K means Assignment

Manhattan $\sum(x-y)$ Euclidean – $(\sum(x-y)^2)^{½}$

ITERATION NO: 01

	Age	M1	M2	M3					
C1(seed)	18	73	75	57	Distance from Clusters Manhattan/ Euclidean			Cluster Allocated (manh)	Cluster Allocated (Euclidean)
C2(seed)	18	79	85	75	From C1	From C2	From C3		
C3(seed)	23	70	70	52					
S1	18	73	75	57	MANH = 0+0+0+0=0 EUCLIDEAN = 0+0+0+0=0	MANH=0+6+10+18=34 EUCLIDEAN=21.44	MANH=5+3+5+5=18 EUCLIDEAN=9.16	C1	C1
S2	18	79	85	75	MANH = 0+6+10+18=34 EUCLIDEAN = 0+36+100+324 = sqrt(460) = 21.44	MANH = 0+0+0+0=0 EUCLIDEAN = 0+0+0+0=0	MANH = 5+9+15+23=52 EUCLIDEAN = 25 + 81 +225 +529 = 860 =29.32	C2	C2
S3	23	70	70	52	MANH = 5+3+5+5=18 EUCLIDEAN = 25+9+25+25 = sqrt(84) =9.16	MANH = 5+9+15+23=52 EUCLIDEAN = 25+81+225+529 =sqrt(860) =29.32	MANH = 0+0+0+0=0 EUCLIDEAN = 0+0+0+0=0	C3	C3
S4	20	55	55	55	MANH = 2+18+20+2=42 EUCLIDEAN = 4+324+400+4 = sqrt(732) =27.055	MANH = 2+24+30+20=76 EUCLIDEAN = 4+576+900+400 =sqrt(1880) =43.35	MANH = 3+15+15+3=36 EUCLIDEAN = 9+225+225+9=sqrt (468) =21.63	C3	C3
S5	22	85	86	87	MANH = 4+12+11+30=57 EUCLIDEAN = 16+144+121+900 = sqrt(1181) =34.36	MANH= 4+6+1+12=23 EUCLIDEAN = 16+36+1+144 =sqrt(197) =14.035	MANH= 1+15+16+35=67 EUCLIDEAN = 1+225+256+1225 =sqrt(1707) =41.31	C2	C2

S6	19	91	90	89	MANH= 1+18+15+32=66 EUCLIDEAN= 1+324+225+1024 =sqrt(1524) =39.03	MANH= 1+12+5+14=32 EUCLIDEAN= 1+144+25+196 =sqrt(366) =19.13	MANH= 4+21+20+37=82 EUCLIDEAN= 16+441+400+1369 =sqrt(2226) =47.18	C2	C2
S7	20	70	65	60	MANH= 2+3+10+3=18 EUCLIDEAN= 4+9+100+9 =sqrt(122) =11.04	MANH= 2+9+20+15=46 EUCLIDEAN= 4+81+400+225 =sqrt(710) =26.64	MANH= 3+0+5+8=16 EUCLIDEAN= 9+0+25+64 =sqrt(98) =9.89	C3	C3
S8	21	53	56	59	MANH= 3+20+19+2=44 EUCLIDEAN= 9+400+361+4 =sqrt(774) =27.82	MANH= 3+26+28+16=73 EUCLIDEAN= 9+676+784+256 =sqrt(1725) =41.53	MANH= 2+17+14+7=40 EUCLIDEAN= 4+289+196+49 =sqrt(538) =23.19	C3	C3
S9	19	82	82	60	MANH= 1+9+7+3=20 EUCLIDEAN= 1+81+49+9 =sqrt(140) =11.83	MANH= 1+3+3+15=22 EUCLIDEAN= 1+9+9+225 =sqrt(244) =15.62	MANH= 4+12+12+8=36 EUCLIDEAN= 16+144+144+64 =sqrt(368) =19.18	C1	C1
S10	47	75	76	77	MANH= 29+2+1+20=52 EUCLIDEAN= 841+4+1+400 =sqrt(1246) =35.29	MANH= 29+4+1+2=44 EUCLIDEAN= 841+16+1+4 =sqrt(862) =30.69	MANH= 24+5+6+25=60 EUCLIDEAN= 576+25+36+476 =sqrt(1113) =35.52	C2	C2

C1: **S1 (18,73,75,57) ,** **MEAN: 18.5, 77.5, 78.5,58.5**

S9(19,82,82,60)

C2: **S2(18,79,85,75),** **MEAN: 26.5, 82.5, 84.25, 82**

S5 (22,85,86,87),

S6(19,91,90,89),

S10(47,75,76,77)

C3: **S3(23,70,70,52),** **MEAN: 21,62,61.5,56.5**

S4(20,55,55,55),

S7(20,70,65,60),

S8(21,53,56,59)

ITERATION : 02

	Age	M1	M2	M3					
C1(seed)	18.5	77.5	78.5	58.5	Distance from Clusters Manhattan/ Euclidean			Cluster Allocated (manh)	Cluster Allocated (Euclidean)
C2(seed)	26.5	82.5	84.25	82	From C1	From C2	From C3		
C3(seed)	21	62	61.5	56.5					
S1	18	73	75	57	MANH = 0.5+4.5+3.5+1.5 =10 EUCLIDEAN = 0.25+20.25+12.25+2.2 =sqrt(45) =6.70	MANH = 8.5+9.5+9.5+25 =29.5 EUCLIDEAN = 72.25+90.25+90.25+625 =sqrt(877.75) =29.62	MANH = 3+11+13.5+0.5 =28 EUCLIDEAN= 9+121+182.25+0.25 =sqrt(312.5) =17.67	C1	C1
S2	18	79	85	75	MANH = 0.5+1.5+6.5+16.5=25 EUCLIDEAN = 0.25+2.25+42.25+272.25 = sqrt(317) = 17.80	MANH = 8.5+3.5+0.75+7 =19.75 EUCLIDEAN = 72.25+12.25+0.5625+49 =sqrt(134.0625) =11.57	MANH = 3+17+23.5+18.5 =62 EUCLIDEAN = 9 + 289 +552.25 +342.25 = sqrt(1192.5) =34.53	C2	C2
S3	23	70	70	52	MANH = 27 EUCLIDEAN = 32.75	MANH = 90.25 EUCLIDEAN = 48.81	MANH = 23 EUCLIDEAN = 12.66	C3	C3
S4	20	55	55	55	MANH = 51 EUCLIDEAN = 13.82	MANH = 60.25 EUCLIDEAN = 35.65	MANH = 16 EUCLIDEAN = 9.72	C3	C3
S5	22	85	86	87	MANH = 47 EUCLIDEAN = 30.61	MANH = 13.75 EUCLIDEAN = 7.38	MANH = 79 EUCLIDEAN = 45.39	C2	C2
S6	19	91	90	89	MANH = 56 EUCLIDEAN = 35.28	MANH = 28.75 EUCLIDEAN = 14.51	MANH = 92 EUCLIDEAN = 52.09	C2	C2
S7	20	70	65	60	MANH = 24 EUCLIDEAN = 15.58	MANH = 60.25 EUCLIDEAN = 32.45	MANH = 16 EUCLIDEAN = 9.46	C3	C3
S8	21	53	56	59	MANH = 50	MANH = 86.25	MANH = 17	C3	C3

					EUCLIDEAN = 33.36	EUCLIDEAN = 47.19	EUCLIDEAN = 10.83		
S9	19	82	82	60	MANH = 10 EUCLIDEAN = 5.91	MANH = 32.25 EUCLIDEAN = 23.35	MANH = 46 EUCLIDEAN = 28.92	C1	C1
S10	47	75	76	77	MANH = 52 EUCLIDEAN = 34.16	MANH = 41.25 EUCLIDEAN = 23.86	MANH = 74 EUCLIDEAN = 38.41	C2	C2

Both iteration 1 & 2 are same. We conclude that required cluster are:

C1	**S1, S9**
C2	**S2, S5, S6, S10**
C3	**S3, S4, S7, S8**