Hollow Body Hold

• Lie on your back and assume a dead bug position: legs together, hips and knees bent 90 degrees, and arms extended toward the ceiling with your palms facing each other.

• Lift your shoulder blades off the floor and engage your core to press your lower back firmly into the floor.

• Keeping your head and shoulders lifted, lower your arms straight overhead as you simultaneously straighten and lower your legs. Only lower your arms and legs as far as you're able to without your lower back rising off of the floor.

• Hold this position for as long as you can, breathing as smoothly as possible.

https://github.com/ch3427/assignment6
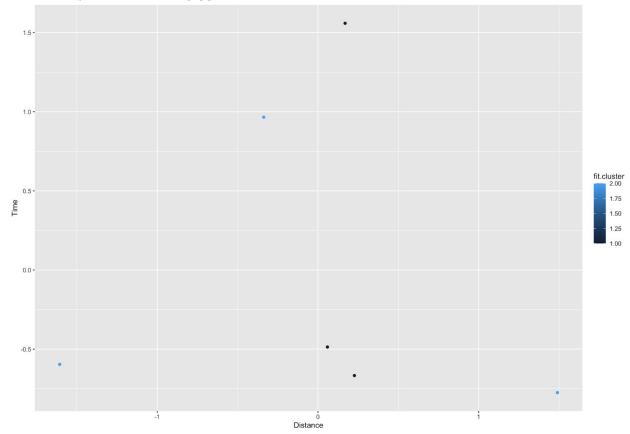https://chat.whatsapp.com/C6s3GcSMLKwDG4NIeBemg8

name	time	wx	wy	wz
Christina	76.58	1.89	3.15	2.46
Jiani	33.11	0.61	0.61	0.3
Yixiong	64.61	1.43	1.14	0.44
Mahshad	29.51	0.03	0.01	0.08
Yujie	33.41	0.1	0.9	0.5
Zhixin	35.32	0.8	3.14	1.84
XI GU	31.68	0.31	3.15	1.71

Jiaao	2.08	0.34	0.33	0.27

Task II

* Create a Github repo where you can store and share your data DONE
* Using K-means, can you identify the novices from the experts using only the app data?
Yes, the experts are the data points with the lowest distance (highest stability) and longest time; all in all, the four data points in the middle of the graph are the experts.
* Visualize your results using ggplot2


```
library(readr)
library(ggplot2)
D1 <- read_csv("Group 6  data.csv")
D2 <- read_csv("distance.csv")
D3 <- merge(D1, D2)
D3 <- D3[,-1]
D3 <- scale(D3)
fit <- kmeans(D3, 2)
D4 <- data.frame(D3, fit$cluster)
```

Distance Formula:
The distance between two points is the length of the path connecting them. The shortest path
distance is a straight line. In a 3 dimensional plane, the distance between points (X1, Y1, Z1)
and (X2, Y2, Z2) is given by:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2}$$

	wx (largest x)	Wx (smallest x)	Largest y	Smallest y	Largest z	Smallest z	d
Mahshad	1.78	-4.44	3.79	-5.03	2.25	-2.73	11.88
Jiani	0.55	-0.61	0.61	-0.56	0.3	-0.24	1.73
Zhixin	2.93	-1.15	0.99	-3.38	1.81	-2.18	7.19
Yixiong	0.74	-4.02	2.66	-0.72	0.45	-0.36	5.89
Christina	1.03	-1.89	3.19	-3.15	2.46	-0.41	7.55
XI	2.43	-0.27	3.02	-0.86	1.99	-0.79	7.74
Yujie	2.45	-0.1	3.12	-0.9	2.41	-0.5	5.57
Jiaao							

Task III
* Devise five questions on a five point Likert scale that ask members of your group about their
experience with your chosen task
* Collect data from all members of your group
* Run a PCA analysis on the data
* What does PC1 represent in your analysis?
PC1 is the question "I would recommend this activity to others."
* Visualize the PC1 results for each member of your group

Five point likert scale:

Strongly disagree (1), disagree (2), undecided (3), agree (4), strongly agree (5)

	Christina	Yixiong	Zhixin	Jiaao	Yujie	Mahshad	Xi	Jiani
I would recommend this activity to others.	4	5	5		5	4	4	5
This activity was very easy for me.	3	3	2		3	2	2	2
It was too difficult to keep my balance.	2	3	4		3	4	3	1
I felt a lot of pressure on my back when doing this exercise.	2	2	2		2	3	3	4
I felt a lot of pressure on my stomach when doing this exercise.	4	4	4		2	4	4	3

Task IV

* If you could only choose one thing to predict the score for each member of your group (raw data variable, a cluster or a PC) what would it be and why?

* Create a visualization that supports your conclusion

```
         time    distance
time     1.00000000 -0.08780678
```

distance -0.08780678 1.00000000

We run a simple correlation between time and distance, and find if an individual shakes more he/she

* Based on your conclusion devise an intervention that would help novice members of your group improve their performance

Task V

* Submit a link to your Github repo containing your data, code, visualizations and conclusions to charles.lang@tc.columbia.edu by 5pm EDT 12/14/20.