ACADGILD

SESSION 3: FOUNDATIONAL R PROGRAMMING

Assignment 1

5. Problem Statement

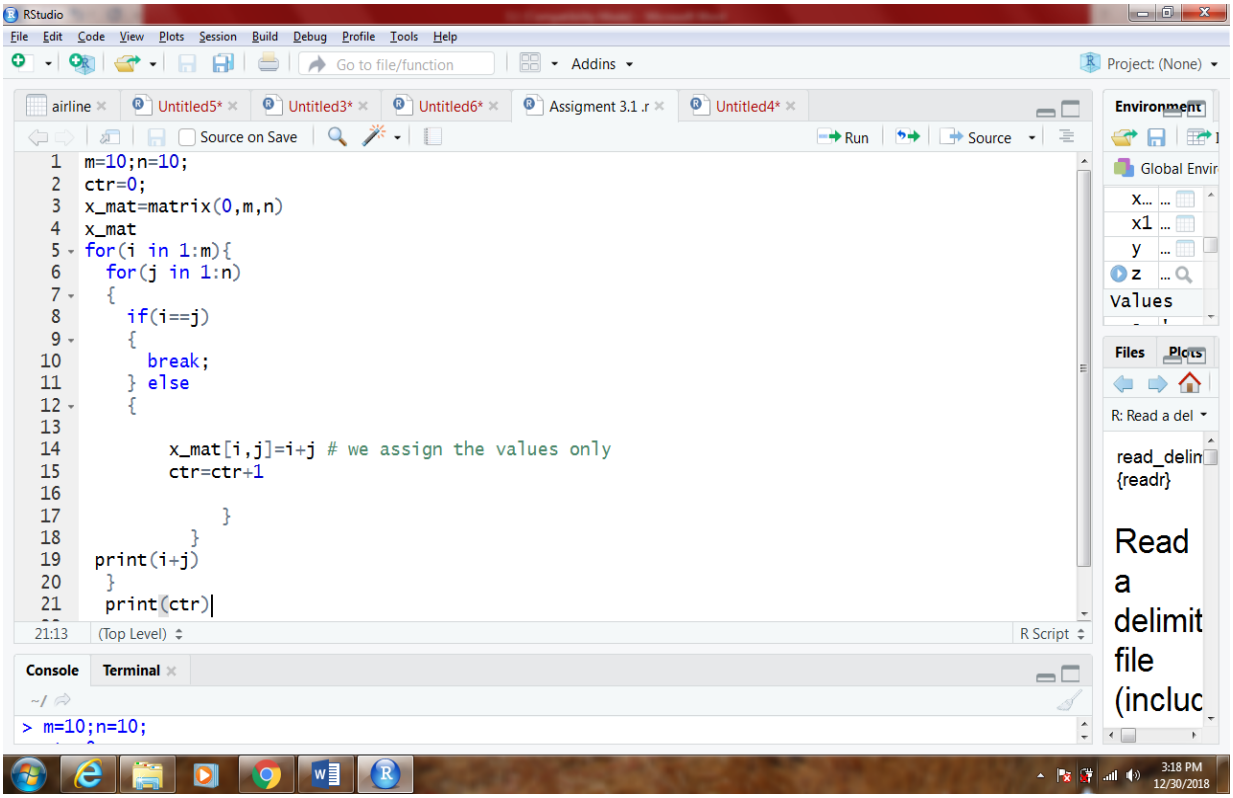
1. Define an m x n matrix of zeros and then enters a nested-for loop to fill the locations of the matrix, only if the two indexes differ.

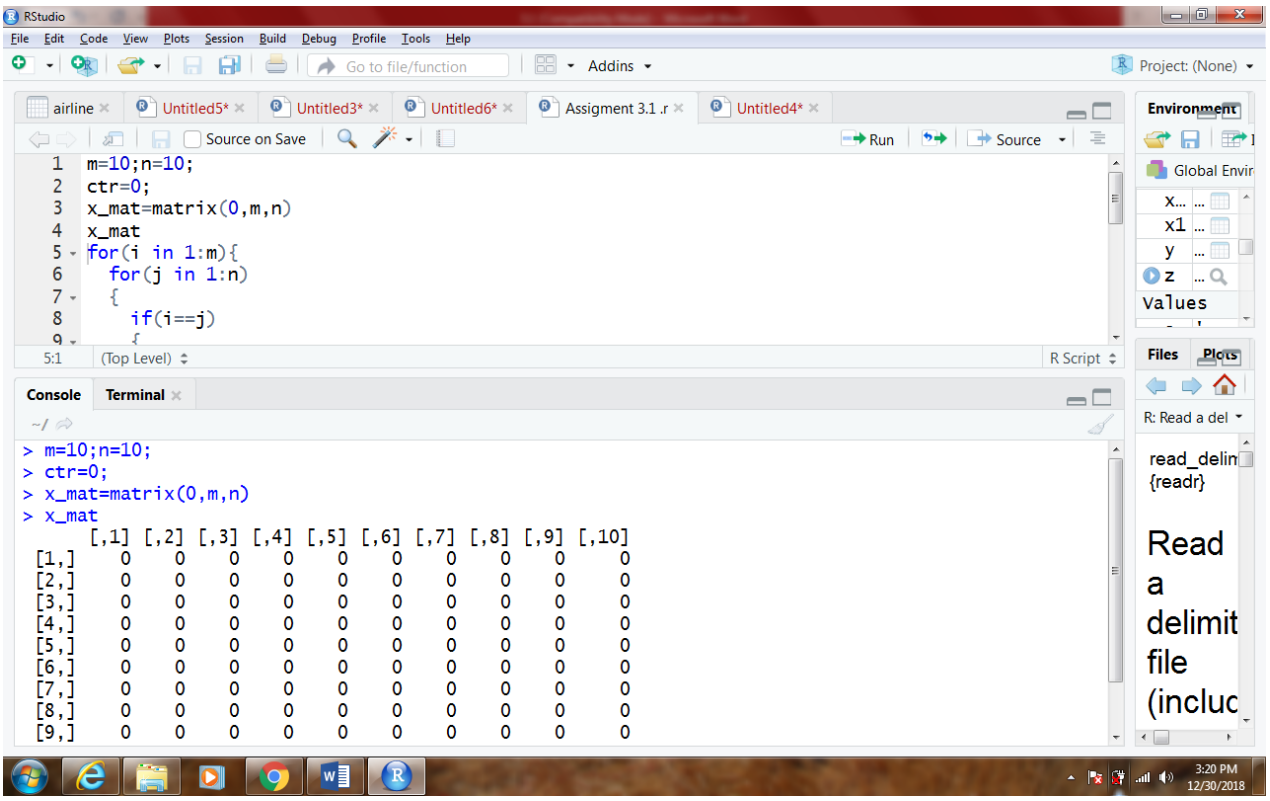
- The purpose is to create a lower triangular matrix, that is a matrix whose elements below the main diagonal are non-zero, the others are left untouched to their initialized zero value.
- When the indexes are equal (if condition in the inner loop, which runs over j, the column index), a break is executed and the innermost loop is interrupted with a direct jump to the instruction following the inner loop, which is a print; then control gets to the outer for condition (over the rows, index i), which is evaluated again.
- If the indexes differ, the assignment is performed and the counter is incremented by 1.
- At the end, the program prints the counter ctr, which contains the #number of elements that were assigned.

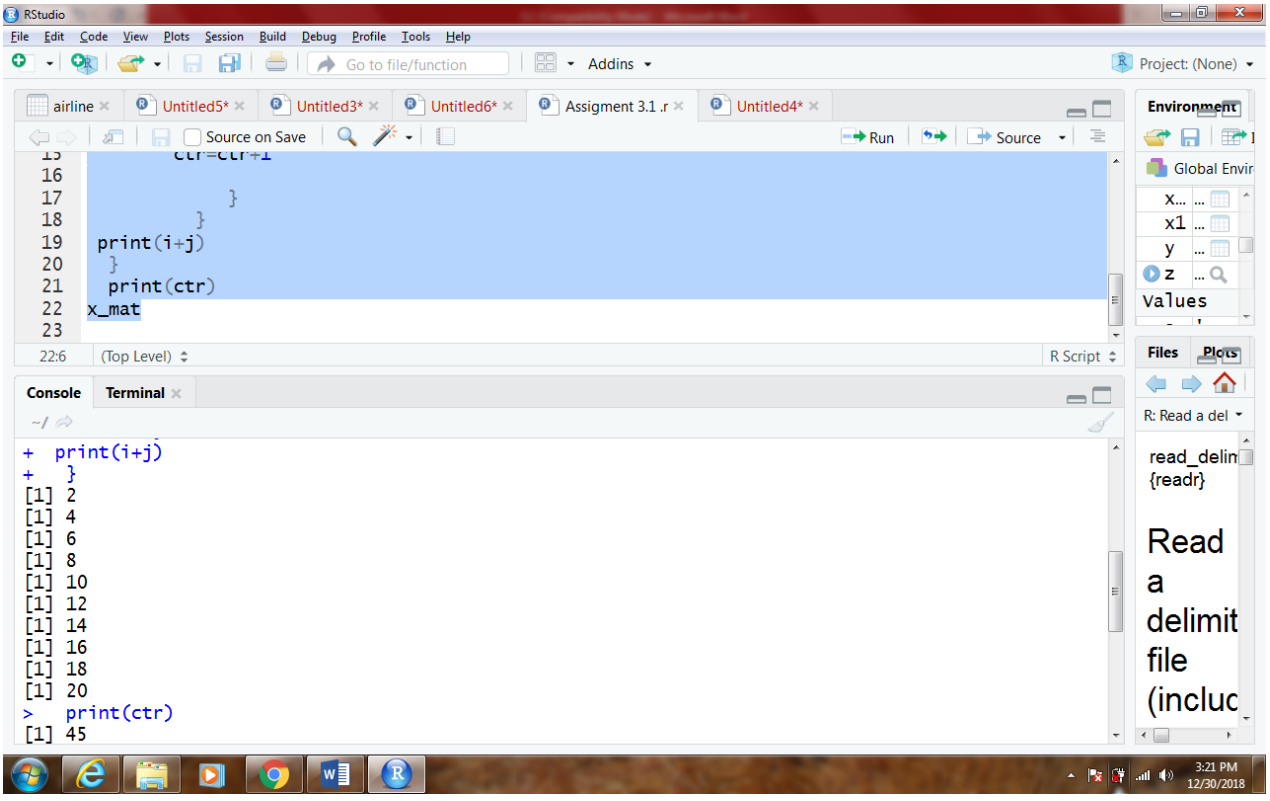
Solution:

```
m=10;n=10;
ctr=0;
x_mat=matrix(0,m,n)
x_mat
for(i in 1:m){
  for(j in 1:n)
  {
    if(i==j)
    {
      break;
    } else
    {

        x_mat[i,j]=i+j # we assign the values only
        ctr=ctr+1

            }
          }
 print(i+j)
  }
  print(ctr)
x_mat
```

Solution on R-




RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project: (None)
airline
Untitled5*
Untitled3*
Untitled6*
Assigment 3.1 .r
Untitled4*
Source on Save
Run
Source
1 m=10;n=10;
2 ctr=0;
3 x_mat=matrix(0,m,n)
4 x_mat
5 for(i in 1:m){
6 for(j in 1:n)
7 {
8 if(i==j)
9 {
5:1
(Top Level)
R Script
Console
Terminal
~/
> m=10;n=10;
> ctr=0;
> x_mat=matrix(0,m,n)
> x_mat
[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]
[1,] 0 0 0 0 0 0 0 0 0 0
[2,] 0 0 0 0 0 0 0 0 0 0
[3,] 0 0 0 0 0 0 0 0 0 0
[4,] 0 0 0 0 0 0 0 0 0 0
[5,] 0 0 0 0 0 0 0 0 0 0
[6,] 0 0 0 0 0 0 0 0 0 0
[7,] 0 0 0 0 0 0 0 0 0 0
[8,] 0 0 0 0 0 0 0 0 0 0
[9,] 0 0 0 0 0 0 0 0 0 0
Environment
Global Envir
x...
x1
y
z
Values
Files
Plots
R: Read a del
read_delin
{readr}
Read
a
delimit
file
(includ
3:20 PM
12/30/2018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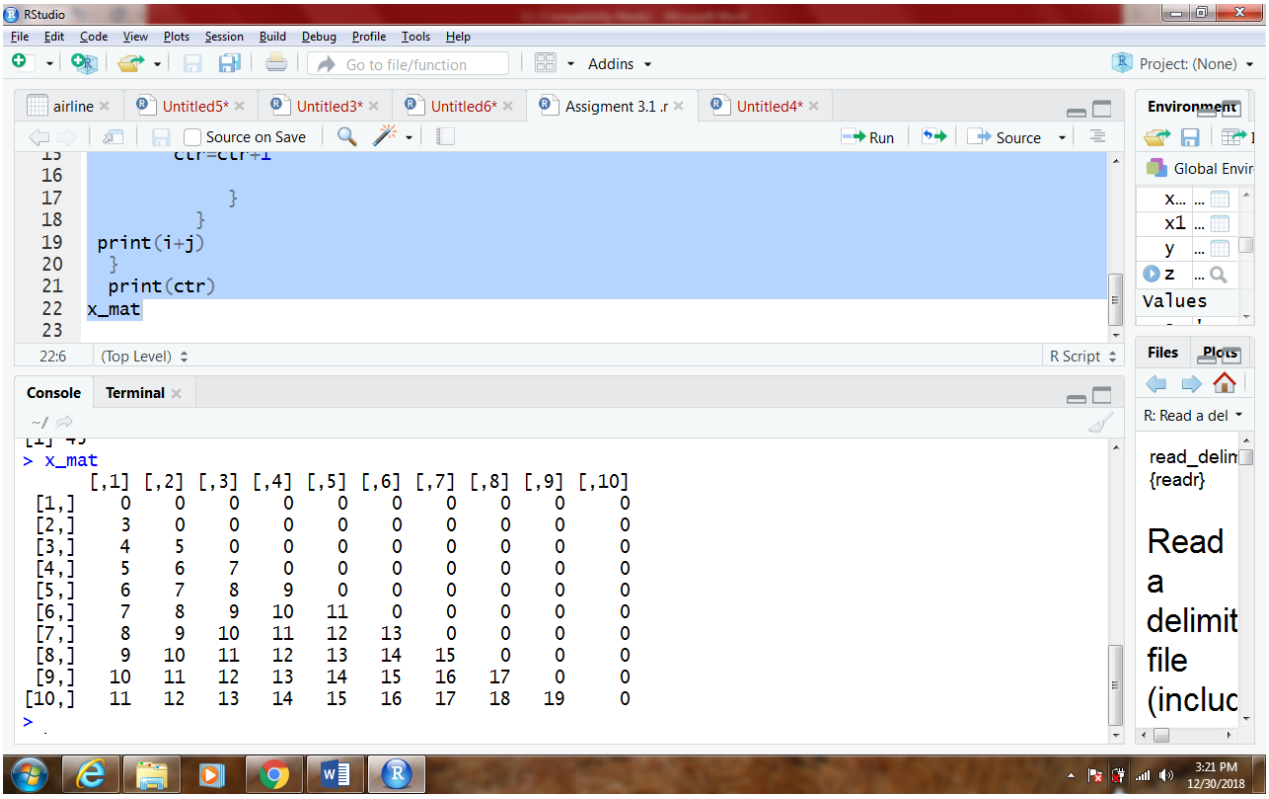
Untitled5*
Untitled3*
Untitled6*
Assigment 3.1 .r
Untitled4*
Source on Save
Run
Source
ctr=ctr+1
}
}
print(i+j)
}
print(ctr)
x_mat
22:6
(Top Level)
R Script
Console
Terminal
~/
+ print(i+j)
+ }
[1] 2
[1] 4
[1] 6
[1] 8
[1] 10
[1] 12
[1] 14
[1] 16
[1] 18
[1] 20
> print(ctr)
[1] 45
Environment
Global Envir
x...
x1
y
z
Values
Files
Plots
R: Read a del
read_delin
{readr}
Read
a
delimit
file
(includ
3:21 PM
12/30/2018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Source on Save
Run
Source
ctr=ctr+1
}
}
print(i+j)
}
print(ctr)
x_mat
22:6
(Top Level)
R Script
Console
Terminal
> x_mat
[,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9] [,10]
[1,] 0 0 0 0 0 0 0 0 0 0
[2,] 3 0 0 0 0 0 0 0 0 0
[3,] 4 5 0 0 0 0 0 0 0 0
[4,] 5 6 7 0 0 0 0 0 0 0
[5,] 6 7 8 9 0 0 0 0 0 0
[6,] 7 8 9 10 11 0 0 0 0 0
[7,] 8 9 10 11 12 13 0 0 0 0
[8,] 9 10 11 12 13 14 15 0 0 0
[9,] 10 11 12 13 14 15 16 17 0 0
[10,] 11 12 13 14 15 16 17 18 19 0
>
Environment
Global Envir
x...
x1
y
z
values
Files
Plots
R: Read a del
read_delim
{readr}
Read a delimit file (includ
3:21 PM
12/30/2018