lab3_estes

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Install Data and Packages

```
#install.packages("AmesHousing")
#tinytex::install_tinytex()
library(AmesHousing)
```

```
## Warning: package 'AmesHousing' was built under R version 4.1.1
```

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --

## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.3     v dplyr   1.0.7
## v tidyr   1.1.3     v stringr 1.4.0
## v readr   2.0.0     v forcats 0.5.1

## Warning: package 'tidyr' was built under R version 4.1.1

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(tinytex)
AmesData <- make_ames()
#view(AmesData)
#str(AmesData)
```

Create a new column in the AmesData data frame which has a value of 1 if the house is built in year 2000 or later or 0 if it is built before year 2000 using the following method: 1) IF-ELSE 2) FOR 3) SAPPLY 4) Question 3 - Question 1

1) ifelse(name this column – w3ifelse). What is the first 10 elements of w3ifelse?

```
AmesData2 <- AmesData %>%
  select(Year_Built) %>%
  mutate(w3ifelse = ifelse(Year_Built > 1999, 1, 0))

head(AmesData2, 10)
```

```
## # A tibble: 10 x 2
##    Year_Built w3ifelse
##         <int>    <dbl>
##  1       1960        0
##  2       1961        0
##  3       1958        0
##  4       1968        0
##  5       1997        0
##  6       1998        0
##  7       2001        1
##  8       1992        0
##  9       1995        0
## 10       1999        0
```

```
view(AmesData2)
```

2) if-Else and a For loop (name this column – w3for). What is the first 10 elements of w3for?

```
AmesData3 <- AmesData2


  w3for = for (i in 1:nrow(AmesData3)){
    if(AmesData3$Year_Built[i] < 2000){
        AmesData3$Year_Built[i] <- 0
    } else {
        AmesData3$Year_Built[i] <- 1
    }
  }

head(AmesData3, 10)
```

```
## # A tibble: 10 x 2
##    Year_Built w3ifelse
##         <dbl>    <dbl>
##  1          0        0
##  2          0        0
##  3          0        0
##  4          0        0
##  5          0        0
##  6          0        0
##  7          1        1
##  8          0        0
##  9          0        0
## 10          0        0
```

3) Build your own function and use sapply (name this column - w3apply). What is the first 10 elements of w3apply?

```
woo <- function(x){
  if(is.na(x)) return(x)
  else if (x <= 1999) return (0)
  else return (1)
}

AmesData4 <- AmesData2 %>%
  select(Year_Built, w3ifelse) %>%
  mutate(w3apply = sapply(AmesData2$Year_Built, woo))

head(AmesData4)
```

```
## # A tibble: 6 x 3
##   Year_Built w3ifelse w3apply
##        <int>    <dbl>   <dbl>
## 1       1960        0       0
## 2       1961        0       0
## 3       1958        0       0
## 4       1968        0       0
## 5       1997        0       0
## 6       1998        0       0
```

4) Create a column w3diff which is the difference of the two columns w3ifelse and w3apply.

DO NOT use a for loop or the apply set of functions for this step. Simple subtraction will work. What is the total sum of this column?

```
AmesDataFinal <- AmesData4 %>%
  mutate(w3diff = w3apply - w3ifelse)

head(AmesDataFinal, 10)
```

```
## # A tibble: 10 x 4
##    Year_Built w3ifelse w3apply w3diff
##         <int>    <dbl>   <dbl>  <dbl>
##  1       1960        0       0      0
##  2       1961        0       0      0
##  3       1958        0       0      0
##  4       1968        0       0      0
##  5       1997        0       0      0
##  6       1998        0       0      0
##  7       2001        1       1      0
##  8       1992        0       0      0
##  9       1995        0       0      0
## 10       1999        0       0      0
```