

EDA Assignment

Outputs first code will then be at the bottom with the source file in the GitHub folder.

Part 1.

```
> head(ames)
  Id MSSubClass MSZoning LotFrontage LotArea Street Alley LotShape LandContour Utilities LotConfig LandSlope Neighborhood Condition1 Condition2
1  1          60      RL         65    8450   Pave  <NA>      Reg      LV1     AllPub   Inside    Gtl     CollgCr     Norm     Norm
2  2          20      RL         80    9600   Pave  <NA>      Reg      LV1     AllPub   FR2     Gtl     veenker   Feedr     Norm
3  3          60      RL         68   11250   Pave  <NA>      IR1      LV1     AllPub   Inside    Gtl     collgCr     Norm     Norm
4  4          70      RL         60    9550   Pave  <NA>      IR1      LV1     AllPub   Corner    Gtl     Crawford  Norm     Norm
5  5          60      RL         84   14260   Pave  <NA>      IR1      LV1     AllPub   FR2     Gtl     Norridge  Norm     Norm
6  6          50      RL         85   14115   Pave  <NA>      IR1      LV1     AllPub   Inside    Gtl     Mitchel   Norm     Norm
  BldgType HouseStyle overallQual overallCond YearBuilt YearRemodAdd RoofStyle RoofMatl Exterior1st Exterior2nd MasvnrType MasvnrArea ExterQual
1  1fam     2story         7          5      2003      2003    Gable    compshg    vinylsd    vinylsd    BrkFace    196      Gd
2  1fam     1story         6          8      1976      1976    Gable    compshg    metalsd    metalsd    None         0      TA
3  1fam     2story         7          5      2001      2002    Gable    compshg    vinylsd    vinylsd    BrkFace    162      Gd
4  1fam     2story         7          5      1915      1970    Gable    compshg    wd shng    wd shng    None         0      TA
5  1fam     2story         8          5      2000      2000    Gable    compshg    vinylsd    vinylsd    BrkFace    350      Gd
6  1fam     1.5Fin         5          5      1993      1995    Gable    compshg    vinylsd    vinylsd    None         0      TA
  ExterCond Foundation BsmtQual BsmtCond BsmtExposure BsmtFinType1 BsmtFinSF1 BsmtFinType2 BsmtFinSF2 BsmtUnfSF TotalBsmtSF Heating HeatingQC
1  TA        PConc      Gd      TA        No        GLQ        706        Unf        0        150        856      GasA      Ex
2  TA        CBlock    Gd      TA        Gd        ALQ        978        Unf        0        284        1262     GasA      Ex
3  TA        PConc      Gd      TA        Mn        GLQ        486        Unf        0        434        920      GasA      Ex
4  TA        BrkTil     TA      Gd        No        ALQ        216        Unf        0        540        756      GasA      Gd
5  TA        PConc      Gd      TA        AV        GLQ        655        Unf        0        490        1145     GasA      Ex
6  TA        Wood       Gd      TA        No        GLQ        732        Unf        0        64         796      GasA      Ex
  CentralAir Electrical X1stFlrSF X2ndFlrSF LowQualFinSF GrLivArea BsmtFullBath BsmtHalfBath FullBath HalfBath BedroomAbvGr KitchenAbvGr
1  Y          Y          856      854          0      1710          1          0          2          1          3          1
2  Y          Y          1262      0          0      1262          0          1          2          0          3          1
3  Y          Y          920      866          0      1786          1          0          2          1          3          1
4  Y          Y          961      756          0      1717          1          0          1          0          3          1
5  Y          Y          1145     1053          0      2198          1          0          2          1          4          1
6  Y          Y          796      566          0      1362          1          0          1          1          1          1
  KitchenQual TotRmsAbvGrd Functional Fireplaces FireplaceQu GarageType GaragevrBlt GarageFinish GarageCars GarageArea GarageQual GarageCond
1  Gd              8          Typ          0          <NA>      Attchd      2003          RFn          2          548      TA          TA
2  TA              6          Typ          1          TA        Attchd      1976          RFn          2          460      TA          TA
3  Gd              6          Typ          1          TA        Attchd      2001          RFn          2          608      TA          TA
4  Gd              7          Typ          1          Gd        Detchd      1998          Unf          3          642      TA          TA
5  Gd              9          Typ          1          TA        Attchd      2000          RFn          3          836      TA          TA
6  TA              5          Typ          0          <NA>      Attchd      1993          Unf          2          480      TA          TA
  PavedDrive woodDeckSF openPorchSF enclosedPorch X3SsnPorch ScreenPorch PoolArea PoolQC Fence MiscFeature Miscval MoSold YrSold SaleType
1  Y              0          61          0          0          0          0          <NA> <NA> <NA>          0          2      2008      WD
2  Y            298          0          0          0          0          0          <NA> <NA> <NA>          0          5      2007      WD
3  Y              0          42          0          0          0          0          <NA> <NA> <NA>          0          9      2008      WD
4  Y              0          35          272          0          0          0          <NA> <NA> <NA>          0          2      2006      WD
5  Y            192          84          0          0          0          0          <NA> <NA> <NA>          0          12     2008      WD
6  Y              40          30          0          320          0          0          <NA> MnPrv  Shed          700          10     2009      WD
  SaleCondition SalePrice
1  Normal      208500
2  Normal      181500
3  Normal      223500
4  Abnorml     140000
5  Normal      250000
6  Normal      143000
```

> summary(ames)

Id	MSSubClass	MSZoning	LotFrontage	LotArea	Street	Alley	LotShape
Min. : 1.0	Min. : 20.0	Length:1460	Min. : 21.00	Min. : 1300	Length:1460	Length:1460	Length:1460
1st Qu.: 365.8	1st Qu.: 20.0	Class :character	1st Qu.: 59.00	1st Qu.: 7554	Class :character	Class :character	Class :character
Median : 730.5	Median : 50.0	Mode :character	Median : 69.00	Median : 9478	Mode :character	Mode :character	Mode :character
Mean : 730.5	Mean : 56.9		Mean : 70.05	Mean : 10517			
3rd Qu.:1095.2	3rd Qu.: 70.0		3rd Qu.: 80.00	3rd Qu.: 11602			
Max. :1460.0	Max. :190.0		Max. :313.00	Max. :215245			
			NA's :259				
LandContour	Utilities	LotConfig	Landslope	Neighborhood	Condition1	Condition2	
Length:1460	Length:1460	Length:1460	Length:1460	Length:1460	Length:1460	Length:1460	
Class :character	Class :character	Class :character	Class :character	Class :character	Class :character	Class :character	
Mode :character	Mode :character	Mode :character	Mode :character	Mode :character	Mode :character	Mode :character	
BldgType	HouseStyle	OverallQual	OverallCond	YearBuilt	YearRemodAdd	RoofStyle	RoofMatl
Length:1460	Length:1460	Min. : 1.000	Min. :1.000	Min. :1872	Min. :1950	Length:1460	Length:1460
Class :character	Class :character	1st Qu.: 5.000	1st Qu.:5.000	1st Qu.:1954	1st Qu.:1967	Class :character	Class :character
Mode :character	Mode :character	Median : 6.000	Median :5.000	Median :1973	Median :1994	Mode :character	Mode :character
		Mean : 6.099	Mean :5.575	Mean :1971	Mean :1985		
		3rd Qu.: 7.000	3rd Qu.:6.000	3rd Qu.:2000	3rd Qu.:2004		
		Max. :10.000	Max. :9.000	Max. :2010	Max. :2010		
Exterior1st	Exterior2nd	MasVnrType	MasVnrArea	ExterQual	ExterCond	Foundation	
Length:1460	Length:1460	Length:1460	Min. : 0.0	Length:1460	Length:1460	Length:1460	
Class :character	Class :character	Class :character	1st Qu.: 0.0	Class :character	Class :character	Class :character	
Mode :character	Mode :character	Mode :character	Median : 0.0	Mode :character	Mode :character	Mode :character	
			Mean : 103.7				
			3rd Qu.: 166.0				
			Max. :1600.0				
			NA's :8				
BsmtQual	BsmtCond	BsmtExposure	BsmtFinType1	BsmtFinSF1	BsmtFinType2	BsmtFinSF2	
Length:1460	Length:1460	Length:1460	Length:1460	Min. : 0.0	Length:1460	Min. : 0.00	
Class :character	Class :character	Class :character	Class :character	1st Qu.: 0.0	Class :character	1st Qu.: 0.00	
Mode :character	Mode :character	Mode :character	Mode :character	Median : 383.5	Mode :character	Median : 0.00	
				Mean : 443.6		Mean : 46.55	
				3rd Qu.: 712.2		3rd Qu.: 0.00	
				Max. :5644.0		Max. :1474.00	
BsmtUnfSF	TotalBsmtSF	Heating	HeatingQC	CentralAir	Electrical	X1stFlrSF	X2ndFlrSF
Min. : 0.0	Min. : 0.0	Length:1460	Length:1460	Length:1460	Length:1460	Min. : 334	Min. : 0
1st Qu.: 223.0	1st Qu.: 795.8	Class :character	Class :character	Class :character	Class :character	1st Qu.: 882	1st Qu.: 0
Median : 477.5	Median : 991.5	Mode :character	Mode :character	Mode :character	Mode :character	Median :1087	Median : 0
Mean : 567.2	Mean :1057.4					Mean :1163	Mean : 347
3rd Qu.: 808.0	3rd Qu.:1298.2					3rd Qu.:1391	3rd Qu.: 728
Max. :2336.0	Max. :6110.0					Max. :4692	Max. :2065
LowQualFinSF	GrLivArea	BsmtFullBath	BsmtHalfBath	FullBath	HalfBath	BedroomAbvGr	KitchenAbvGr
Min. : 0.000	Min. : 334	Min. :0.0000	Min. :0.00000	Min. :0.000	Min. :0.0000	Min. :0.000	Min. :0.000
1st Qu.: 0.000	1st Qu.:1130	1st Qu.:0.0000	1st Qu.:0.00000	1st Qu.:1.000	1st Qu.:0.0000	1st Qu.:2.000	1st Qu.:1.000
Median : 0.000	Median :1464	Median :0.0000	Median :0.00000	Median :2.000	Median :0.0000	Median :3.000	Median :1.000
Mean : 5.845	Mean :1515	Mean :0.4253	Mean :0.05753	Mean :1.565	Mean :0.3829	Mean :2.866	Mean :1.047
3rd Qu.: 0.000	3rd Qu.:1777	3rd Qu.:1.0000	3rd Qu.:0.00000	3rd Qu.:2.000	3rd Qu.:1.0000	3rd Qu.:3.000	3rd Qu.:1.000
Max. :572.000	Max. :5642	Max. :3.0000	Max. :2.00000	Max. :3.000	Max. :2.0000	Max. :8.000	Max. :3.000
KitchenQual	TotRmsAbvGrd	Functional	Fireplaces	FireplaceQu	GarageType	GarageYrBlt	GarageFinish
Length:1460	Min. : 2.000	Length:1460	Min. :0.000	Length:1460	Length:1460	Min. :1900	Length:1460
Class :character	1st Qu.: 5.000	Class :character	1st Qu.:0.000	Class :character	Class :character	1st Qu.:1961	Class :character
Mode :character	Median : 6.000	Mode :character	Median :1.000	Mode :character	Mode :character	Median :1980	Mode :character
	Mean : 6.518		Mean :0.613			Mean :1979	
	3rd Qu.: 7.000		3rd Qu.:1.000			3rd Qu.:2002	
	Max. :14.000		Max. :3.000			Max. :2010	
						NA's :81	
GarageCars	GarageArea	GarageQual	GarageCond	PavedDrive	WoodDeckSF	OpenPorchSF	EnclosedPorch
Min. :0.000	Min. : 0.0	Length:1460	Length:1460	Length:1460	Min. : 0.00	Min. : 0.00	Min. : 0.00
1st Qu.:1.000	1st Qu.: 334.5	Class :character	Class :character	Class :character	1st Qu.: 0.00	1st Qu.: 0.00	1st Qu.: 0.00
Median :2.000	Median : 480.0	Mode :character	Mode :character	Mode :character	Median : 0.00	Median : 25.00	Median : 0.00
Mean :1.767	Mean : 473.0				Mean : 94.24	Mean : 46.66	Mean : 21.95
3rd Qu.:2.000	3rd Qu.: 576.0				3rd Qu.:168.00	3rd Qu.: 68.00	3rd Qu.: 0.00
Max. :4.000	Max. :1418.0				Max. :857.00	Max. :547.00	Max. :552.00
X3SsnPorch	ScreenPorch	PoolArea	PoolQC	Fence	MiscFeature	Miscval	Mosold
Min. : 0.00	Min. : 0.00	Min. : 0.000	Length:1460	Length:1460	Length:1460	Min. : 0.00	Min. : 1.000
1st Qu.: 0.00	1st Qu.: 0.00	1st Qu.: 0.000	Class :character	Class :character	Class :character	1st Qu.: 0.00	1st Qu.: 5.000
Median : 0.00	Median : 0.00	Median : 0.000	Mode :character	Mode :character	Mode :character	Median : 0.00	Median : 6.000
Mean : 3.41	Mean :15.06	Mean : 2.759				Mean : 43.49	Mean : 6.322
3rd Qu.: 0.00	3rd Qu.: 0.00	3rd Qu.: 0.000				3rd Qu.: 0.00	3rd Qu.: 8.000
Max. :508.00	Max. :480.00	Max. :738.000				Max. :15500.00	Max. :12.000
YrSold	SaleType	SaleCondition	SalePrice				
Min. :2006	Length:1460	Length:1460	Min. : 34900				
1st Qu.:2007	Class :character	Class :character	1st Qu.:129975				
Median :2008	Mode :character	Mode :character	Median :163000				
Mean :2008			Mean :180921				
3rd Qu.:2009			3rd Qu.:214000				
Max. :2010			Max. :755000				

```

> str(ames)
'data.frame':   1460 obs. of  81 variables:
 $ Id          : int  1 2 3 4 5 6 7 8 9 10 ...
 $ MSSubClass  : int  60 20 60 70 60 50 20 60 50 190 ...
 $ MSZoning    : chr   "RL" "RL" "RL" "RL" ...
 $ LotFrontage : int  65 80 68 60 84 85 75 NA 51 50 ...
 $ LotArea     : int  8450 9600 11250 9550 14260 14115 10084 10382 6120 7420 ...
 $ Street      : chr   "Pave" "Pave" "Pave" "Pave" ...
 $ Alley       : chr   NA NA NA NA ...
 $ LotShape    : chr   "Reg" "Reg" "IR1" "IR1" ...
 $ LandContour : chr   "Lvl" "Lvl" "Lvl" "Lvl" ...
 $ Utilities   : chr   "AllPub" "AllPub" "AllPub" "AllPub" ...
 $ LotConfig   : chr   "Inside" "FR2" "Inside" "Corner" ...
 $ Landslope   : chr   "Gtl" "Gtl" "Gtl" "Gtl" ...
 $ Neighborhood : chr   "CollgCr" "Veenker" "CollgCr" "Crawfor" ...
 $ Condition1  : chr   "Norm" "Feedr" "Norm" "Norm" ...
 $ Condition2  : chr   "Norm" "Norm" "Norm" "Norm" ...
 $ BldgType    : chr   "1Fam" "1Fam" "1Fam" "1Fam" ...
 $ HouseStyle  : chr   "2story" "1story" "2story" "2story" ...
 $ OverallQual : int  7 6 7 7 8 5 8 7 7 5 ...
 $ OverallCond : int  5 8 5 5 5 5 5 6 5 6 ...
 $ YearBuilt   : int  2003 1976 2001 1915 2000 1993 2004 1973 1931 1939 ...
 $ YearRemodAdd : int  2003 1976 2002 1970 2000 1995 2005 1973 1950 1950 ...
 $ RoofStyle   : chr   "Gable" "Gable" "Gable" "Gable" ...
 $ RoofMatl    : chr   "Compshg" "Compshg" "Compshg" "Compshg" ...
 $ Exterior1st : chr   "vinylsd" "Metalsd" "vinylsd" "wd sdng" ...
 $ Exterior2nd : chr   "vinylsd" "Metalsd" "vinylsd" "wd shng" ...
 $ MasVnrType  : chr   "BrkFace" "None" "BrkFace" "None" ...
 $ MasVnrArea  : int  196 0 162 0 350 0 186 240 0 0 ...
 $ ExterQual   : chr   "Gd" "TA" "Gd" "TA" ...
 $ ExterCond   : chr   "TA" "TA" "TA" "TA" ...
 $ Foundation  : chr   "PConc" "CBlock" "PConc" "BrkTil" ...
 $ BsmtQual    : chr   "Gd" "Gd" "Gd" "TA" ...
 $ BsmtCond    : chr   "TA" "TA" "TA" "Gd" ...
 $ BsmtExposure : chr   "No" "Gd" "Mn" "No" ...
 $ BsmtFinType1 : chr   "GLQ" "ALQ" "GLQ" "ALQ" ...
 $ BsmtFinSF1  : int  706 978 486 216 655 732 1369 859 0 851 ...
 $ BsmtFinType2 : chr   "Unf" "Unf" "Unf" "Unf" ...
 $ BsmtFinSF2  : int  0 0 0 0 0 0 0 32 0 0 ...
 $ BsmtUnfsf   : int  150 284 434 540 490 64 317 216 952 140 ...
 $ TotalBsmtSF : int  856 1262 920 756 1145 796 1686 1107 952 991 ...
 $ Heating     : chr   "GasA" "GasA" "GasA" "GasA" ...
 $ HeatingQC   : chr   "Ex" "Ex" "Ex" "Gd" ...
 $ CentralAir  : chr   "Y" "Y" "Y" "Y" ...
 $ Electrical  : chr   "SBrkr" "SBrkr" "SBrkr" "SBrkr" ...
 $ X1stFlrsF   : int  856 1262 920 961 1145 796 1694 1107 1022 1077 ...
 $ X2ndFlrsF   : int  854 0 866 756 1053 566 0 983 752 0 ...
 $ LowQualFinSF : int  0 0 0 0 0 0 0 0 0 0 ...
 $ GrLivArea   : int  1710 1262 1786 1717 2198 1362 1694 2090 1774 1077 ...
 $ BsmtFullBath : int  1 0 1 1 1 1 1 1 0 1 ...
 $ BsmtHalfBath : int  0 1 0 0 0 0 0 0 0 0 ...
 $ FullBath    : int  2 2 2 1 2 1 2 2 2 1 ...
 $ HalfBath    : int  1 0 1 0 1 1 0 1 0 0 ...
 $ BedroomAbvGr : int  3 3 3 3 4 1 3 3 2 2 ...

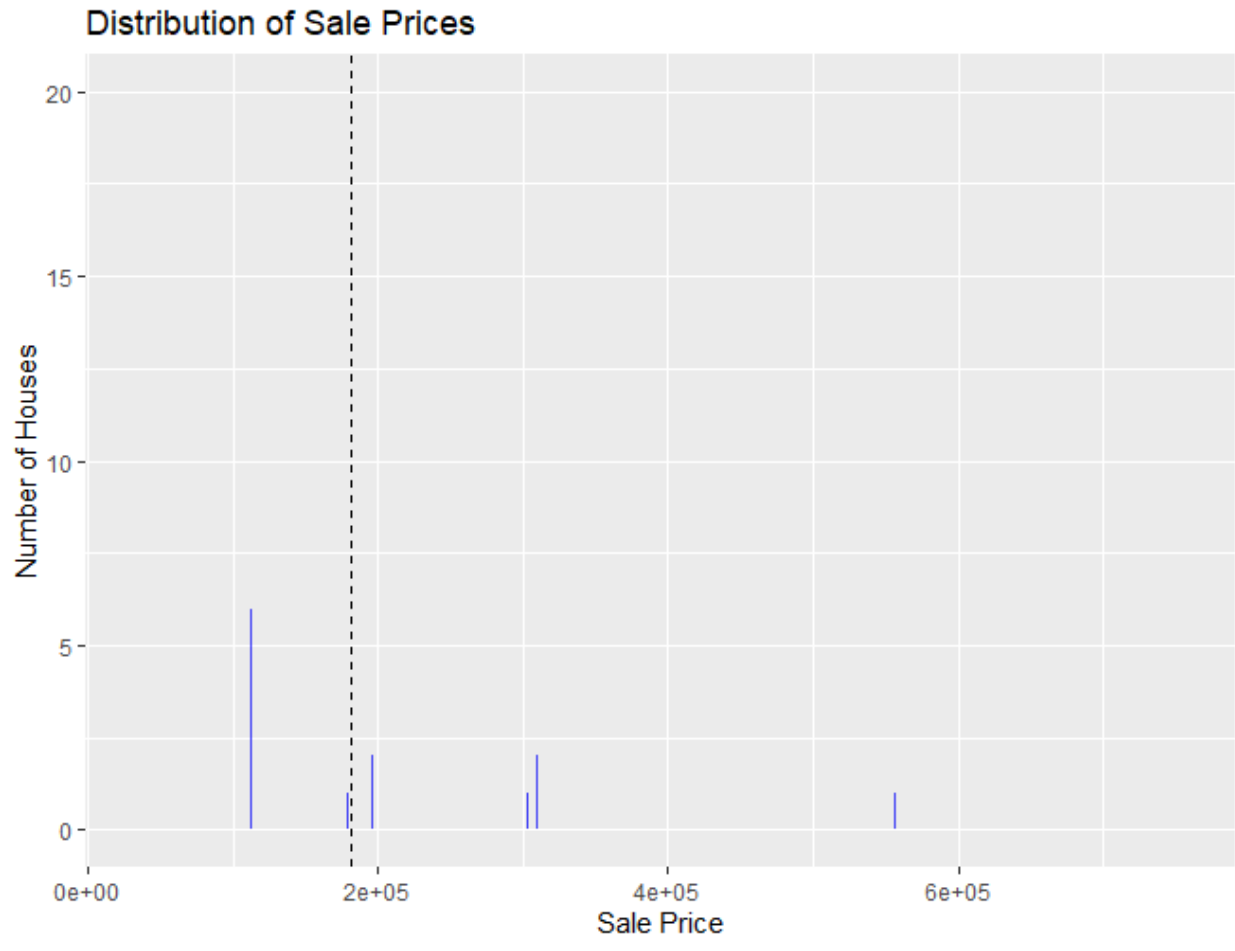
```

```

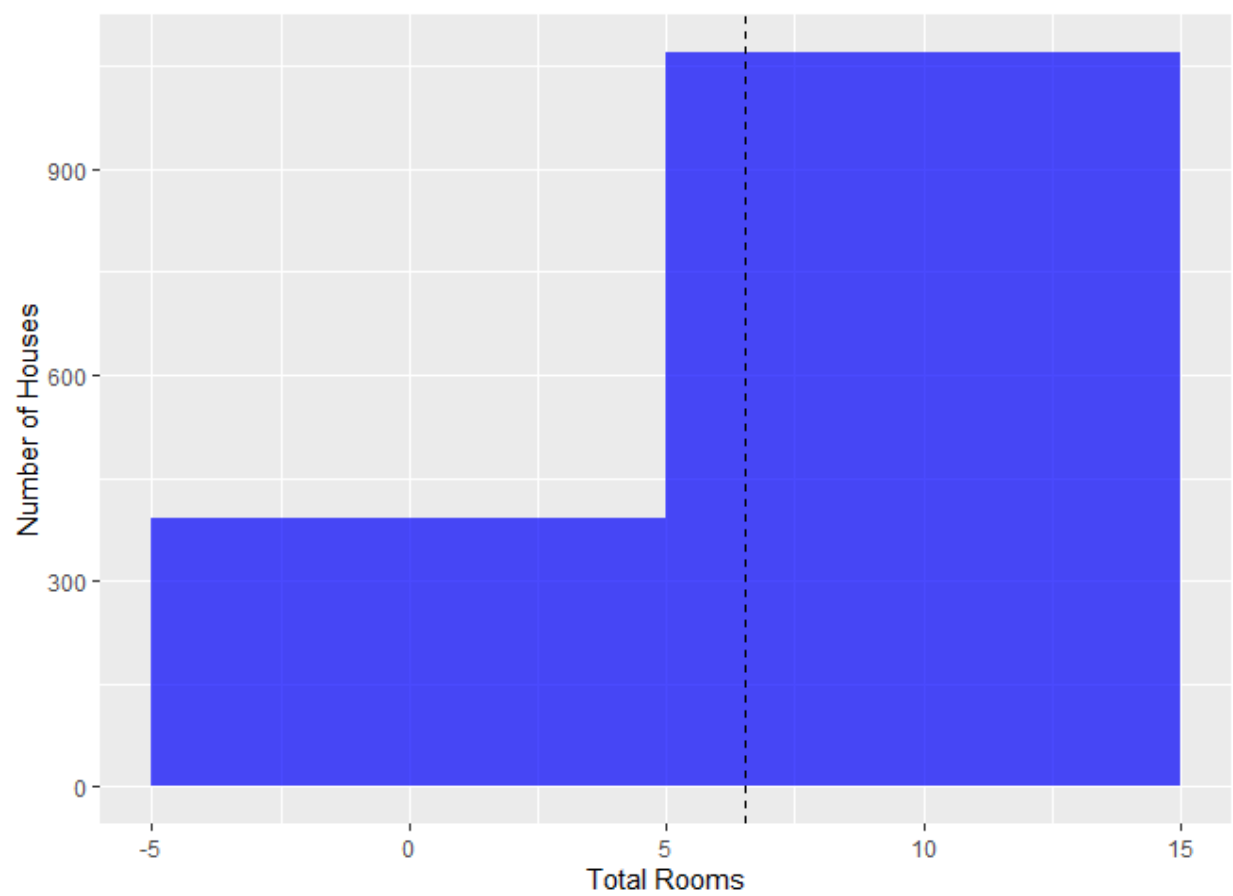
$ KitchenAbvGr : int 1 1 1 1 1 1 1 1 2 2 ...
$ KitchenQual  : chr "Gd" "TA" "Gd" "Gd" ...
$ TotRmsAbvGrd : int 8 6 6 7 9 5 7 7 8 5 ...
$ Functional   : chr "Typ" "Typ" "Typ" "Typ" ...
$ Fireplaces   : int 0 1 1 1 1 0 1 2 2 2 ...
$ FireplaceQu  : chr NA "TA" "TA" "Gd" ...
$ GarageType   : chr "Attchd" "Attchd" "Attchd" "Detchd" ...
$ GarageYrBlt  : int 2003 1976 2001 1998 2000 1993 2004 1973 1931 1939 ...
$ GarageFinish : chr "RFn" "RFn" "RFn" "Unf" ...
$ GarageCars   : int 2 2 2 3 3 2 2 2 1 ...
$ GarageArea   : int 548 460 608 642 836 480 636 484 468 205 ...
$ GarageQual   : chr "TA" "TA" "TA" "TA" ...
$ GarageCond   : chr "TA" "TA" "TA" "TA" ...
$ PavedDrive   : chr "Y" "Y" "Y" "Y" ...
$ WoodDeckSF   : int 0 298 0 0 192 40 255 235 90 0 ...
$ OpenPorchSF  : int 61 0 42 35 84 30 57 204 0 4 ...
$ EnclosedPorch : int 0 0 0 272 0 0 0 228 205 0 ...
$ X3SsnPorch   : int 0 0 0 0 0 320 0 0 0 0 ...
$ ScreenPorch  : int 0 0 0 0 0 0 0 0 0 0 ...
$ PoolArea     : int 0 0 0 0 0 0 0 0 0 0 ...
$ PoolQC       : chr NA NA NA NA ...
$ Fence        : chr NA NA NA NA ...
$ MiscFeature   : chr NA NA NA NA ...
$ MiscVal      : int 0 0 0 0 0 700 0 350 0 0 ...
$ MoSold       : int 2 5 9 2 12 10 8 11 4 1 ...
$ YrSold       : int 2008 2007 2008 2006 2008 2009 2007 2009 2008 2008 ...
$ SaleType     : chr "WD" "WD" "WD" "WD" ...
$ SaleCondition: chr "Normal" "Normal" "Normal" "Abnorml" ...
$ SalePrice    : int 208500 181500 223500 140000 250000 143000 307000 200000 129900 118000 ...

```

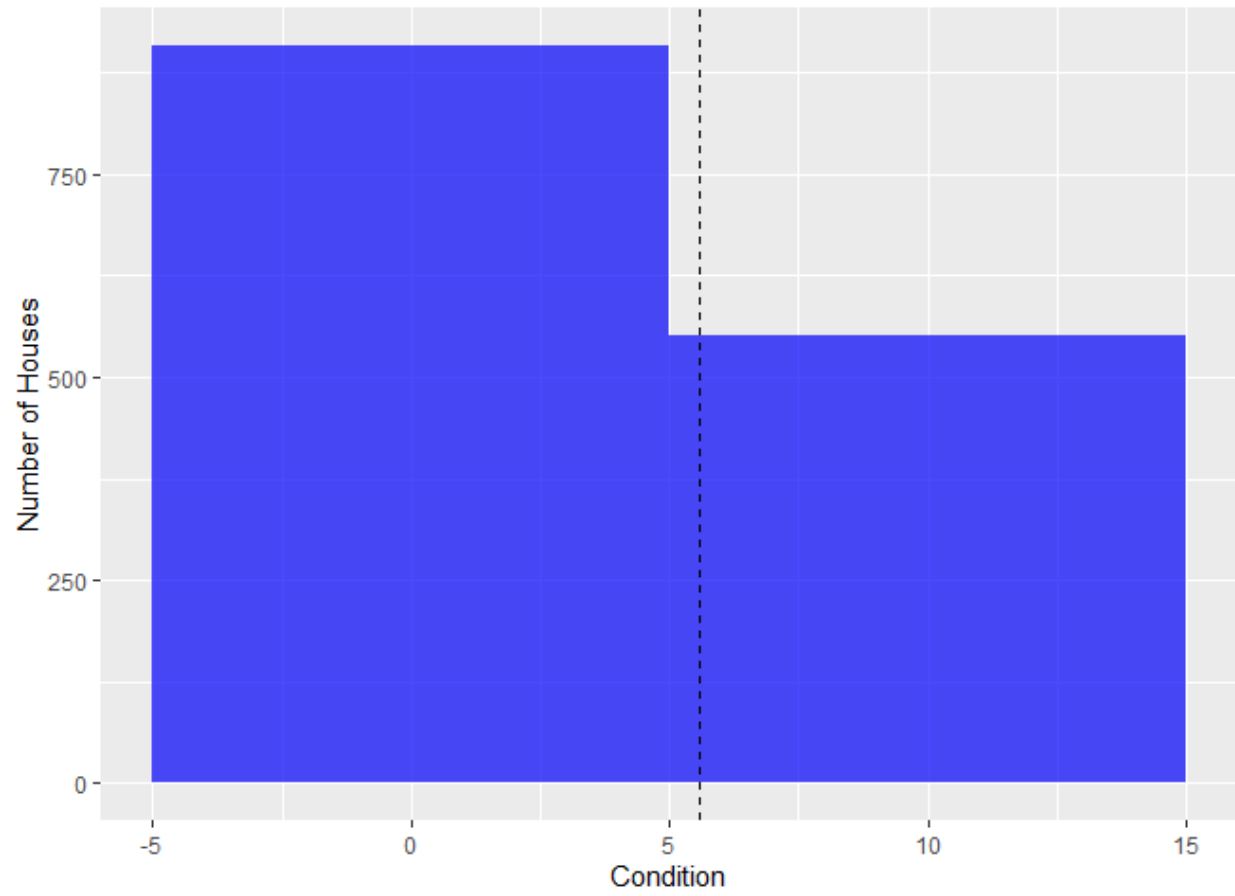
Part 2



Distribution of Total Rooms Above Grade



Distribution of Overall Condition



```
> summary_stats(ames, "SalePrice")
$Mean
[1] 180921.2

$Median
[1] 163000

$SD
[1] 79442.5

> summary_stats(ames, "TotRmsAbvGrd")
$Mean
[1] 6.517808

$Median
[1] 6

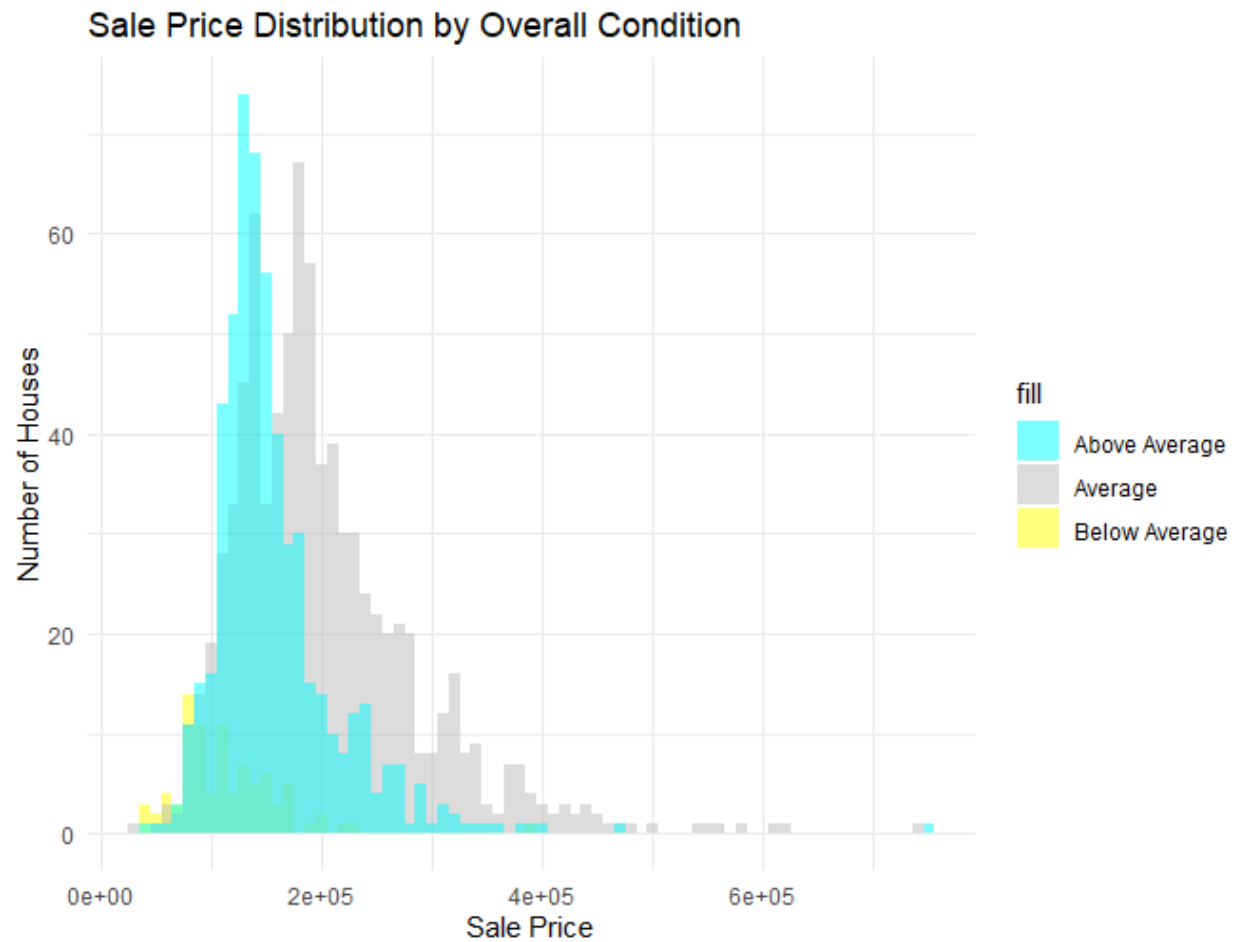
$SD
[1] 1.625393

> summary_stats(ames, "OverallCond")
$Mean
[1] 5.575342

$Median
[1] 5

$SD
[1] 1.112799
```

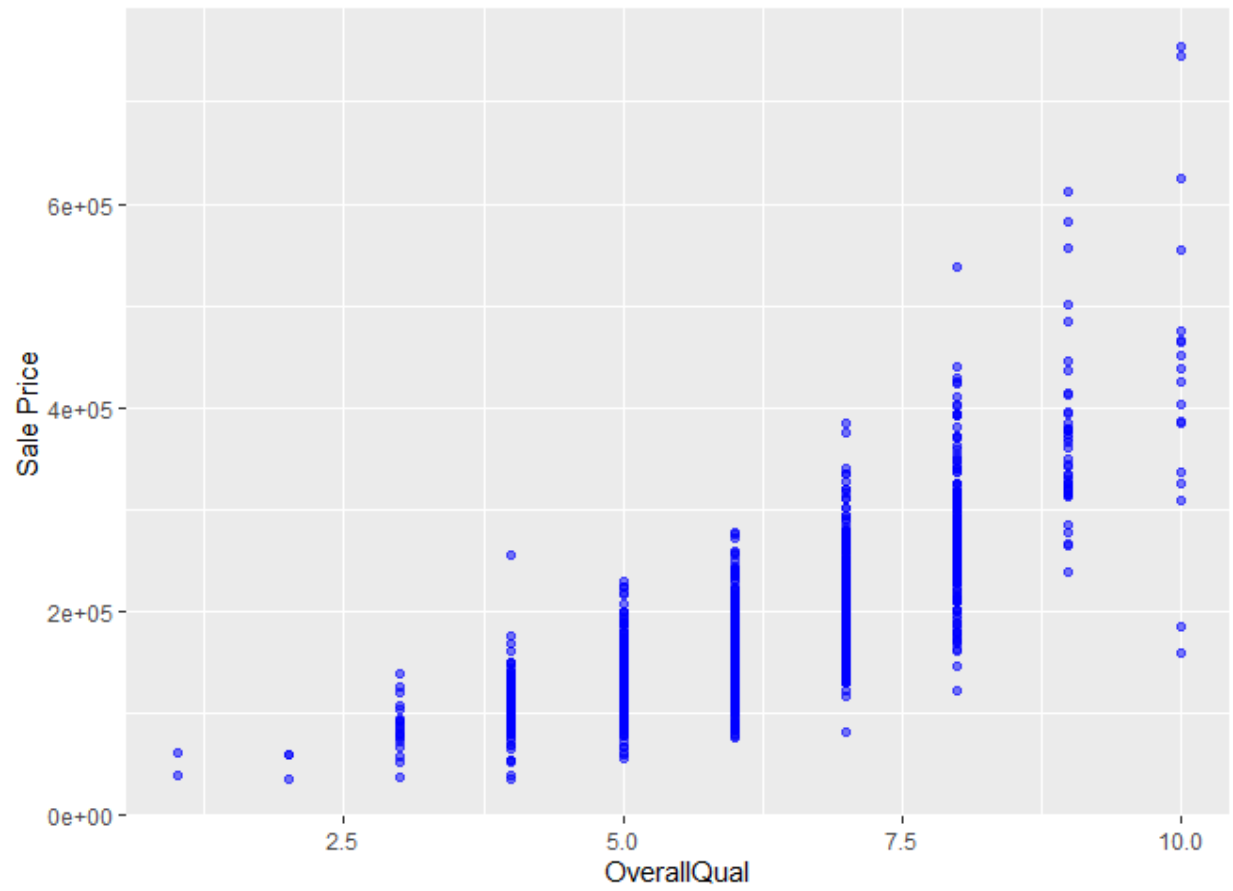
Part 3.

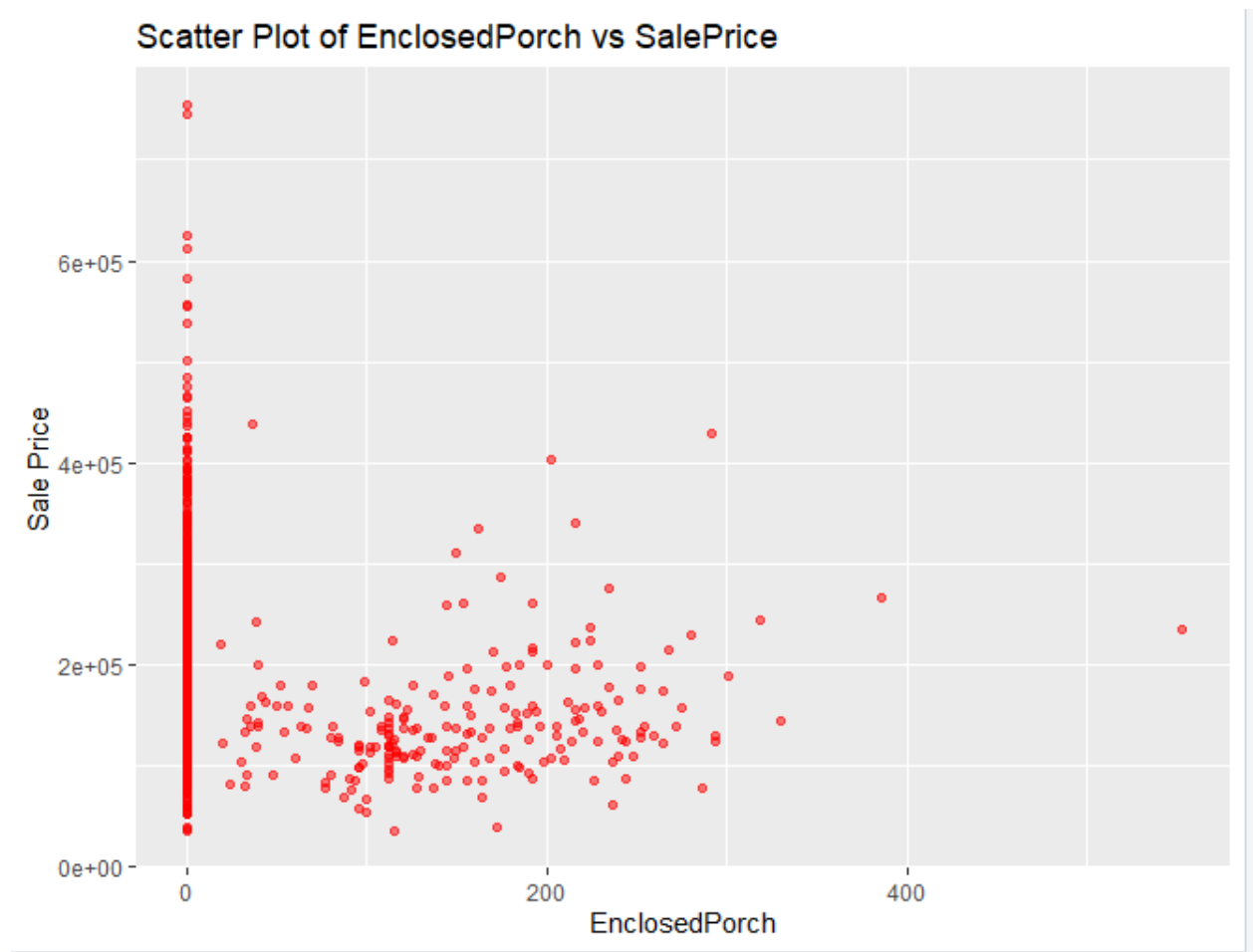


Part 4

```
> cat("Most Positively Correlated:", most_positive, "\n")
Most Positively Correlated: overallQual
> cat("Most Negatively Correlated:", most_negative, "\n")
Most Negatively Correlated: EnclosedPorch
```

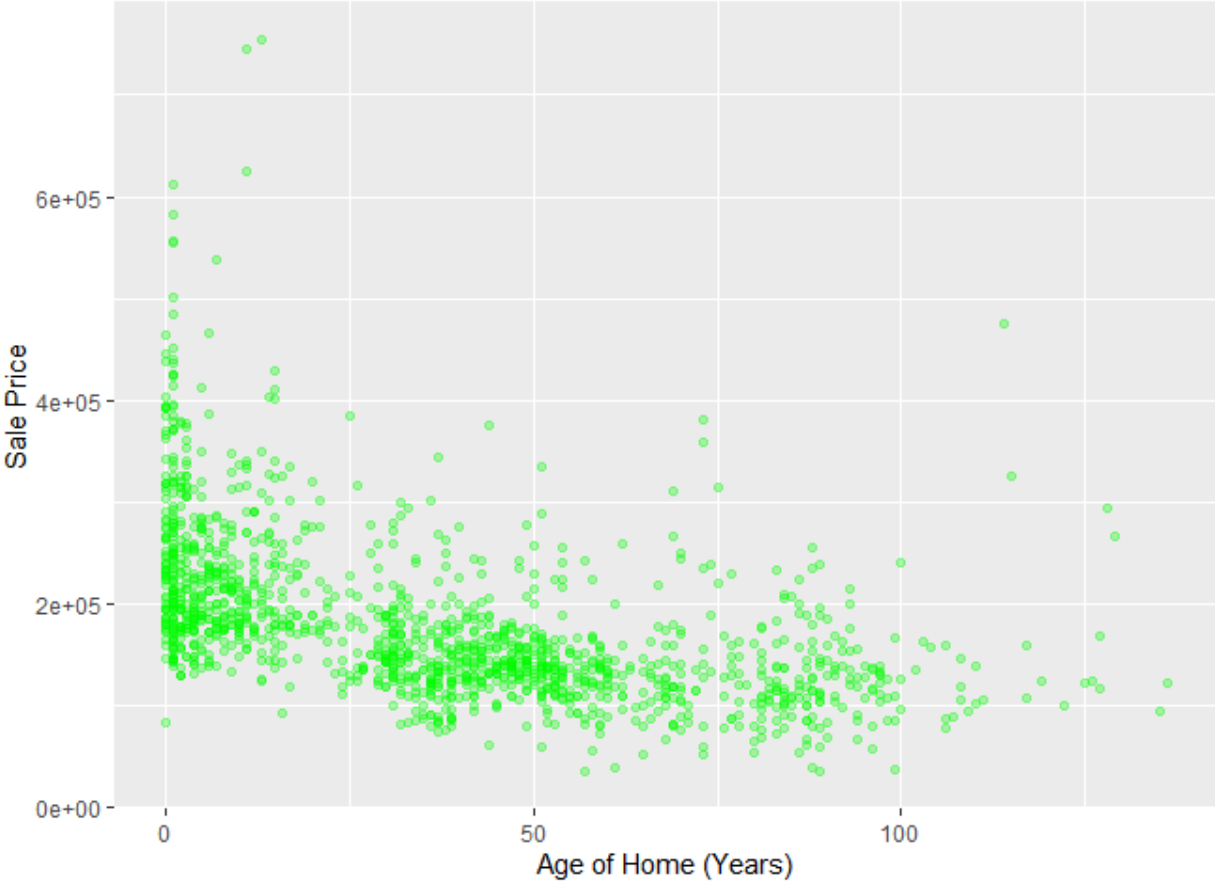
Scatter Plot of OverallQual vs SalePrice





Part 5.

Scatter Plot of Home Age vs Sale Price



```

#Part 1
library(ggplot2)
library(dplyr)

path <- "C:/Users/uppur/Downloads/School/ames.csv"
ames <- read.csv(path)

head(ames)
summary(ames)
str(ames)

features <- c("SalePrice", "TotRmsAbvGrd", "OverallCond", "YrSold", "YearBuilt", "LandSlope")
ames_selected <- ames %>% select(all_of(features))
|
#Part 2
plot_histogram <- function(data, column, title, xlabel, ylabel) {
  ggplot(data, aes_string(x = column)) +
    geom_histogram(binwidth = 10, fill = "blue", alpha = 0.7) +
    geom_vline(aes_string(xintercept = paste0("mean(", column, ", na.rm = TRUE)")),
              color = "black", linetype = "dashed") +
    labs(title = title, x = xlabel, y = ylabel)
}

plot_histogram(ames, "SalePrice", "Distribution of Sale Prices", "Sale Price", "Number of Houses")

plot_histogram(ames, "TotRmsAbvGrd", "Distribution of Total Rooms Above Grade", "Total Rooms", "Number of Houses")

plot_histogram(ames, "OverallCond", "Distribution of Overall Condition", "Condition", "Number of Houses")

# Summary stats
summary_stats <- function(data, column) {
  list(
    Mean = mean(data[[column]], na.rm = TRUE),
    Median = median(data[[column]], na.rm = TRUE),
    SD = sd(data[[column]], na.rm = TRUE)
  )
}

summary_stats(ames, "SalePrice")
summary_stats(ames, "TotRmsAbvGrd")
summary_stats(ames, "OverallCond")

```

```

#Part 3
# Subsets based on OverallCond
below_avg <- ames %>% filter(OverallCond < 5)
average <- ames %>% filter(OverallCond == 5)
above_avg <- ames %>% filter(OverallCond > 5)

# Plot distributions
ggplot() +
  geom_histogram(data = below_avg, aes(x = SalePrice, fill = "Below Average"), alpha = 0.5, binwidth = 10000) +
  geom_histogram(data = average, aes(x = SalePrice, fill = "Average"), alpha = 0.5, binwidth = 10000) +
  geom_histogram(data = above_avg, aes(x = SalePrice, fill = "Above Average"), alpha = 0.5, binwidth = 10000) +
  scale_fill_manual(values = c("Below Average" = "yellow", "Average" = "gray", "Above Average" = "cyan")) +
  labs(title = "Sale Price Distribution by Overall Condition", x = "Sale Price", y = "Number of Houses") +
  theme_minimal()

#Part 4
numeric_columns <- ames %>% select(where(is.numeric))
correlations <- cor(numeric_columns, use = "complete.obs")
saleprice_corr <- correlations[, "SalePrice"]

# Most positively and negatively correlated features
most_positive <- names(sort(saleprice_corr, decreasing = TRUE))[2]
most_negative <- names(sort(saleprice_corr))[1]

cat("Most Positively Correlated:", most_positive, "\n")
cat("Most Negatively Correlated:", most_negative, "\n")

# Scatter plot
ggplot(ames, aes_string(x = most_positive, y = "SalePrice")) +
  geom_point(alpha = 0.5, color = "blue") +
  labs(title = paste("Scatter Plot of", most_positive, "vs SalePrice"),
       x = most_positive, y = "Sale Price")

ggplot(ames, aes_string(x = most_negative, y = "SalePrice")) +
  geom_point(alpha = 0.5, color = "red") +
  labs(title = paste("Scatter Plot of", most_negative, "vs SalePrice"),
       x = most_negative, y = "Sale Price")

#Part 5
ames <- ames %>% mutate(Age = YrSold - YearBuilt)

# Scatter plot of Age vs SalePrice
ggplot(ames, aes(x = Age, y = SalePrice)) +
  geom_point(alpha = 0.3, color = "green") +
  labs(title = "Scatter Plot of Home Age vs Sale Price",
       x = "Age of Home (Years)", y = "Sale Price")

```