Assignment 1

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11 July 2016

## R Markdown

"I love Octocat. She's the coolest cat in town"



Octocat

## Assignment 2  
  
data (anscombe)  
dim (anscombe)

## [1] 11 8

head (anscombe)

## x1 x2 x3 x4 y1 y2 y3 y4  
## 1 10 10 10 8 8.04 9.14 7.46 6.58  
## 2 8 8 8 8 6.95 8.14 6.77 5.76  
## 3 13 13 13 8 7.58 8.74 12.74 7.71  
## 4 9 9 9 8 8.81 8.77 7.11 8.84  
## 5 11 11 11 8 8.33 9.26 7.81 8.47  
## 6 14 14 14 8 9.96 8.10 8.84 7.04

tail (anscombe)

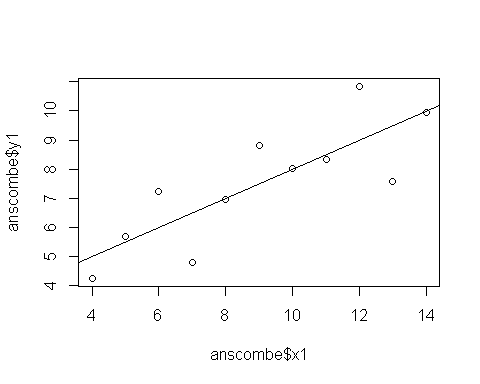
## x1 x2 x3 x4 y1 y2 y3 y4  
## 6 14 14 14 8 9.96 8.10 8.84 7.04  
## 7 6 6 6 8 7.24 6.13 6.08 5.25  
## 8 4 4 4 19 4.26 3.10 5.39 12.50  
## 9 12 12 12 8 10.84 9.13 8.15 5.56  
## 10 7 7 7 8 4.82 7.26 6.42 7.91  
## 11 5 5 5 8 5.68 4.74 5.73 6.89

summary (anscombe)

## x1 x2 x3 x4   
## Min. : 4.0 Min. : 4.0 Min. : 4.0 Min. : 8   
## 1st Qu.: 6.5 1st Qu.: 6.5 1st Qu.: 6.5 1st Qu.: 8   
## Median : 9.0 Median : 9.0 Median : 9.0 Median : 8   
## Mean : 9.0 Mean : 9.0 Mean : 9.0 Mean : 9   
## 3rd Qu.:11.5 3rd Qu.:11.5 3rd Qu.:11.5 3rd Qu.: 8   
## Max. :14.0 Max. :14.0 Max. :14.0 Max. :19   
## y1 y2 y3 y4   
## Min. : 4.260 Min. :3.100 Min. : 5.39 Min. : 5.250   
## 1st Qu.: 6.315 1st Qu.:6.695 1st Qu.: 6.25 1st Qu.: 6.170   
## Median : 7.580 Median :8.140 Median : 7.11 Median : 7.040   
## Mean : 7.501 Mean :7.501 Mean : 7.50 Mean : 7.501   
## 3rd Qu.: 8.570 3rd Qu.:8.950 3rd Qu.: 7.98 3rd Qu.: 8.190   
## Max. :10.840 Max. :9.260 Max. :12.74 Max. :12.500

## Assignment 3

knitr::opts\_chunk$set(fig.width = 8,   
 fig.height = 8,   
 fig.align = "center",   
 dev = 'png',   
 fig.path = '.\figures')  
  
data (anscombe)  
plot(anscombe$x1, anscombe$y1)  
abline (lm (y1~x1, data = anscombe))



## Assignment 4

### Code Chunk 4

df <- read.csv('analgesic.csv')

### Code Chunk 5

dim (df)

## [1] 40 5

colnames (df)

## [1] "ID" "Group" "Measurement\_1" "Measurement\_2"  
## [5] "Measurement\_3"

head (df)

## ID Group Measurement\_1 Measurement\_2 Measurement\_3  
## 1 1 Analgesic 26 26 21  
## 2 2 Analgesic 29 26 23  
## 3 3 Analgesic 24 28 22  
## 4 4 Analgesic 25 22 24  
## 5 5 Analgesic 24 28 23  
## 6 6 Analgesic 22 23 26

tail (df)

## ID Group Measurement\_1 Measurement\_2 Measurement\_3  
## 35 35 Placebo 17 21 15  
## 36 36 Placebo 19 17 15  
## 37 37 Placebo 14 19 13  
## 38 38 Placebo 17 19 13  
## 39 39 Placebo 11 20 18  
## 40 40 Placebo 15 18 12

summary (df)

## ID Group Measurement\_1 Measurement\_2   
## Min. : 1.00 Analgesic:20 Min. :10.00 Min. : 8.0   
## 1st Qu.:10.75 Placebo :20 1st Qu.:17.00 1st Qu.:17.0   
## Median :20.50 Median :20.00 Median :20.0   
## Mean :20.50 Mean :20.12 Mean :20.7   
## 3rd Qu.:30.25 3rd Qu.:24.00 3rd Qu.:25.0   
## Max. :40.00 Max. :30.00 Max. :32.0   
## Measurement\_3   
## Min. :12.00   
## 1st Qu.:16.00   
## Median :20.50   
## Mean :20.52   
## 3rd Qu.:24.25   
## Max. :30.00

### Code Chunk 6

library(tidyr)

## Warning: package 'tidyr' was built under R version 3.3.1

library(dplyr)

## Warning: package 'dplyr' was built under R version 3.3.1

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

df2 <- gather(df,"Measurement", "Value", Measurement\_1:Measurement\_3) #Change wide to long  
df2

## ID Group Measurement Value  
## 1 1 Analgesic Measurement\_1 26  
## 2 2 Analgesic Measurement\_1 29  
## 3 3 Analgesic Measurement\_1 24  
## 4 4 Analgesic Measurement\_1 25  
## 5 5 Analgesic Measurement\_1 24  
## 6 6 Analgesic Measurement\_1 22  
## 7 7 Analgesic Measurement\_1 25  
## 8 8 Analgesic Measurement\_1 28  
## 9 9 Analgesic Measurement\_1 22  
## 10 10 Analgesic Measurement\_1 18  
## 11 11 Analgesic Measurement\_1 25  
## 12 12 Analgesic Measurement\_1 26  
## 13 13 Analgesic Measurement\_1 26  
## 14 14 Analgesic Measurement\_1 19  
## 15 15 Analgesic Measurement\_1 24  
## 16 16 Analgesic Measurement\_1 23  
## 17 17 Analgesic Measurement\_1 24  
## 18 18 Analgesic Measurement\_1 24  
## 19 19 Analgesic Measurement\_1 23  
## 20 20 Analgesic Measurement\_1 30  
## 21 21 Placebo Measurement\_1 19  
## 22 22 Placebo Measurement\_1 10  
## 23 23 Placebo Measurement\_1 12  
## 24 24 Placebo Measurement\_1 17  
## 25 25 Placebo Measurement\_1 18  
## 26 26 Placebo Measurement\_1 12  
## 27 27 Placebo Measurement\_1 14  
## 28 28 Placebo Measurement\_1 20  
## 29 29 Placebo Measurement\_1 16  
## 30 30 Placebo Measurement\_1 17  
## 31 31 Placebo Measurement\_1 18  
## 32 32 Placebo Measurement\_1 20  
## 33 33 Placebo Measurement\_1 12  
## 34 34 Placebo Measurement\_1 20  
## 35 35 Placebo Measurement\_1 17  
## 36 36 Placebo Measurement\_1 19  
## 37 37 Placebo Measurement\_1 14  
## 38 38 Placebo Measurement\_1 17  
## 39 39 Placebo Measurement\_1 11  
## 40 40 Placebo Measurement\_1 15  
## 41 1 Analgesic Measurement\_2 26  
## 42 2 Analgesic Measurement\_2 26  
## 43 3 Analgesic Measurement\_2 28  
## 44 4 Analgesic Measurement\_2 22  
## 45 5 Analgesic Measurement\_2 28  
## 46 6 Analgesic Measurement\_2 23  
## 47 7 Analgesic Measurement\_2 25  
## 48 8 Analgesic Measurement\_2 21  
## 49 9 Analgesic Measurement\_2 26  
## 50 10 Analgesic Measurement\_2 25  
## 51 11 Analgesic Measurement\_2 29  
## 52 12 Analgesic Measurement\_2 25  
## 53 13 Analgesic Measurement\_2 25  
## 54 14 Analgesic Measurement\_2 30  
## 55 15 Analgesic Measurement\_2 20  
## 56 16 Analgesic Measurement\_2 24  
## 57 17 Analgesic Measurement\_2 32  
## 58 18 Analgesic Measurement\_2 17  
## 59 19 Analgesic Measurement\_2 25  
## 60 20 Analgesic Measurement\_2 18  
## 61 21 Placebo Measurement\_2 12  
## 62 22 Placebo Measurement\_2 16  
## 63 23 Placebo Measurement\_2 11  
## 64 24 Placebo Measurement\_2 17  
## 65 25 Placebo Measurement\_2 18  
## 66 26 Placebo Measurement\_2 16  
## 67 27 Placebo Measurement\_2 17  
## 68 28 Placebo Measurement\_2 19  
## 69 29 Placebo Measurement\_2 19  
## 70 30 Placebo Measurement\_2 15  
## 71 31 Placebo Measurement\_2 21  
## 72 32 Placebo Measurement\_2 13  
## 73 33 Placebo Measurement\_2 8  
## 74 34 Placebo Measurement\_2 17  
## 75 35 Placebo Measurement\_2 21  
## 76 36 Placebo Measurement\_2 17  
## 77 37 Placebo Measurement\_2 19  
## 78 38 Placebo Measurement\_2 19  
## 79 39 Placebo Measurement\_2 20  
## 80 40 Placebo Measurement\_2 18  
## 81 1 Analgesic Measurement\_3 21  
## 82 2 Analgesic Measurement\_3 23  
## 83 3 Analgesic Measurement\_3 22  
## 84 4 Analgesic Measurement\_3 24  
## 85 5 Analgesic Measurement\_3 23  
## 86 6 Analgesic Measurement\_3 26  
## 87 7 Analgesic Measurement\_3 30  
## 88 8 Analgesic Measurement\_3 21  
## 89 9 Analgesic Measurement\_3 20  
## 90 10 Analgesic Measurement\_3 29  
## 91 11 Analgesic Measurement\_3 28  
## 92 12 Analgesic Measurement\_3 23  
## 93 13 Analgesic Measurement\_3 26  
## 94 14 Analgesic Measurement\_3 27  
## 95 15 Analgesic Measurement\_3 24  
## 96 16 Analgesic Measurement\_3 27  
## 97 17 Analgesic Measurement\_3 28  
## 98 18 Analgesic Measurement\_3 25  
## 99 19 Analgesic Measurement\_3 23  
## 100 20 Analgesic Measurement\_3 25  
## 101 21 Placebo Measurement\_3 18  
## 102 22 Placebo Measurement\_3 18  
## 103 23 Placebo Measurement\_3 20  
## 104 24 Placebo Measurement\_3 18  
## 105 25 Placebo Measurement\_3 20  
## 106 26 Placebo Measurement\_3 16  
## 107 27 Placebo Measurement\_3 17  
## 108 28 Placebo Measurement\_3 18  
## 109 29 Placebo Measurement\_3 15  
## 110 30 Placebo Measurement\_3 13  
## 111 31 Placebo Measurement\_3 14  
## 112 32 Placebo Measurement\_3 16  
## 113 33 Placebo Measurement\_3 21  
## 114 34 Placebo Measurement\_3 16  
## 115 35 Placebo Measurement\_3 15  
## 116 36 Placebo Measurement\_3 15  
## 117 37 Placebo Measurement\_3 13  
## 118 38 Placebo Measurement\_3 13  
## 119 39 Placebo Measurement\_3 18  
## 120 40 Placebo Measurement\_3 12

df3 <- group\_by (df2, Group) #Group by Placebo and Analgesic  
df3

## Source: local data frame [120 x 4]  
## Groups: Group [2]  
##   
## ID Group Measurement Value  
## (int) (fctr) (chr) (int)  
## 1 1 Analgesic Measurement\_1 26  
## 2 2 Analgesic Measurement\_1 29  
## 3 3 Analgesic Measurement\_1 24  
## 4 4 Analgesic Measurement\_1 25  
## 5 5 Analgesic Measurement\_1 24  
## 6 6 Analgesic Measurement\_1 22  
## 7 7 Analgesic Measurement\_1 25  
## 8 8 Analgesic Measurement\_1 28  
## 9 9 Analgesic Measurement\_1 22  
## 10 10 Analgesic Measurement\_1 18  
## .. ... ... ... ...

df4 <- group\_by (df3, ID) #Read by ID  
df4

## Source: local data frame [120 x 4]  
## Groups: ID [40]  
##   
## ID Group Measurement Value  
## (int) (fctr) (chr) (int)  
## 1 1 Analgesic Measurement\_1 26  
## 2 2 Analgesic Measurement\_1 29  
## 3 3 Analgesic Measurement\_1 24  
## 4 4 Analgesic Measurement\_1 25  
## 5 5 Analgesic Measurement\_1 24  
## 6 6 Analgesic Measurement\_1 22  
## 7 7 Analgesic Measurement\_1 25  
## 8 8 Analgesic Measurement\_1 28  
## 9 9 Analgesic Measurement\_1 22  
## 10 10 Analgesic Measurement\_1 18  
## .. ... ... ... ...

summarise (df4, mean(Value)) #Mean of all replicates

## Source: local data frame [40 x 2]  
##   
## ID mean(Value)  
## (int) (dbl)  
## 1 1 24.33333  
## 2 2 26.00000  
## 3 3 24.66667  
## 4 4 23.66667  
## 5 5 25.00000  
## 6 6 23.66667  
## 7 7 26.66667  
## 8 8 23.33333  
## 9 9 22.66667  
## 10 10 24.00000  
## .. ... ...