Logistics data analysis using R programming [202102-LSB5019-001]

Assignment 4

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```
#1) Load the price index .csv file attached via this assignment########################
destfile<- "D:\\One\\OneDrive\\My research\\5th semester\\R\\Assignment 4\\food-price-index-September-2021-index-numbers-csv-tables.csv"
pricedata<- read.csv(destfile) #load the file

#2) Use 4 methods that you learned in the last two sessions to manipulate the dataset####
#2.1: read the data file and overview its content
head(pricedata,n=3) # check the first 3 row
```

```
##   Series_reference  Period Data_value STATUS   UNITS
## 1     CPIM.SAP0100 2006.06       3.11  FINAL Dollars
## 2     CPIM.SAP0100 2006.07       2.78  FINAL Dollars
## 3     CPIM.SAP0100 2006.08       2.43  FINAL Dollars
##                          Subject
## 1 Consumers Price Index - CPI
## 2 Consumers Price Index - CPI
## 3 Consumers Price Index - CPI
##                                                                         Group
## 1 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 2 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 3 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
##   Series_title_1
## 1   Oranges, 1kg
## 2   Oranges, 1kg
## 3   Oranges, 1kg
```

```
tail(pricedata,n=10)# check the last 10 row
```

```
##       Series_reference  Period Data_value STATUS   UNITS
## 25954     CPIM.SAP0269 2020.12       3.08  FINAL Dollars
## 25955     CPIM.SAP0269 2021.01       3.10  FINAL Dollars
## 25956     CPIM.SAP0269 2021.02       3.09  FINAL Dollars
## 25957     CPIM.SAP0269 2021.03       3.10  FINAL Dollars
## 25958     CPIM.SAP0269 2021.04       3.08  FINAL Dollars
## 25959     CPIM.SAP0269 2021.05       3.12  FINAL Dollars
## 25960     CPIM.SAP0269 2021.06       3.16  FINAL Dollars
## 25961     CPIM.SAP0269 2021.07       3.10  FINAL Dollars
## 25962     CPIM.SAP0269 2021.08       3.13  FINAL Dollars
## 25963     CPIM.SAP0269 2021.09       3.16  FINAL Dollars
##                           Subject
## 25954 Consumers Price Index - CPI
## 25955 Consumers Price Index - CPI
## 25956 Consumers Price Index - CPI
## 25957 Consumers Price Index - CPI
## 25958 Consumers Price Index - CPI
## 25959 Consumers Price Index - CPI
## 25960 Consumers Price Index - CPI
## 25961 Consumers Price Index - CPI
## 25962 Consumers Price Index - CPI
## 25963 Consumers Price Index - CPI
##                                                                            Group
## 25954 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25955 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25956 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25957 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25958 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25959 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25960 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25961 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25962 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 25963 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
##                   Series_title_1
## 25954 Chewing gum, packet, each
## 25955 Chewing gum, packet, each
## 25956 Chewing gum, packet, each
## 25957 Chewing gum, packet, each
## 25958 Chewing gum, packet, each
## 25959 Chewing gum, packet, each
## 25960 Chewing gum, packet, each
## 25961 Chewing gum, packet, each
## 25962 Chewing gum, packet, each
## 25963 Chewing gum, packet, each
```

```
summary(pricedata) # summary of the object
```

```
##  Series_reference       Period       Data_value        STATUS
##  Length:25963       Min.   :2006   Min.   : 0.900   Length:25963
##  Class :character   1st Qu.:2010   1st Qu.: 2.640   Class :character
##  Mode  :character   Median :2014   Median : 3.660   Mode  :character
##                     Mean   :2014   Mean   : 5.432
##                     3rd Qu.:2018   3rd Qu.: 6.160
##                     Max.   :2021   Max.   :37.960
##                                    NA's   :82
##     UNITS             Subject             Group            Series_title_1
##  Length:25963       Length:25963       Length:25963       Length:25963
##  Class :character   Class :character   Class :character   Class :character
##  Mode  :character   Mode  :character   Mode  :character   Mode  :character
##
##
##
##
```

```
dim(pricedata) # check the dimension
```

```
## [1] 25963     8
```

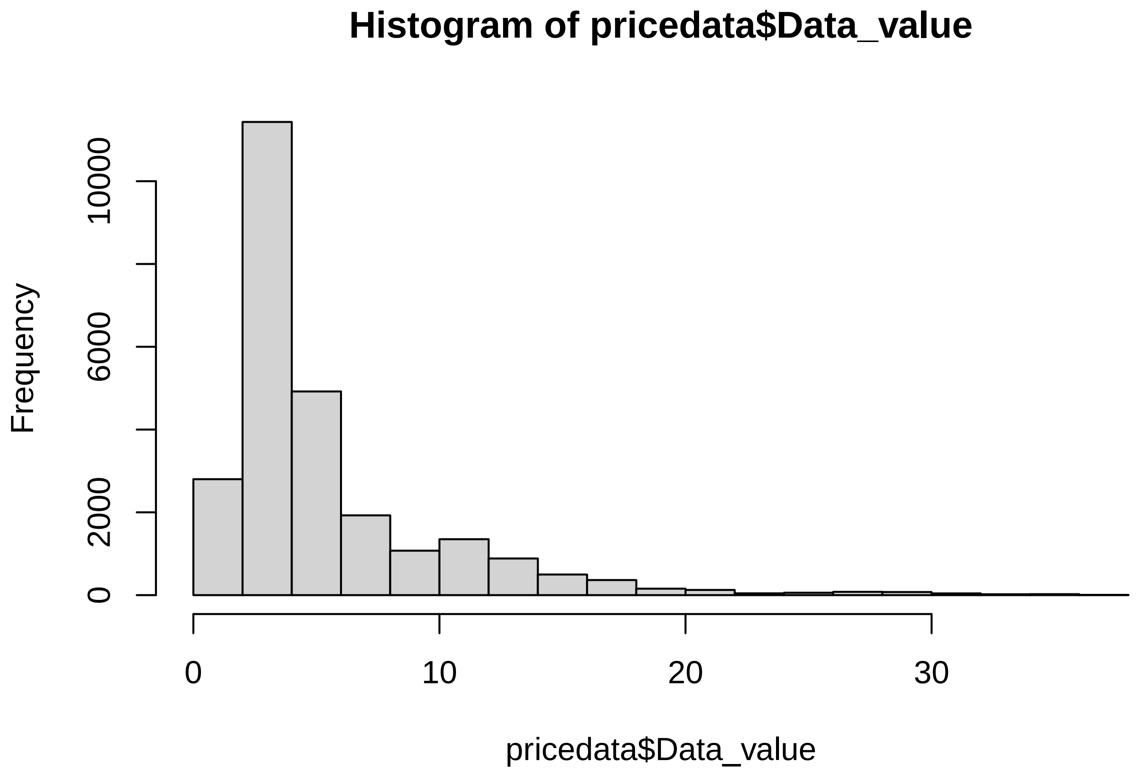
```r
names(pricedata) # check the object names
```

```
## [1] "Series_reference" "Period"           "Data_value"       "STATUS"
## [5] "UNITS"            "Subject"          "Group"            "Series_title_1"
```

```r
str(pricedata)# the structure
```

```
## 'data.frame':    25963 obs. of  8 variables:
##  $ Series_reference: chr  "CPIM.SAP0100" "CPIM.SAP0100" "CPIM.SAP0100" "CPIM.SAP0100" ...
##  $ Period          : num  2006 2006 2006 2006 2006 ...
##  $ Data_value      : num  3.11 2.78 2.43 2.42 3.04 3.24 3.27 3.18 3.74 4.21 ...
##  $ STATUS          : chr  "FINAL" "FINAL" "FINAL" "FINAL" ...
##  $ UNITS           : chr  "Dollars" "Dollars" "Dollars" "Dollars" ...
##  $ Subject         : chr  "Consumers Price Index - CPI" "Consumers Price Index - CPI" "Consumers Price Index - CPI" "Consumers Price In
##  $ Group           : chr  "Food Price Index Selected Monthly Weighted Average Prices for New Zealand" "Food Price Index Selected Monthl
##  $ Series_title_1  : chr  "Oranges, 1kg" "Oranges, 1kg" "Oranges, 1kg" "Oranges, 1kg" ...
```

```r
#attributes(pricedata)# object's attributes
hist(pricedata$Data_value)# Use a histogram to display data distribution
```



```
table(pricedata$Data_value)[1:5] # Frequency of occurrence of the first 5 values
```

```
##
##  0.9 0.91 0.93 0.94 0.95
##    1    1    1    1    4
```

```
pricedata[pricedata$Series_title_1=="Olives, jar, 400g",] # All rows where Series_reference is "CPIM.SAP0100"
```

```
##       Series_reference  Period Data_value STATUS   UNITS
## 24604     CPIM.SAP0261 2017.10       4.41  FINAL Dollars
## 24605     CPIM.SAP0261 2017.11       4.48  FINAL Dollars
## 24606     CPIM.SAP0261 2017.12       4.39  FINAL Dollars
## 24607     CPIM.SAP0261 2018.01       4.42  FINAL Dollars
## 24608     CPIM.SAP0261 2018.02       4.39  FINAL Dollars
## 24609     CPIM.SAP0261 2018.03       4.27  FINAL Dollars
## 24610     CPIM.SAP0261 2018.04       4.44  FINAL Dollars
## 24611     CPIM.SAP0261 2018.05       4.43  FINAL Dollars
## 24612     CPIM.SAP0261 2018.06       4.38  FINAL Dollars
## 24613     CPIM.SAP0261 2018.07       4.46  FINAL Dollars
## 24614     CPIM.SAP0261 2018.08       4.44  FINAL Dollars
## 24615     CPIM.SAP0261 2018.09       4.38  FINAL Dollars
## 24616     CPIM.SAP0261 2018.10       4.41  FINAL Dollars
## 24617     CPIM.SAP0261 2018.11       4.44  FINAL Dollars
## 24618     CPIM.SAP0261 2018.12       4.39  FINAL Dollars
## 24619     CPIM.SAP0261 2019.01       4.32  FINAL Dollars
## 24620     CPIM.SAP0261 2019.02       4.39  FINAL Dollars
## 24621     CPIM.SAP0261 2019.03       4.50  FINAL Dollars
## 24622     CPIM.SAP0261 2019.04       4.50  FINAL Dollars
## 24623     CPIM.SAP0261 2019.05       4.43  FINAL Dollars
## 24624     CPIM.SAP0261 2019.06       4.49  FINAL Dollars
## 24625     CPIM.SAP0261 2019.07       4.50  FINAL Dollars
## 24626     CPIM.SAP0261 2019.08       4.43  FINAL Dollars
## 24627     CPIM.SAP0261 2019.09       4.41  FINAL Dollars
## 24628     CPIM.SAP0261 2019.10       4.38  FINAL Dollars
## 24629     CPIM.SAP0261 2019.11       4.34  FINAL Dollars
## 24630     CPIM.SAP0261 2019.12       4.40  FINAL Dollars
## 24631     CPIM.SAP0261 2020.01       4.36  FINAL Dollars
## 24632     CPIM.SAP0261 2020.02       4.41  FINAL Dollars
## 24633     CPIM.SAP0261 2020.03       4.36  FINAL Dollars
## 24634     CPIM.SAP0261 2020.04       4.55  FINAL Dollars
## 24635     CPIM.SAP0261 2020.05       4.41  FINAL Dollars
## 24636     CPIM.SAP0261 2020.06       4.34  FINAL Dollars
## 24637     CPIM.SAP0261 2020.07       4.42  FINAL Dollars
## 24638     CPIM.SAP0261 2020.08       4.30  FINAL Dollars
## 24639     CPIM.SAP0261 2020.09       4.29  FINAL Dollars
## 24640     CPIM.SAP0261 2020.10       4.33  FINAL Dollars
## 24641     CPIM.SAP0261 2020.11       4.43  FINAL Dollars
## 24642     CPIM.SAP0261 2020.12       4.10  FINAL Dollars
## 24643     CPIM.SAP0261 2021.01       4.24  FINAL Dollars
## 24644     CPIM.SAP0261 2021.02       4.08  FINAL Dollars
## 24645     CPIM.SAP0261 2021.03       4.03  FINAL Dollars
## 24646     CPIM.SAP0261 2021.04       4.13  FINAL Dollars
## 24647     CPIM.SAP0261 2021.05       4.25  FINAL Dollars
## 24648     CPIM.SAP0261 2021.06       4.22  FINAL Dollars
## 24649     CPIM.SAP0261 2021.07       4.17  FINAL Dollars
## 24650     CPIM.SAP0261 2021.08       4.18  FINAL Dollars
## 24651     CPIM.SAP0261 2021.09       4.17  FINAL Dollars
##                            Subject
## 24604 Consumers Price Index - CPI
## 24605 Consumers Price Index - CPI
## 24606 Consumers Price Index - CPI
## 24607 Consumers Price Index - CPI
## 24608 Consumers Price Index - CPI
## 24609 Consumers Price Index - CPI
## 24610 Consumers Price Index - CPI
## 24611 Consumers Price Index - CPI
## 24612 Consumers Price Index - CPI
## 24613 Consumers Price Index - CPI
## 24614 Consumers Price Index - CPI
## 24615 Consumers Price Index - CPI
## 24616 Consumers Price Index - CPI
## 24617 Consumers Price Index - CPI
## 24618 Consumers Price Index - CPI
## 24619 Consumers Price Index - CPI
## 24620 Consumers Price Index - CPI
## 24621 Consumers Price Index - CPI
## 24622 Consumers Price Index - CPI
## 24623 Consumers Price Index - CPI
## 24624 Consumers Price Index - CPI
## 24625 Consumers Price Index - CPI
## 24626 Consumers Price Index - CPI
## 24627 Consumers Price Index - CPI
## 24628 Consumers Price Index - CPI
## 24629 Consumers Price Index - CPI
## 24630 Consumers Price Index - CPI
## 24631 Consumers Price Index - CPI
## 24632 Consumers Price Index - CPI
## 24633 Consumers Price Index - CPI
## 24634 Consumers Price Index - CPI
## 24635 Consumers Price Index - CPI
## 24636 Consumers Price Index - CPI
## 24637 Consumers Price Index - CPI
## 24638 Consumers Price Index - CPI
## 24639 Consumers Price Index - CPI
## 24640 Consumers Price Index - CPI
## 24641 Consumers Price Index - CPI
## 24642 Consumers Price Index - CPI
## 24643 Consumers Price Index - CPI
## 24644 Consumers Price Index - CPI
## 24645 Consumers Price Index - CPI
## 24646 Consumers Price Index - CPI
## 24647 Consumers Price Index - CPI
## 24648 Consumers Price Index - CPI
## 24649 Consumers Price Index - CPI
## 24650 Consumers Price Index - CPI
## 24651 Consumers Price Index - CPI
##                                                                            Group
## 24604 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24605 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24606 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24607 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24608 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24609 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24610 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24611 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24612 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24613 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24614 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24615 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24616 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24617 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24618 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24619 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24620 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24621 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24622 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24623 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24624 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24625 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24626 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24627 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24628 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24629 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24630 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24631 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24632 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24633 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24634 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24635 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24636 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24637 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24638 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24639 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24640 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24641 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24642 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24643 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
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## 24647 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24648 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24649 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24650 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
## 24651 Food Price Index Selected Monthly Weighted Average Prices for New Zealand
##          Series_title_1
## 24604 Olives, jar, 400g
## 24605 Olives, jar, 400g
## 24606 Olives, jar, 400g
## 24607 Olives, jar, 400g
## 24608 Olives, jar, 400g
## 24609 Olives, jar, 400g
## 24610 Olives, jar, 400g
## 24611 Olives, jar, 400g
## 24612 Olives, jar, 400g
## 24613 Olives, jar, 400g
## 24614 Olives, jar, 400g
## 24615 Olives, jar, 400g
## 24616 Olives, jar, 400g
## 24617 Olives, jar, 400g
## 24618 Olives, jar, 400g
## 24619 Olives, jar, 400g
## 24620 Olives, jar, 400g
## 24621 Olives, jar, 400g
## 24622 Olives, jar, 400g
## 24623 Olives, jar, 400g
## 24624 Olives, jar, 400g
## 24625 Olives, jar, 400g
## 24626 Olives, jar, 400g
## 24627 Olives, jar, 400g
## 24628 Olives, jar, 400g
## 24629 Olives, jar, 400g
## 24630 Olives, jar, 400g
## 24631 Olives, jar, 400g
## 24632 Olives, jar, 400g
## 24633 Olives, jar, 400g
## 24634 Olives, jar, 400g
## 24635 Olives, jar, 400g
## 24636 Olives, jar, 400g
## 24637 Olives, jar, 400g
## 24638 Olives, jar, 400g
## 24639 Olives, jar, 400g
## 24640 Olives, jar, 400g
## 24641 Olives, jar, 400g
## 24642 Olives, jar, 400g
## 24643 Olives, jar, 400g
## 24644 Olives, jar, 400g
## 24645 Olives, jar, 400g
## 24646 Olives, jar, 400g
## 24647 Olives, jar, 400g
## 24648 Olives, jar, 400g
## 24649 Olives, jar, 400g
## 24650 Olives, jar, 400g
## 24651 Olives, jar, 400g
```

```
is.factor(pricedata$Series_title_1) # Determine whether it is factor data
```

```
## [1] FALSE
```

```
#as.factor(pricedata$Series_title_1) # Convert to factor data

#2.2: Remove the missing data
colSums(is.na(pricedata))
```

```
## Series_reference           Period       Data_value           STATUS 
##                0                0               82                0 
##            UNITS          Subject            Group   Series_title_1 
##                0                0                0                0
```

```
#2.1.1 Method 1: na.omit()
good1<-na.omit(pricedata)
dim(good1)
```

```
## [1] 25881     8
```

```
#2.1.2 Method 2: complete.cases()
good2<-pricedata[complete.cases(pricedata),]
dim(good2)
```

```
## [1] 25881     8
```

```
#2.1.3 Method 3: is.na()
badrow<-which(rowSums(is.na(pricedata))>0) # Find the rows with missing values in the table "pricedata"
bad<-pricedata[badrow,] # Save these rows with missing values in a table "bad"
good3<-pricedata[-badrow,] # Save rows without missing values in the original table
dim(good3)
```

```
## [1] 25881     8
```

```
#2.3: Modify table
names(good3)[1]<-"reference" # Change the factor name through the names() function
names(good3)[1]<-"Series_reference" #Change it back

#2.4: Sub-setting the data set
#2.4.1 Method 1: Remove the unwanted columns
newdata1<- good3[,-c(4:7)]# Remove columns with unique values
head(newdata1,n=3)
```

```
##   Series_reference  Period Data_value Series_title_1
## 1     CPIM.SAP0100 2006.06       3.11   Oranges, 1kg
## 2     CPIM.SAP0100 2006.07       2.78   Oranges, 1kg
## 3     CPIM.SAP0100 2006.08       2.43   Oranges, 1kg
```

```
#2.4.2 Method 2: Select the wanted columns
newdata2<-good3[,c(1:3,8)]
head(newdata2,n=3)
```

```
##   Series_reference  Period Data_value Series_title_1
## 1     CPIM.SAP0100 2006.06       3.11   Oranges, 1kg
## 2     CPIM.SAP0100 2006.07       2.78   Oranges, 1kg
## 3     CPIM.SAP0100 2006.08       2.43   Oranges, 1kg
```

```
#3)Use the factor function for column "Series_title_1" and get the average for each product using the price values in column "Data_value"
splitmean <- function(newdata1) {
  s <- split( newdata1, newdata1$Series_title_1)
  sapply( s, function(x) mean(x$Data_value) )
}
splitmean(newdata1)
```

```
##                                                   Apples, 1kg
##                                                      2.837609
##                                         Apricots, dried, 100g
##                                                      2.193089
##                                                  Avocado, 1kg
##                                                      9.789261
##                                               Baby food, 110g
##                                                      1.096648
##              Bacon - middle rashers (supermarket only), 700g
##                                                     12.004432
##                                                  Bananas, 1kg
##                                                      2.740761
##                                                    Beans, 1kg
##                                                     12.858864
##                                             Beef - mince, 1kg
##                                                     12.698913
##                                       Beef steak - blade, 1kg
##                                                     15.687935
##                         Beef steak - porterhouse/sirloin, 1kg
##                                                     26.263859
##                                         Berries, frozen, 500g
##                                                      6.499837
##                                    Biscuits - chocolate, 200g
##                                                      2.831957
##      Biscuits, plain (eg arrowroot, ginger, malt, wine), 250g
##                                                      2.216989
##                              Biscuits, savoury, crackers 250g
##                                                      3.160625
##                                          Bottled water, 750ml
##                                                      2.029946
##                               Bread - white sliced loaf, 600g
##                                                      1.323261
##                                Bread rolls, filled, hot, each
##                                                      6.276229
##                           Bread rolls, hamburger buns, 6 pack
##                                                      2.784489
##                                       Breakfast biscuits, 1kg
##                                                      5.623913
##                                Breakfast drink, 250ml, 6 pack
##                                                      7.712874
##                                                 Broccoli, 1kg
##                                                      5.917120
##                  Burger, with or without accompaniments, each
##                                                      4.597600
##                                         Butter - salted, 500g
##                                                      3.978261
##                                                 Cabbage, 1kg 
##                                                     1.976848 
##                                 Cakes and biscuits, takeaway 
##                                                     3.634114 
##                              Capsicums, green, else red, 1kg 
##                                                    12.769602 
##                                                 Carrots, 1kg 
##                                                     2.136304 
##                                             Cauliflower, 1kg 
##                                                     3.427273 
##                                                  Celery, 1kg 
##                                                     3.319659 
##                Cheese - mild cheddar (supermarket only), 1kg 
##                                                     9.102391 
##                                      Cheese, camembert, 125g 
##                                                     4.276818 
##                               Cheese, processed slices, 250g 
##                                                     3.500227 
##                                    Chewing gum, packet, each 
##                                                     2.724188 
##                                          Chicken breast, 1kg 
##                                                    13.958409 
##                                 Chicken nuggets, frozen, 1kg 
##                                                    11.063252 
##  Chicken pieces (excluding breast), boneless or bone in, 1kg 
##                                                     8.147471 
##          Chicken, cooked, whole, No. 15 - Cheapest Available 
##                                                    11.575975 
##          Chicken, whole, frozen, No. 15 - Cheapest Available 
##                                                     8.099318 
##             Chilled fruit juice or smoothies, 1 to 1.5 litre 
##                                                     4.586352 
##                   Chocolate - block (supermarket only), 250g 
##                                                     3.960435 
##           Chocolate blocks, convenience stores, 100g to 250g 
##                                                     4.534261 
##                                  Chocolate novelty bars, 50g 
##                                                     1.425455 
##                                Chocolate, boxed, loose, 250g 
##                                                      8.467670
##                                        Coffee - instant, 100g
##                                                      5.550380
##                                          Coffee, ground, 200g
##                                                      6.314716
##                                         Coffee, takeway, each
##                                                      3.575086
##                                        Cookie, takeaway, each
##                                                      1.876686
##                                             Corn flakes, 500g
##                                                      3.386477
##                    Corned beef, fresh, chilled or frozen, 1kg
##                                                      9.553920
##                                               Courgettes, 1kg
##                                                      8.753636
##                             Cream, 300ml - Cheapest Available
##                                                      2.233693
##                                                 Cucumber, 1kg
##                                                      7.793807
##                                         Dessert, frozen, 500g
##                                                      6.350629
##                                 Dried mixed herbs, 10g to 15g
##                                                      2.363587
##                    Dried pasta, spaghetti or other type, 500g
##                                                      1.884151
##                                      Drinking chocolate, 300g
##                                                      3.927443
##                                                   Eggs, dozen
##                                                      3.730870
##                                      Eggs, free range, 6 pack
##                                                      4.710252
##                                Fish and chips, One fish/chips
##                                                      5.948579
##                         Fish fillets, frozen, multipack, 500g
##                                                      7.324545
##                    Flat bread - pita, tortilla, or other type
##                                                      4.134228
##                       Flour - white (supermarket only), 1.5kg
##                                                      1.942935
##                                               Fresh fish, 1kg
##                                                     29.396534
##                               Fresh herbs, packaged, chilled
##                                                      3.793958
##           Fresh pasta, tortellini or other filled type, 300g
##                                                      4.591384
##                   Fried and other takeaway chicken, 5 pieces
##                                                     11.338743
##            Fruit flavoured drink powder, multipack of 3 to 5
##                                                      1.255562
##        Fruit juice - apple based (supermarket only), 3 litre
##                                                      4.176774
##                                         Grapes, green or red
##                                                      7.479830
##                                   Ham, sliced or shaved, 1kg
##                                                     13.677609
##                                 Honey, clover, creamed, 500g
##                                                      7.062500
##                                        Hot chips, hot wedges
##                                                      2.974971
##                                             Hummus dip, 200g
##                                                      3.745786
##                                 Ice block, water based, each
##                                                      2.128977
##                           Ice cream bought in bulk, 2 litres
##                                                      5.588182
##                   Ice cream novelty, chocolate coated, each
##                                                      3.182784
##                                         Infant formula, 900g
##                                                     19.292955
##                                                    Jam, 375g
##                                                      2.614830
##                                               Kiwifruit, 1kg
##                                                      3.737826
##                                                  Kumara, 1kg
##                                                      5.290057
##                                            Lamb - chops, 1kg
##                                                     14.218750
##                                                 Lettuce, 1kg
##                                                     4.397772
##                                               Mandarins, 1kg
##                                                     5.262159
##                                 Margarine/table spread, 500g
##                                                     2.339837
##                                            Mayonnaise, 380ml
##                                                     3.326304
##                                         Meat pie - hot, each
##                                                     3.701093
##         Meat pies, chilled, 6 or 8 pack - Cheapest Available
##                                                     6.068693
##                        Milk - standard homogenised, 2 litres
##                                                     3.386141
##                             Milk, calcium enriched, 2 litres
##                                                     5.106477
##                                Mixed vegetables, frozen, 1kg
##                                                     3.405341
##                             Muesli, natural or toasted, 750g
##                                                     5.286080
##                                     Muesli/cereal bars, 200g
##                                                     2.947547
##                                               Mushrooms, 1kg
##                                                    11.033315
##                                           Mussels, live, 1kg
##                                                     3.902670
##                                     Mussels, marinated, 375g
##                                                     5.905852
##          Olive oil, pure, not extra virgin or light, 1 litre
##                                                    11.870000
##                                            Olives, jar, 400g
##                                                     4.353958
##                                                  Onions, 1kg
##                                                     2.081477
##  Orange juice, not apple based, 1 litre - Cheapest Available
##                                                     2.667154
##                                                 Oranges, 1kg
##                                                     3.384837
##                                    Packaged cake slice, 300g
##                                                     3.557670
##                          Packaged meal, pasta and sauce, 130g
##                                                      2.556648
##                                                 Parsnips, 1kg
##                                                      5.718864
##                              Pasta sauces, tomato based, 500g
##                                                      2.993580
##                    Pastry, frozen sheets, puff or flaky, 800g
##                                                      5.099716
##                     Peaches - canned (supermarket only), 410g
##                                                      1.607228
##                            Peanut butter, not salt free, 375g
##                                                      2.851848
##                               Peanuts, blanched, salted, 250g
##                                                      3.379783
##                                                    Pears, 1kg
##                                                      3.777386
##                         Peas - frozen (supermarket only), 1kg
##                                                      2.512989
##                                                Pineapple, 1kg
##                                                      3.277673
##            Pineapple, pieces, in juice or syrup, canned, 425g
##                                                      1.776420
##       Pizza, fresh or frozen, with any standard topping, each
##                                                      5.487826
##                                               Pizza, takeaway
##                                                     13.467771
##                                        Pork - loin chops, 1kg
##                                                     15.808587
##                                           Potato crisps, 150g
##                                                      1.836532
##                                     Potato fries, frozen, 1kg
##                                                      3.356477
##                                                 Potatoes, 1kg
##                                                      1.749457
##                                          Prawns, frozen, 700g
##                                                     17.330575
##                                  Prepared meals, frozen, 340g
##                                                      5.577330
##                                                  Pumpkin, 1kg
##                                                     2.629261
##             Rice - long grain, white (supermarket only), 1kg
##                                                     2.417826
##      Roasting lamb and hogget, fresh, chilled or frozen, 1kg
##                                                    15.044318
##                 Roasting pork, fresh, chilled or frozen, 1kg
##                                                    10.353750
##                                  Salad, leaf, packaged, 150g
##                                                     4.551954
##                              Salad, takeaway, vegetable, 1kg
##                                                    10.227045
##                                                 Salami, 100g
##                                                     3.330852
##            Salmon, imported, pink, canned, unflavoured, 210g
##                                                     3.058239
##                                   Sandwich, fresh or toasted
##                                                     4.238579
##                                                Sausages, 1kg
##                                                     8.860217
##                                       Soft drink, 1.5 litres
##                                                     2.410815
##                                           Soft drinks, 600ml
##                                                     3.550057
##                                          Soft drinks, poured
##                                                     2.709829
##                                           Soup, canned, 500g
##                                                     3.100966
##                               Soy milk, unflavoured, 1 litre
##                                                     3.319937
##                                             Soy sauce, 300ml
##                                                     2.421477
##                                     Spaghetti - canned, 420g
##                                                     1.528207
##                                  Sports energy drinks, 250ml
##                                                     2.008161
##                                  Sports energy drinks, 350ml
##                                                     3.386667
##                                         Sugar - white, 1.5kg
##                                                     2.572935
##                             Sultanas (supermarket only), 375g
##                                                      2.132120
##                                                  Sweets, 200g
##                               Takeaway muffins and buns, each
##                                                      3.324457
##                       Tea bags (supermarket only), box of 100
##                                                      4.466739
##                      Tea bags, flavoured or herbal, box of 25
##                                                      3.114792
##                                                 Tea, takeaway
##                                                      3.066514
##                                   Tomato sauce - canned, 560g
##                                                      2.987500
##                                                 Tomatoes, 1kg
##                                                      6.223043
##                                        Tomatoes, canned, 400g
##                                                      1.303125
##                        Tuna - canned (supermarket only), 185g
##                                                      2.434891
##                               Two minute noodles, multipack,5
##                                                      2.472903
##                                                Vinegar, 750ml
##                                                      2.468523
##                                 Wheatmeal bread, sliced, 700g
##                                                      2.858125
##                                Wholegrain bread, sliced, 700g
##                                                      3.472216
## Yoghurt - flavoured, 150g pottle (supermarket only), pk of 6
##                                                      4.900272
```

#4) Push the r file into your GitHub like before and submit your GitHub link like prior assignments####

When you read this, I have finished uploading.

Thanks for your patience!

THE END