XP Booster
April 6

For this challenge you may work in teams of TWO or THREE. You will be using the timbits dataset (timbits.csv).

1. What proportion of timbits in the dataset are honey dip?
   (a) If someone were to choose a timbit at random would say selecting a honey dip is likely, or unlikely?
   (b) Now look at the proportion of timbits in box A and box B that are honey dip. Does this change your answer to part (a)?
   (c) Using a visualization make an argument for why the type of timbit is associated with the location it comes from.
2. Create a barchart for the distribution of type of timbits across both different boxes. Do the boxes appear to have the same distribution?
3. When ordering the timbits Mr. Merrick asked if they could chose the type of each timbits at random.
   (a) If the Tim Hortons locations assigned the timbits at random, how many of each type would be expected in each box?
   (b) Using a graphical visualization give an argument for why the timbits were not assigned to each box at random.
   (c) Using a graphical visualization give an argument for why the timbits were assigned to each box at random.

Solution:

```r
### Load Packages
library(ggplot2)
library(tidyverse)

### Question 1: What proportion of timbits are Honey Dip?
counts <- table(timbits$type) # Seeing values
proportions <- counts/40 # 30% honey dip
table(timbits$type, timbits$box) # 10% for Box A, 50% for Box B
barplot(table(timbits$type)) # using base R
timbits %>% ggplot(aes(x=type))+geom_bar()+theme_classic() # Looking at
    counts
timbits %>% ggplot(aes(x=type, fill=box)) + geom_bar()+theme_classic() #
    Considering box (hard to compare proportions)
timbits %>% ggplot(aes(x=type, fill=box)) + geom_bar(position='fill')+theme_
    classic() # Relative barchart
timbits %>% ggplot(aes(x=type, fill=box)) + geom_bar(position='dodge')+theme_
    classic() # Dodged counts

### Question 2: If timbits were randomly assigned to each box by type, what
    would be expected in each category?
p <- 20*(1/5) # 4 In each box

```

```
### Question 3: Would you say the timbit selector actually chose the timbits
    at random?
timbits %>% filter(box=="A") %>% ggplot(aes(x=type)) + geom_bar() # for
    location a
timbits %>% filter(box=="B") %>% ggplot(aes(x=type)) + geom_bar() # for
    location b
```