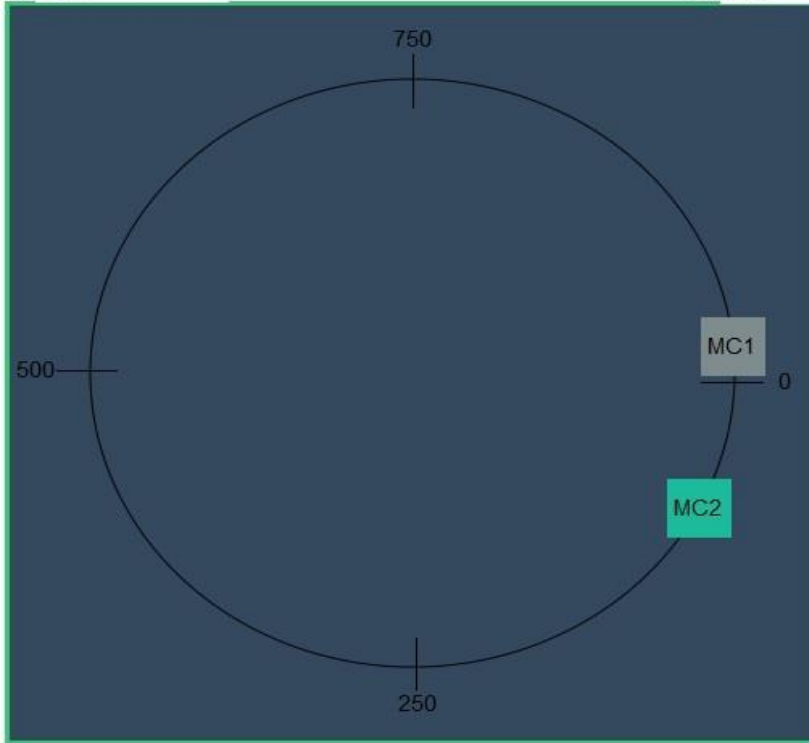
5 typical snapshots

MetroCar1

x: 5
y: 90
z: 3.625

MetroCar2

x: 4
y: 910
z: 0.875

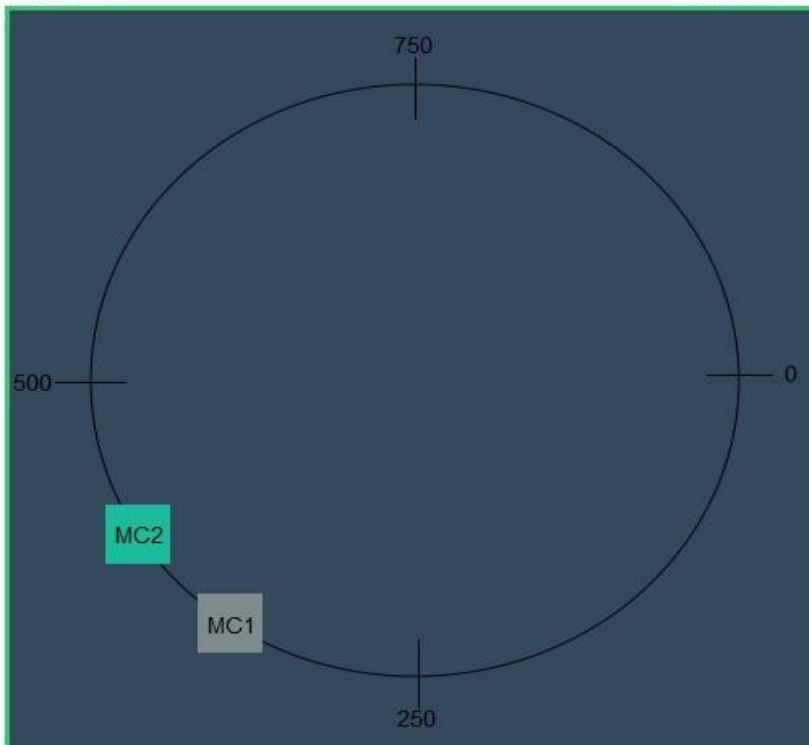


MetroCar1

x: 8
y: 66
z: 5.375

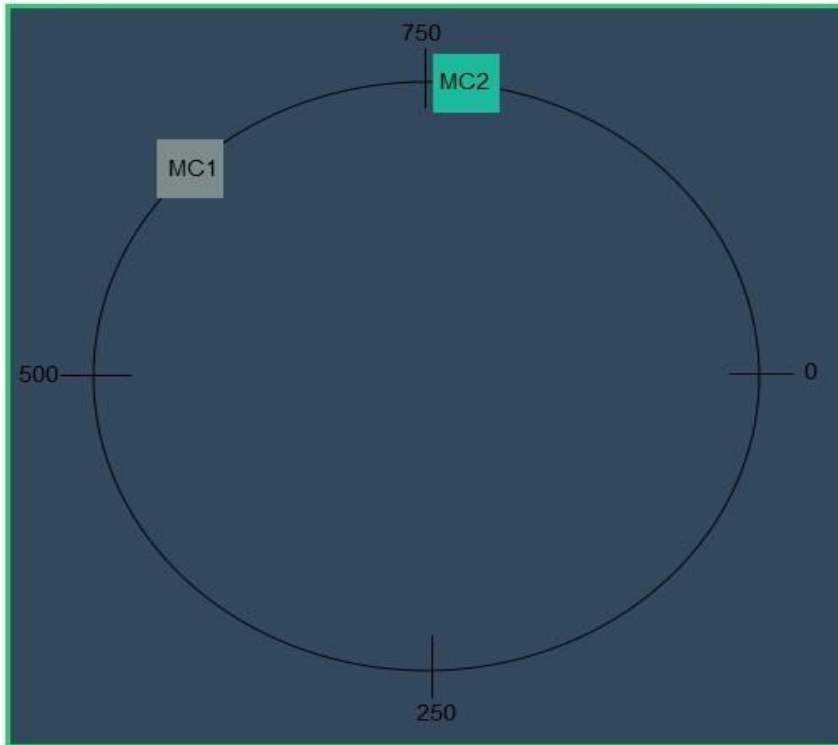
MetroCar2

x: 4
y: 934
z: 0.875



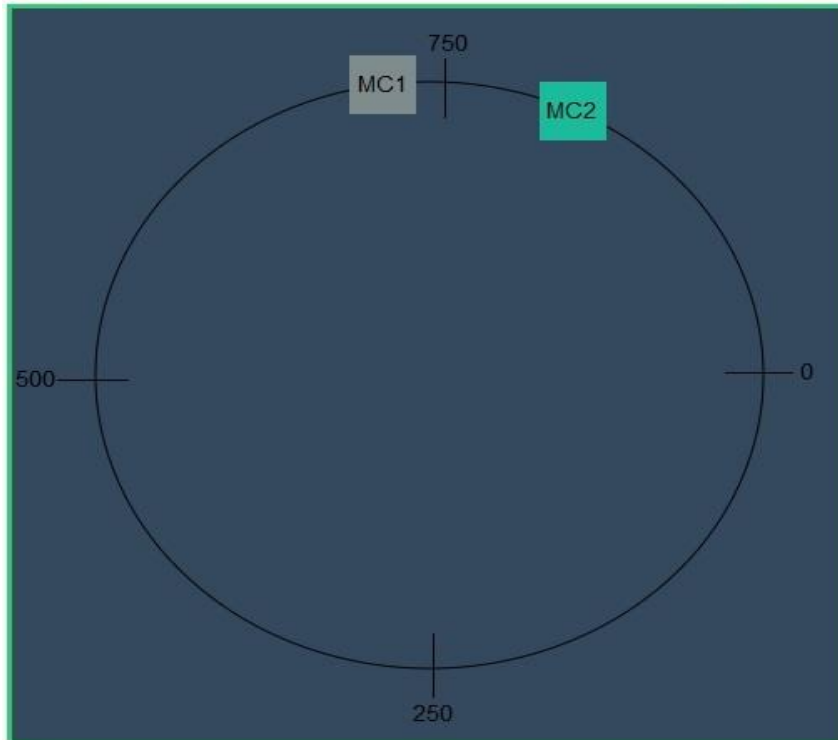
MetroCar1
x: 2
y: 145
z: 3.625

MetroCar2
x: 4
y: 855
z: 0.875



MetroCar1
x: 12
y: 93
z: 7.867

MetroCar2
x: 8
y: 907
z: 0.875



MetroCar1
x: 2
y: 241
z: 2.063

MetroCar2
x: 12
y: 759
z: 0.875

