Q6

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```
library(car)
```

```
## Loading required package: carData
```

```
brand = read.table("../data/brand.txt", header=T)
names(brand)
```

```
## [1] "liking"    "moisture"  "sweetness"
```

```
head(brand)
```

```
##   liking moisture sweetness
## 1     64        4         2
## 2     73        4         4
## 3     61        4         2
## 4     76        4         4
## 5     72        6         2
## 6     80        6         4
```

(a) Find the variance inflation factors for the full model with both predictors in the model. What do they tell you?

```
fit = lm(liking ~ moisture + sweetness, brand)
vif(fit)
```

```
##  moisture sweetness
##         1         1
```

pefect.

(b) Obtain the analysis of variance table that decomposes the regression sum of squares into extra sums of squares associated with moisture; and with sweetness given moisture?

```r
anova(fit)
```

```
## Analysis of Variance Table
##
## Response: liking
##           Df  Sum Sq Mean Sq F value    Pr(>F)
## moisture   1 1566.45 1566.45 215.947 1.778e-09 ***
## sweetness  1  306.25  306.25  42.219 2.011e-05 ***
## Residuals 13   94.30    7.25
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

(c) Obtain the analysis of variance table that decomposes the regression sum of squares into extra sums of squares associated with sweetness; and moisture given sweetness. What do you notice?

```r
fit2 = lm(liking ~ sweetness + moisture, brand)
anova(fit2)
```

```
## Analysis of Variance Table
##
## Response: liking
##           Df  Sum Sq Mean Sq F value    Pr(>F)
## sweetness  1  306.25  306.25  42.219 2.011e-05 ***
## moisture   1 1566.45 1566.45 215.947 1.778e-09 ***
## Residuals 13   94.30    7.25
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

(d) Regress liking on moisture content only. How does the estimate of B1 in the previous part compare with the estimate in the model with both predictors?

```r
fit3 = lm(liking ~ moisture, brand)
coef(fit)
```

```
## (Intercept)    moisture   sweetness
##      37.650       4.425       4.375
```

```r
coef(fit3)
```

```
## (Intercept)    moisture
##      50.775       4.425
```