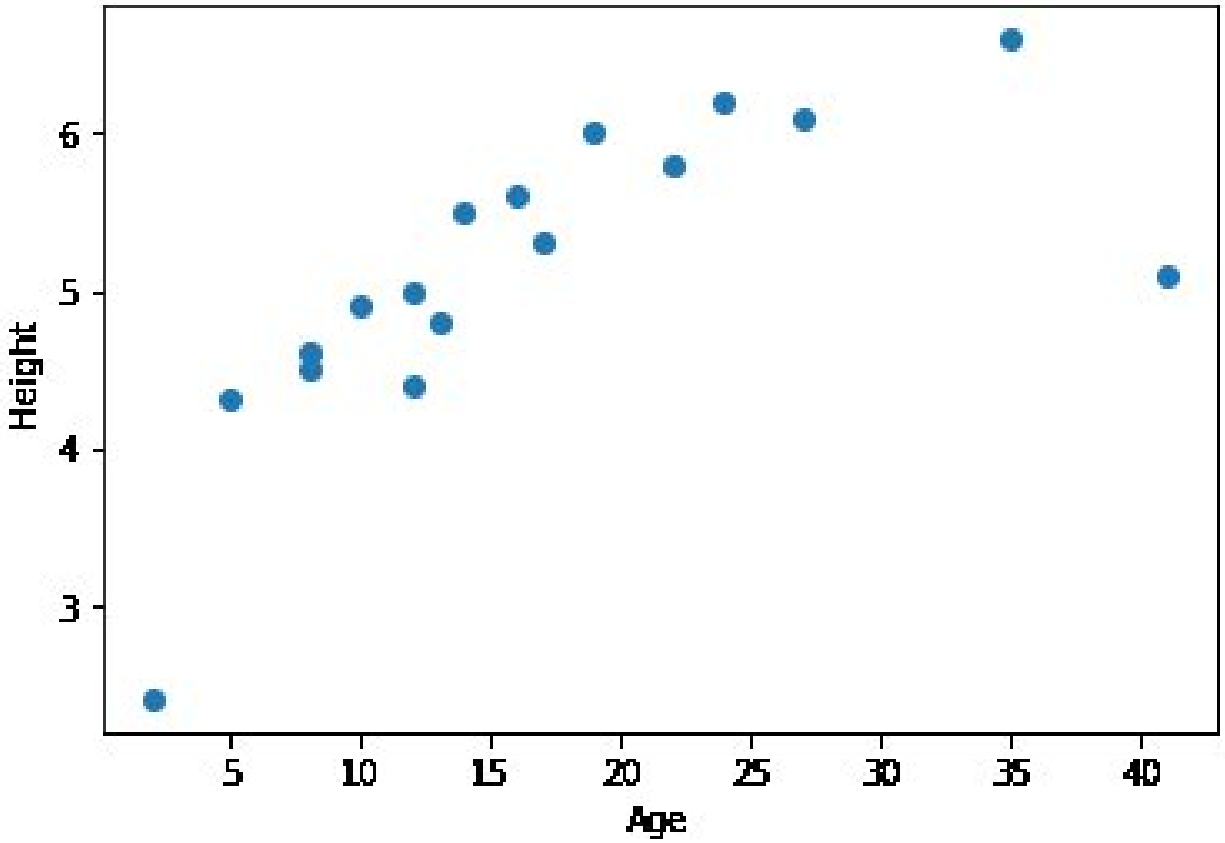
1. [20%] Plot your data in a cartesian plane.
a. Put Age in the x-axis, Height in the Y-axis (you can use the factor of m=15 in this axis) to visualize how close they are using the defined distance



2. Define the number of clusters K=4, with seeds on Blake, Lebron, Peter and Grace, and compute:

a) [15%] Assign a group for each of the persons of the table

1st Iteration

Blake

Name	Sex	Age	Height	Distance
Blake	Male	5	4.3	0
Jhon	Male	2	2.4	31.5
Keneddy	Female	12	4.4	8.5
Henry	Male	8	4.6	7.49
Claire	Female	8	4.5	6

Peter

Name	Sex	Age	Height	Distance
Peter	Male	19	6	0
Carlos	Male	24	6.2	8
Ana	Female	22	5.8	6
Jared	Male	27	6.1	9.49
David	Male	16	5.6	9

Lebron

Name	Sex	Age	Height	Distance
Lebron	Male	35	6.6	0
Jessica	Female	41	5.1	28.5

Grace

Name	Sex	Age	Height	Distance
Grace	Female	12	5	0
Lathia	Female	17	5.3	9.49
Nancy	Female	13	4.8	4
Jude	Female	10	4.9	3.49
Mason	Male	14	5.5	9.5

b) [15%] Compute new center centers

Means/Center

Name	Age	Height
Blake	7	4.04
Lebron	38	5.85
Peter	21.6	5.94
Grace	13.2	5.1

3. Compute and show results in tables:

a) [15%] Assign a group for each of the persons of the table

2nd Iteration

Blake

Name	Sex	Age	Height	Distance
Blake	Male	5	4.3	5.89
Jhon	Male	2	2.4	29.6
Keneddy	Female	12	4.4	10.4
Henry	Male	8	4.6	9.39
Claire	Female	8	4.5	7.89

Lebron

Name	Sex	Age	Height	Distance
Lebron	Male	35	6.6	14.25
Jessica	Female	41	5.1	14.25

Peter

Name	Sex	Age	Height	Distance
Peter	Male	19	6	3.49
Carlos	Male	24	6.2	6.29
Ana	Female	22	5.8	2.5
Jared	Male	27	6.1	7.79

Grace

Name	Sex	Age	Height	Distance
Grace	Female	12	5	2.69
Lathia	Female	17	5.3	6.8
Nancy	Female	13	4.8	4.69
David	Male	16	5.6	10.3
Jude	Female	10	4.9	6.19
Mason	Male	14	5.5	6.8

b) [15%] Compute a new center

Means/Center

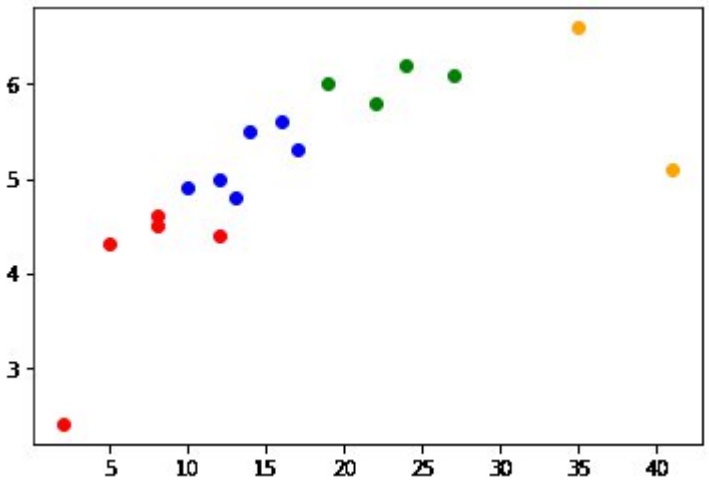
Name	Age	Height
Blake	7	4.04
Lebron	38	5.85
Peter	23	6.03
Grace	13.67	5.18

4. [10%] Do you see any change in the assignations of the clusters? Would you recommend an extra round of computations?

There was a change between the Peter and Grace groups. One person was removed from Peter and added onto Grace. I don't think an additional round is necessary as the new centers created after iteration 2 were not very different from what was created after iteration 1. Additionally, the distances seem to be minimal already.

However, I did test my hypothesis. I performed 2 more iterations and the distances and means were at a stand still. They did not change from what was calculated after the second iteration.

5. [10%] Could you tell some characteristics about the clusters created. Check the age, and/or height of the elements of each cluster. Do the cluster corresponds makes sense in the real world?



Red cluster = Blake, Blue cluster = Grace, Green cluster = Peter, Yellow cluster = Lebron

Visualizing the data we can see a trend. As the individuals get older, they get taller. At around the age of 18-20 the heights stop growing. However, the Lebron group seems to be full of outliers. Not only are the two individuals much older than the rest of the people, the two people have drastically different heights. Overall, this obviously does correlate to the real world. Typically, unless there's a medical issue, people will get taller as they age. The groups correlate to specific age/height groups such that: Blake's is full of young children, Grace's is of pre-teen/early teens, Peter's is full of young adults, and Lebron's is full of people in the latter stages of adulthood.