PS Lab 8

Exercise

1.)

```r
#Question 01
pop_mean <- mean(weight.kg.)
pop_sd <- sd(weight.kg.)

pop_mean
pop_sd
```

```
> pop_mean <- mean(weight.kg.)
> pop_sd <- sd(weight.kg.)
> pop_mean
[1] 2.468
> pop_sd
[1] 0.2561069
>
```

2.)

```r
#Question 02
samples <- c()
for (i in 1:25) {
  s <- sample(weight.kg., 6, replace = TRUE)
  samples <- cbind(samples, s)
}

sample_means <- apply(samples, 2, mean)
sample_sds <- apply(samples, 2, sd)

sample_means
sample_sds
```

```
> sample_means <- apply(samples, 2, mean)
> sample_sds <- apply(samples, 2, sd)
> sample_means
       s        s        s        s        s        s        s        s        s        s        s        s
2.411667 2.466667 2.695000 2.440000 2.418333 2.395000 2.585000 2.515000 2.540000 2.703333 2.363333 2.245000
       s        s        s        s        s        s        s        s        s        s        s        s
2.576667 2.565000 2.615000 2.468333 2.488333 2.306667 2.530000 2.481667 2.640000 2.518333 2.491667 2.623333
       s
2.420000
> sample_sds
         s          s          s          s          s          s          s          s          s          s
0.28868091 0.11430952 0.13590438 0.20493902 0.19062179 0.22295740 0.12485992 0.34151135 0.15556349 0.06918574
         s          s          s          s          s          s          s          s          s          s
0.28118796 0.47030841 0.12307179 0.27486360 0.11291590 0.16702295 0.28631568 0.26807959 0.25115732 0.21544528
         s          s          s          s          s
```

3.)

```r
#Question 03
mean_of_sample_means <- mean(sample_means)
sd_of_sample_means <- sd(sample_means)

true_mean <- pop_mean
true_sd <- pop_sd / sqrt(6)

mean_of_sample_means
true_mean

sd_of_sample_means
true_sd
```

```
> mean_of_sample_means
[1] 2.500133
> true_mean
[1] 2.468
> sd_of_sample_means
[1] 0.1131053
> true_sd
[1] 0.1045552
>
```