**Report – Part 1**

**k = 3**

Cluster ID: Point IDs

0 [Points:1,5,7,9,15,23,30,31,35,43,44,45,46,47,49,62,66,67,76,79,81,86,87,90,]

1 [Points:2,6,8,10,12,13,17,19,20,24,27,29,34,38,39,41,51,53,54,55,57,58,61,63 ,65,73,75,77,78, 85,88,89,93,94,97,98,99,]

2 [Points:3,4,11,14,16,18,21,22,25,26,28,32,33,36,37,40,42,48,50,52,56,59,60,64, 68,69,70,71,72, 74,80,82,83,84,91,92,95,96,100,]

Iterations to converge: 13

SSE for k = 3 is 1.8475709598906684

**K =5**

Cluster ID: Point IDs

0 [Points:1,8,17,61,79,94,98,99,]

1 [Points:2,6,10,12,13,19,20,24,27,29,34,38,39,41,51,53,54,55,57,58,63,65,73,75,77,78, 85,88,89,93,97,]

2 [Points:3,14,16,18,21,25,26,33,40,42,50,56,59,60,64,69,74,80,84,91,100,]

3 [Points:4,11,22,28,32,36,37,48,52,68,70,71,72,82,83,92,95,96,]

4 [Points:5,7,9,15,23,30,31,35,43,44,45,46,47,49,62,66,67,76,81,86,87,90,]

Iterations to converge : 22

SSE for k = 5 is 1.2978142065826337

**K = 8**

Cluster ID: Point IDs

0 [Points:1,65,79,99,]

1 [Points:2,10,19,20,24,27,29,34,39,41,51,53,54,55,57,58,63,73,77,78,85,88,89,]

2 [Points:3,14,16,18,21,25,26,33,40,42,50,56,60,64,69,74,80,84,91,100,]

3 [Points:4,11,22,28,32,36,37,48,52,68,70,71,72,82,83,92,95,96,]

4 [Points:5,31,35,43,67,]

5 [Points:6,12,13,38,59,75,93,97,]

6 [Points:7,9,15,23,30,44,45,46,47,49,62,66,76,81,86,87,90,]

7 [Points:8,17,61,94,98,]

Iterations to converge : 25

SSE for k = 8 is 0.969351591265932

**K=10**

Cluster ID: Point IDs

0 [Points:1,65,79,99,]

1 [Points:2,19,20,24,27,29,34,39,41,51,53,54,55,57,58,61,63,73,77,78,85,88,89,]

2 [Points:3,14,16,18,21,25,26,33,40,42,50,56,60,64,69,74,80,84,91,100,]

3 [Points:4,11,22,28,32,36,37,48,52,68,70,71,72,82,83,92,95,96,]

4 [Points:5,31,35,43,67,]

5 [Points:6,12,13,38,59,75,93,97,]

6 [Points:7,15,62,81,87,]

7 [Points:8,17,94,98,]

8 [Points:9,23,30,44,45,46,47,49,66,76,86,90,]

9 [Points:10,]

Iterations to converge : 25

SSE for k = 10 is 0.8240351405083566

**K = 14**

Cluster ID: Point IDs

0 [Points:1,79,99,]

1 [Points:2,19,27,39,58,73,78,85,88,89,]

2 [Points:3,16,25,26,42,56,80,100,]

3 [Points:4,32,52,59,60,64,]

4 [Points:5,31,35,43,67,]

5 [Points:6,38,97,]

6 [Points:7,15,62,81,87,]

7 [Points:8,17,94,98,]

8 [Points:9,23,30,44,45,46,47,49,66,76,86,90,]

9 [Points:10,]

10 [Points:11,22,28,36,37,48,68,70,71,72,82,83,92,95,96,]

11 [Points:12,20,41,54,55,75,77,93,]

12 [Points:13,24,29,34,51,53,57,61,63,65,]

13 [Points:14,18,21,33,40,50,69,74,84,91,]

Iterations to converge : 25

SSE for k = 14 is 0.4406901752525254