Assignment-Chapter 9&10 (100 points)

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1. Please run the following two commands and observe the differences of two graphs. Write the difference and the reasons. (10 points)

a. p <-ggplot(heightweight,aes(x=ageYear,y=heightIn)) +geom\_point()

p + theme(axis.title.x =element\_text(colour="red")) + theme\_bw()

b. p + theme\_bw() + theme(axis.title.x =element\_text(colour="red",size=12))

In graph a, the theme()beforesthe theme specification. Anything set by the theme() was unset

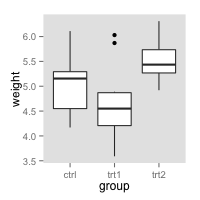
by theme\_bw(). We couldn’t see any effect on the graph.

In graph b, the theme()works since it was set after theme\_bw().The theme()term sets the

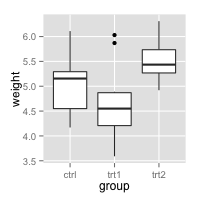
colour of the element x to red.

1. Use the PlantGrowth data frame to draw following graphs, respectively. Write down the used functions in ggplot2 (25 points)

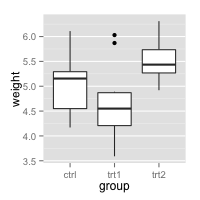
(a)



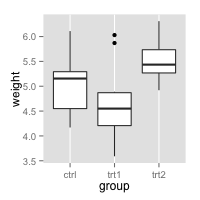
(b)



(c)



(d)



(a)

# Hide all the gridlines

bp + theme(panel.grid.minor=element\_blank(),

panel.grid.major=element\_blank())

(b)

# Hide just the minor gridlines

bp + theme(panel.grid.minor=element\_blank())

(c)

# Hide all the vertical gridlines

bp + theme(panel.grid.minor.x=element\_blank(),

panel.grid.major.x=element\_blank())

(d)

# Hide all the horizontal gridlines

bp + theme(panel.grid.minor.y=element\_blank(),

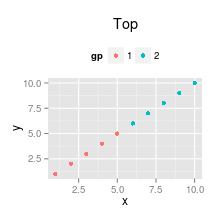
panel.grid.major.y=element\_blank())

1. Please use the DF1 data frame to draw following graphs, respectively. Write down the used functions in ggplot2 (40 points)

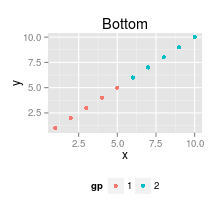
DF1 <- data.frame(x = 1:10, y = 1:10, gp = factor(rep(1:2, each = 5)))

p0 <- ggplot(DF1, aes(x = x, y = y, colour = gp)) + geom\_point()

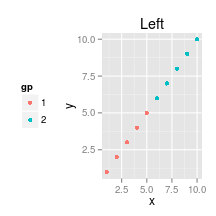
(a)



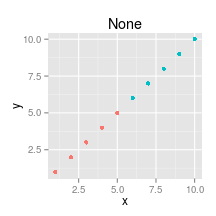
(b)



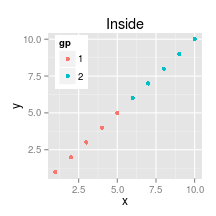
(c)



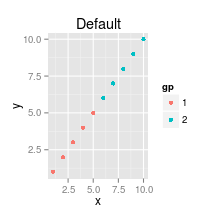
(d)



(e)



(f)



Answers:

p0 + theme(legend.position = "top") + ggtitle("Top")

p0 + theme(legend.position = "bottom") + ggtitle("Bottom")

p0 + theme(legend.position = "left") + ggtitle("Left")

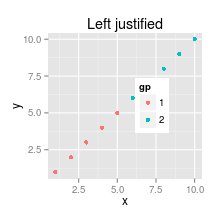
p0 + theme(legend.position = "none") + ggtitle("None")

p0 + theme(legend.position = c(0.15, 0.8)) + ggtitle("Inside")

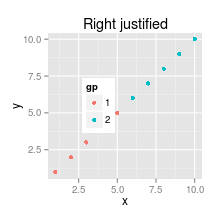
p0 + ggtitle("Default")

1. Please use the DF1 data frame to draw following graphs, respectively. Write down the used functions in ggplot2 (25 points)

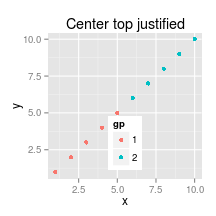
(a)



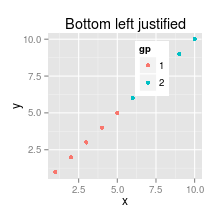
(b)



(c)



(d)



Answers:

p0 + theme(legend.position = c(0.5, 0.5), legend.justification = "left") + labs(title = "Left

justified")

p0 + theme(legend.position = c(0.5, 0.5), legend.justification = "right") + labs(title = "Right

justified")

p0 + theme(legend.position = c(0.5, 0.5), legend.justification = c("center", "top")) + labs(title

= "Center top justified")

p0 + theme(legend.position = c(0.5, 0.5), legend.justification = c("left", "bottom") ) +

labs(title = "Bottom left justified")