BERD R Short Course  
Session 3 Homework Problems

1. Use data frame ‘cats’ in R package ‘MASS’ as input file to perform the following procedures:
   1. Use par() statement to plot the density histogram of Bwt and density histogram of Hwt side by side in one plot. For the histogram of Bwt, use ‘breaks=20’ and ‘col=’Red’’ and make the xlab as ‘Bwt(kg)’ and main tile as ‘hist of Bwt’. For the histogram of Hwt, use ‘breaks=20’ and ‘col=’Blue’’ and make the xlab as ‘Hwt(g)’ and main tile as ‘hist of Hwt’. For each of the histogram plot, add density curve on it.
   2. In order to test the normality assumption of variables ‘Bwt’ and ‘Hwt’, Use par() statement to draw QQ-plot and QQ-lines for two variables Bwt and Hwt side by side in one plot.
   3. Use par() statement to draw three scatter plots: Hwt vs Bwt, Hwt vs Bwt for Female and Hwt vs Bwt for male. Use ‘Red’, ‘Blue’ and ‘Green’ in the three plots and give appropriate titles and labels. For each of the plot, control the limit of x axis as 0 to 4 and the limit of y axis as 6 to 22. Then add the regression lines on them.
2. Use data frame ‘ToothGrowth’ as input file for the following procedures:
   1. Use par() statement to draw the following three boxplots in one plot: 1.len by supp; 2. len by dose; 3. len by supp and dose. Give the subtitles for each plot as: 'len by supp', 'len by dose' and 'len by supp and dose'. Label the y axis as ‘length of odontoblasts’ and x axis as ‘supp’, ‘dose’ and ‘supp by dose’, separately in each plot. Lastly use 'red' for the third plot.
   2. Create new variable ‘len\_R’ by following: If 4<=len<6, then len\_R=’Tiny’, if 6<=len<12, then len\_R=’Small’, if 12<=len<18, then len\_R=’Medium’, if 18<=len<26, then len\_R=’Big’, if len>=26, then len\_R=’Huge’. Make the pie plot by using variable ‘len\_R’. Present percentage and use rainbow as the color.