Assignment1_Xin Huang

Answer for Question 1
Run the following code:

```
myNum <- 4
myFun <- function(x) {
  myNum <- 2
   return (myNum * yourFun(x))
   }
yourFun <- function(x) {
   x * myNum
}
print(myFun(4))
```

```
## [1] 32
```

The returned value is: 32

Answer for Question 2

```
A <- matrix(c(3,1,2,1),nrow=2,ncol=2)
b <- matrix(c(12,5),nrow=2,ncol=1)
Q2<-solve(A,b)
cat("Here is the answer: ", "x = ",Q2[1,1], "y =",Q2[2,1])
```

```
## Here is the answer:  x =  2 y = 3
```

Use solve() function to find the answer to the set of equations.

Answer for Question 3

```
solveLine <- function(u, v, r, s, b1, b2){
  A <- matrix(c(u, r, v, s), nrow = 2, ncol = 2)
  b <- matrix(c(b1, b2), nrow = 2, ncol = 1)
  solution <- solve(A, b)
  cat("x=",solution[1,1])
  cat("\n")
  cat("y=",solution[2,1])
}
solveLine(3, 2, 1, 1, 12, 5)
```

```
## x= 2
## y= 3
```

The function is verified.

Anwsers for Question 4
Answer 4a)

```
#set workspace and read file
setwd("/Users/xinhuang/Google Drive/CSC 522 R Language Programming /Homework1")
adultData <- read.csv("adultData.txt", header = FALSE)
```

```
whole <- adultData[which(adultData$V15 ==" <=50K"), ]
cat("Number of all people making less than or equal to 50k: ", dim(whole)[1])
```

```
## Number of all people making less than or equal to 50k:  24720
```

```
male <- whole[which(adultData$V15 ==" <=50K" & adultData$V10 == " Male"), ]
cat("Number of males making less than or equal to 50k: ", dim(male)[1])
```

```
## Number of males making less than or equal to 50k:  15128
```

```
cat("The percentage of people making 50k or less that are male is: ",
    dim(male)[1] / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making 50k or less that are male is:  61.19741 %
```

Answer for 4b)

```
cat("The percentage of people making 50k that are female is: ",
    (dim(whole)[1] - dim(male)[1]) / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making 50k that are female is:  38.80259 %
```

Answer for 4c)

```
whole <- adultData[which(adultData$V15 ==" <=50K" & adultData$V13 >= 40), ]
cat("Number of all people making less than or equal to 50k
    and working no less than 40 hour/week: ", dim(whole)[1])
```

```
## Number of all people making less than or equal to 50k
##     and working no less than 40 hour/week:  17695
```

```
male <- whole[which(adultData$V15 ==" <=50K"
                    & adultData$V13 >= 40 & adultData$V10 == " Male"), ]
cat("Number of males making less than or equal to 50k
    and working no less than 40 hour/week: ", dim(male)[1])
```

```
## Number of males making less than or equal to 50k
##     and working no less than 40 hour/week:  11901
```

```
cat("The percentage of people making 50k or less
    and working no less than 40 hour/week that are male is: ",
    dim(male)[1] / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making 50k or less
##     and working no less than 40 hour/week that are male is:  67.25629 %
```

```
cat("The percentage of people making 50k or less
    and working no less than 40 hour/week that are female is: ",
    (dim(whole)[1] - dim(male)[1]) / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making 50k or less
##     and working no less than 40 hour/week that are female is:  32.74371 %
```

Answer for 4d)

```
whole <- adultData[which(adultData$V13 >= 40 & adultData$V15 == " >50K"), ]
cat("Number of all people working at least 40 hour/week: ", dim(whole)[1])
```

```
## Number of all people working at least 40 hour/week:  7103
```

```
female <- whole[which(adultData$V15 ==" >50K"
                      & adultData$V13 >= 40 & adultData$V10 == " Female"), ]
```

```
cat("Number of females making more than 50k
    and working at least 40 hour/week: ", dim(female)[1])
```

```
## Number of females making more than 50k
##     and working at least 40 hour/week:  870
```

```
cat("The percentage of people making more than 50k
    and working no less than 40 hour/week that are female is: ",
    dim(female)[1] / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making more than 50k
##     and working no less than 40 hour/week that are female is:  12.24835 %
```

```
cat("The percentage of people making more than 50k
    and working no less than 40 hour/week that are male is: ",
    (dim(whole)[1] - dim(female)[1]) / dim(whole)[1] * 100, "%")
```

```
## The percentage of people making more than 50k
##     and working no less than 40 hour/week that are male is:  87.75165 %
```

Answer for 4e)

```
whole <- adultData[which(adultData$V13 >= 40 & adultData$V4 == " Bachelors"), ]
subset50K <- adultData[which(adultData$V13 >= 40 & adultData$V4 == " Bachelors"
                             & adultData$V15 ==" >50K" ), ]
cat("Of the people with a bachelors degree, the percent making more
    than fifty thousand dollars is: ", (dim(subset50K)[1]) / dim(whole)[1] * 100, "%")
```

```
## Of the people with a bachelors degree, the percent making more
##     than fifty thousand dollars is:  45.5301 %
```

```
whole <- adultData[which(adultData$V13 >= 40 & adultData$V5 < 14), ]
subset50K <- adultData[which(adultData$V13 >= 40 & adultData$V5 < 14
                             & adultData$V15 ==" >50K" ), ]
cat("Of the people with less than 14 years of education, the
    percent making more than fifty thousand dollars is: ",
    (dim(subset50K)[1]) / dim(whole)[1] * 100, "%")
```

```
## Of the people with less than 14 years of education, the
##     percent making more than fifty thousand dollars is:  24.89457 %
```

```
whole <- adultData[which(adultData$V13 >= 40 & adultData$V5 > 15), ]
subset50K <- adultData[which(adultData$V13 >= 40 & adultData$V5 > 15
                             & adultData$V15 ==" >50K" ), ]
cat("Of the people with at least 16 years of education, the
    percent making more than fifty thousand dollars is: ",
    (dim(subset50K)[1]) / dim(whole)[1] * 100, "%")
```

```
## Of the people with at least 16 years of education, the
##     percent making more than fifty thousand dollars is:  76.13636 %
```

```
whole <- adultData[which(adultData$V13 >= 40 & adultData$V5 > 15), ]
cat("The number of people have at least 16 years of education is: ", dim(whole)[1])
```

```
## The number of people have at least 16 years of education is:  352
```

Answer for Question 5

By investigating people who who as full time, the higher eduction he has, the higher chance for him to make more money. Those who less than 14 years of education only have alomst 1/3 the chances of who have more

than 16 years of education.

Also, in all the cases above, there are less chances for women to make as much money as males d0.