Tugas Mata Kuliah Analisa R

Correlated Data Analysis

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Tugas

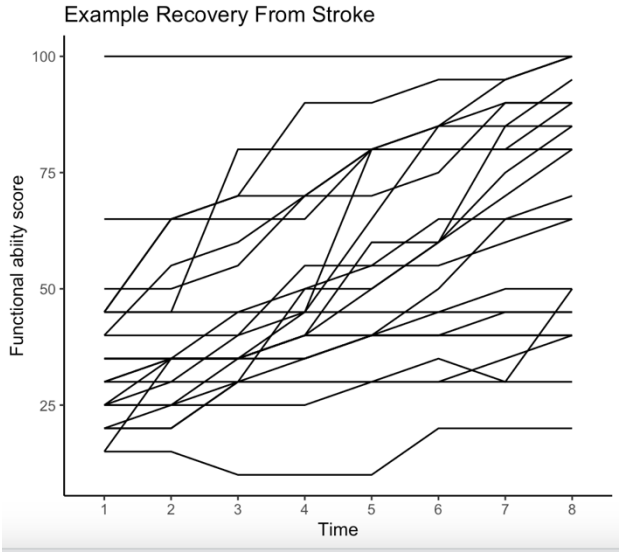
Dengan menggunakan data stroke pada link berikut
: http://www.statsci.org/data/oz/stroke.txt dengan penjelasan data (meta data) dapat dipelajari pada link: http://www.statsci.org/data/oz/stroke.html , mengakses dan mendownload dataset ke dalam global environment RStudio.

```
#1.Mengakses dan mendownload dataset ke dalam global environment RStudio
library(tidyverse)
stroke_long = stroke %>% select(c(1:6,39:46)) %>%
  pivot_longer(cols=Bart1:Bart8,
               names_to = "time",
               names_prefix = "Bart",
               values_to = "ability")

names(stroke_long)
glimpse(stroke_long)
```

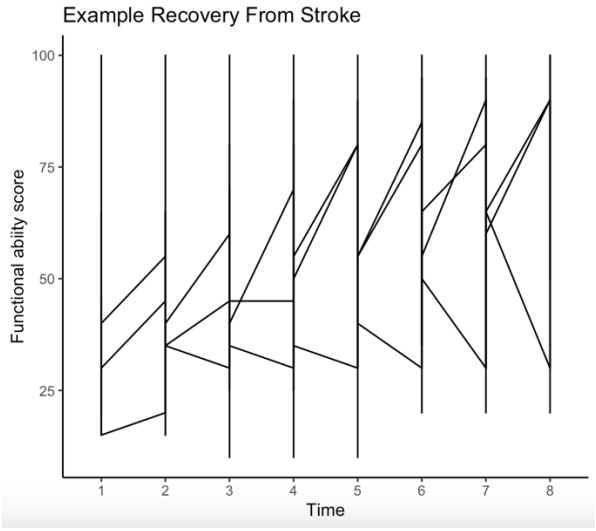
Membuat visualisasi grafik garis dari perkembangan nilai kemampuan motorik (functional ability score) dari setiap subyek menggunakan variable bart

```
#2.A. Membuat visualisasi grafik garis dari perkembangan nilai kemampuan motorik
(functional ability score) dari setiap subyek menggunakan variable bart
library(ggplot)
ggplot(stroke_long, aes(x = time,
                        y = ability)) +
  geom_line(aes(group = Subject)) +
  theme_classic()+labs( y="Functional abiity score",
                        x="Time", title="Example Recovery From Stroke")
```

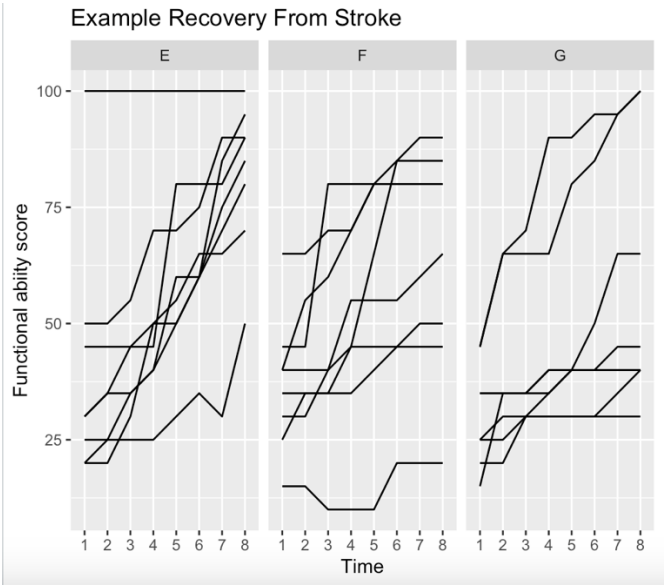


#2.B Membuat visualisasi grafik garis dari perkembangan nilai kemampuan motoric (functional ability score) dari setiap group menggunakan variable bart

```
library(ggplot2)
ggplot(stroke_long, aes(x = time,y = ability)) +geom_line(aes(group = Group)) +
  theme_classic()+ labs( y="Functional abiity score",
                         x="Time", title="Example Recovery From Stroke")
```



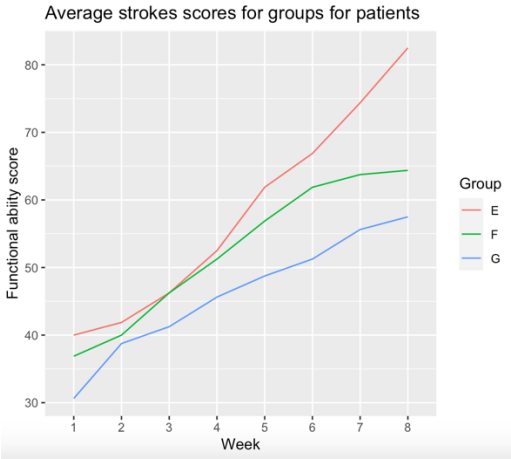

```
ggplot(stroke_long, aes(x=time, y=ability, group=Subject)) +geom_line() +
  facet_wrap(~Group)+ labs( y="Functional abiity score",
                            x="Time", title="Example Recovery From Stroke")
```



Membuat grafik nilai rata-rata perkembangan fungsi motorik secara total dan masing-masing yang divisualisasikan pada 1 grafik.

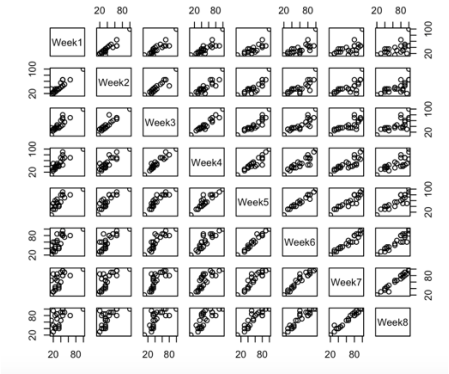
```
#3. Membuat grafik nilai rata-rata perkembangan fungsi motorik secara total dan masing-masing yang divisualisasikan pada 1 grafik.
Average_recovery_score <- stroke_long %>%
  group_by(Group, time) %>%
  mutate(Average = mean(ability)) %>%
  as.data.frame()

Average_recovery_score %>%
  mutate(label = if_else(time == max(time), as.character(Group), NA_character_)) %>%
  ggplot(aes(x = time, y = Average, group = Group, colour = Group)) + geom_line() +
labs( y="Functional abiity score", x="Week", title="Average strokes scores for groups for patients")
```



Membuat Matrix Scatter plot dari nilai fungsi motorik antar waktu/pekan

```
#4. Membuat Matrix Scatter plot dari nilai fungsi motorik antar waktu/pekan.
pairs(~Week1 + Week2 +  Week3 + Week4 + Week5 + Week6 + Week7 + Week8, data = stroke_week)
```



Menghitung dan membuat tabel silang koefisien korelasi nilai fungsi motorik antar waktu/pekan

```
cor(stroke$Bart1, stroke$Bart2)
cor(stroke$Bart1, stroke$Bart3)
cor(stroke$Bart1, stroke$Bart4)
cor(stroke$Bart1, stroke$Bart5)
cor(stroke$Bart1, stroke$Bart6)
cor(stroke$Bart1, stroke$Bart7)
cor(stroke$Bart1, stroke$Bart8)
cor(stroke$Bart2, stroke$Bart3)
cor(stroke$Bart2, stroke$Bart4)
cor(stroke$Bart2, stroke$Bart5)
cor(stroke$Bart2, stroke$Bart6)
cor(stroke$Bart2, stroke$Bart7)
cor(stroke$Bart2, stroke$Bart8)
cor(stroke$Bart3, stroke$Bart4)
cor(stroke$Bart3, stroke$Bart5)
cor(stroke$Bart3, stroke$Bart6)
cor(stroke$Bart3, stroke$Bart7)
cor(stroke$Bart3, stroke$Bart8)
cor(stroke$Bart4, stroke$Bart5)
cor(stroke$Bart4, stroke$Bart6)
cor(stroke$Bart4, stroke$Bart7)
cor(stroke$Bart4, stroke$Bart8)
cor(stroke$Bart5, stroke$Bart6)
cor(stroke$Bart5, stroke$Bart7)
cor(stroke$Bart5, stroke$Bart8)
cor(stroke$Bart6, stroke$Bart7)
cor(stroke$Bart6, stroke$Bart8)
cor(stroke$Bart7, stroke$Bart8)
```

	Week						
	1	2	3	4	5	6	7
Week 2	0.93						
Week 3	0.88	0.92					
Week 4	0.83	0.88	0.95				
Week 5	0.79	0.85	0.91	0.92			
Week 6	0.71	0.79	0.85	0.88	0.97		
Week 7	0.62	0.70	0.77	0.83	0.92	0.95	
Week 8	0.55	0.64	0.70	0.77	0.88	0.93	0.98

Menghitung intercept dan slope, beserta standar errornya masing-masing, dari hubungan fungsi motorik dengan waktu/pekan setiap subyek, serta mempresentasikan hasilnya dalam bentuk tabel

```
ml <- lmList(log(ability) ~ I(time) | Subject, stroke_long)
intercepts <- sapply(ml,coef)[1,]
slopes <- sapply(ml,coef)[2,]
intercepts
slopes

library(lme4)
model <- (lmList(ability ~ time | Subject, data = stroke_gabungan))
summary(model)$coef
```

Subject	Intercept	(std. error)	Slope	(std. error)
1	3.68	(3.987336)	3.1	(0.7896103)
2	4.17	(3.987336)	2.7	(0.7896103)
3	3.4	(3.987336)	2.2	(0.7896103)
4	3.2	(3.987336)	3.3	(0.7896103)
5	3.8	(3.987336)	1.5	(0.7896103)
6	2.7	(3.987336)	1.4	(0.7896103)
7	3.5	(3.987336)	1.1	(0.7896103)
8	3.6	(3.987336)	1.6	(0.7896103)
9	2.9	(3.987336)	4.7	(0.7896103)
10	3.5	(3.987336)	2.5	(0.7896103)
11	3.5	(3.987336)	9.3	(0.7896103)
12	3.8	(3.987336)	3.6	(0.7896103)
13	3.8	(3.987336)	3.6	(0.7896103)
14	3.2	(3.987336)	1.8	(0.7896103)
15	3.2	(3.987336)	3.2	(0.7896103)
16	2.7	(3.987336)	8.4	(0.7896103)
17	3.8	(3.987336)	5.1	(0.7896103)
18	2.9	(3.987336)	2.2	(0.7896103)
19	3.9	(3.987336)	3.5	(0.7896103)
20	3.2	(3.987336)	1.2	(0.7896103)
21	4.6		2.5	
22	2.9	(3.987336)	8.8	(0.7896103)
23	3.4	(3.987336)	1.5	(0.7896103)
24	3.4	(3.987336)	1.5	(0.7896103)