

Euclidean Distance

	Cluster 1	Cluster 2	Assignment
(40, 65000)	72000	139375	2

Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(300625 + 40)}{2} = 3503125 \quad (510625 + 65000)/2 = 5803125$$

Euclidean Distance

Cluster 1 Cluster 2 Assignment

(41, 63000)	74000	4968	2
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Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(3503125 + 41)}{2} = 38015625 \quad (5803125 + 63000)/2 = 60515625$$

Euclidean Distance

Cluster 1 Cluster 2 Assignment

(43, 64000)	73000	3484	2
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Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(43 + 38015625)}{2} = 405078125 \quad (64000 + 60515625)/2 = 622578125$$

Euclidean Distance

Cluster 1 Cluster 2 Assignment

(39, 80000)	57000	17742	2
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Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(39 + 405078125)}{2} = 3975390625 \quad (622578125 + 80000)/2 = 7112890625$$

Euclidean Distance

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(40, 65000)	72000	139375	2

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Cluster X Y

k1	37	137000
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$$k2 = \frac{(300625 + 40)}{2} = 3503125 \quad (510625 + 65000)/2 = 5803125$$

Euclidean Distance

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(41, 63000)	74000	4968	2
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$$k2 = \frac{(3503125 + 41)}{2} = 38015625 \quad (5803125 + 63000)/2 = 60515625$$

Euclidean Distance

Cluster 1 Cluster 2 Assignment

(43, 64000)	73000	3484	2
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Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(43 + 38015625)}{2} = 405078125 \quad (64000 + 60515625)/2 = 622578125$$

Euclidean Distance

Cluster 1 Cluster 2 Assignment

(39, 80000)	57000	17742	2
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Update the cluster centroid

Cluster X Y

k1	37	137000
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$$k2 = \frac{(39 + 405078125)}{2} = 3975390625 \quad (622578125 + 80000)/2 = 7112890625$$

Final Assignment	Name	Age	Income	Assignment
	Donald	37	137000	1
	Tom	26	45000	2
	Arnold	27	48000	2
	Jared	28	51000	2
	Stark	29	49500	2
	Ranbir	32	53000	2
	Dipika	40	65000	2
	Priyanka	41	63000	2
	Nick	43	64000	2
	Alia	39	8000	2

Cluster centroid

k1	37	137000
k2	39.75390625	71128.90625

Initial Centroid

$k=2$	Cluster	X	Y
	k ₁	37	137000
	k ₂	26	45000

Euclidean Distance

Cluster 1	Cluster 2	Assignment
(27, 48000)	89000	3000

Update the cluster centroid

Cluster	X	Y
k ₁	37	137000
k ₂	$(26+27)/2 = 26.5$	$(45000+48000)/2 = 46500$

Euclidean Distance

Cluster 1	Cluster 2	Assignment
(28, 51000)	86000	4500

Update the cluster centroid

Cluster	X	Y
k ₁	37	137000
k ₂	$(26.5+28)/2 = 27.25$	$(46500+51000)/2 = 48750$

Euclidean Distance

Cluster 1	Cluster 2	Assignment
(29, 49500)	87500	750

Update the cluster centroid

Cluster	X	Y
k ₁	37	137000
k ₂	$(27.25+29)^2 = 28.125$	$(48750+49500)/2 = 49125$

Euclidean Distance

Cluster 1	Cluster 2	Assignment
(32, 53000)	84000	3875

Update the cluster centroid

Cluster	X	Y
k ₁	37	137000
k ₂	$(32+28.125)/2 = 30.0625$	$(49125+53000)/2 = 51062.5$