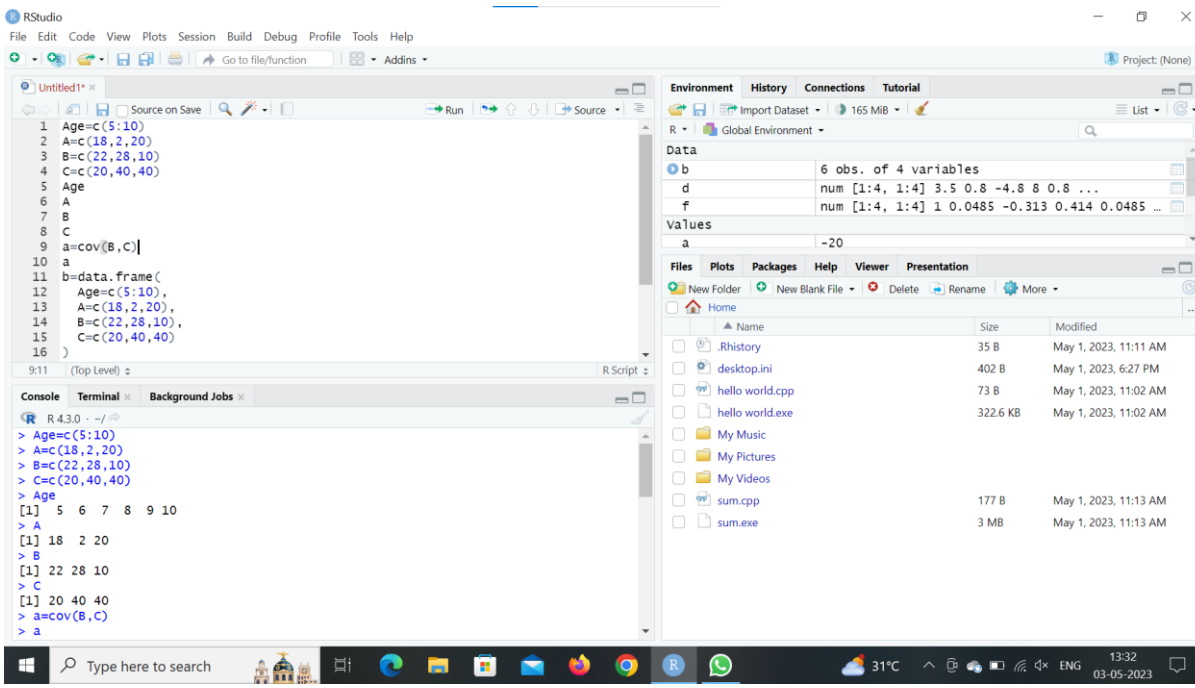
1.Covariance and correlation

Children of three ages are asked to indicate their preference for three photographs of adults. Do the data suggest that there is a significant relationship between age and photograph preference? What is wrong with this study?

	Photograph:		
Age of child	A	B	C
5-6 years:	18	22	20
7-8 years:	2	28	40
9-10 years:	20	10	40

1. Use cov() to calculate the sample covariance between B and C.
2. Use another call to cov() to calculate the sample covariance matrix for the preferences.
3. Use cor() to calculate the sample correlation between B and C.
4. Use another call to cor() to calculate the sample correlation matrix for the preferences.

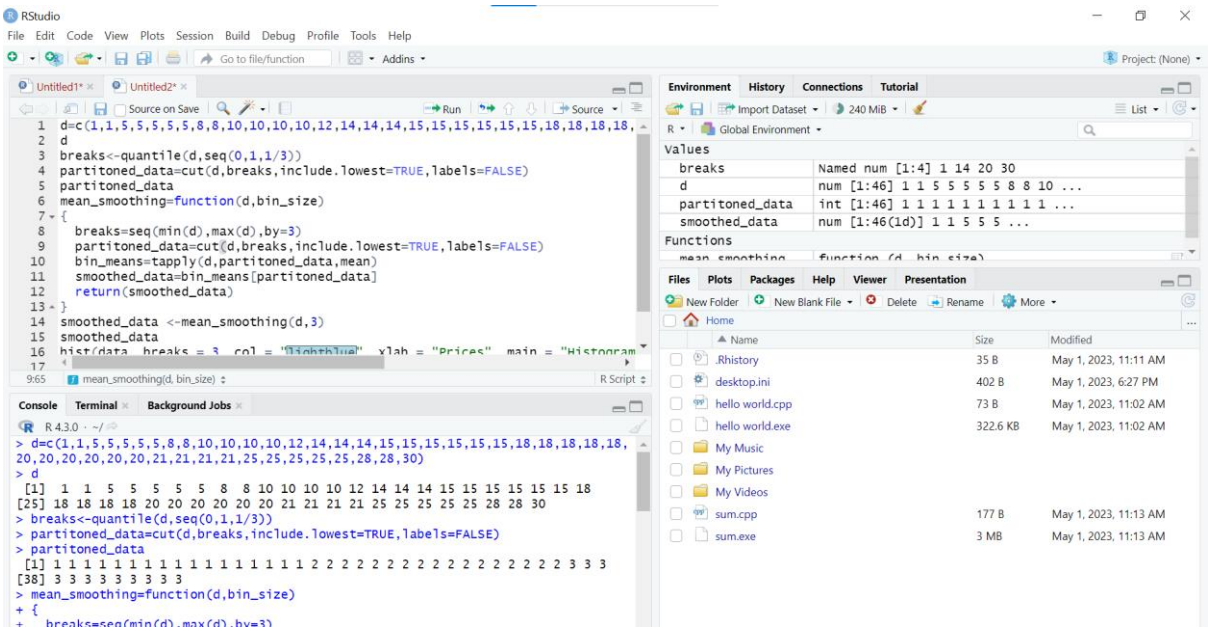
OUTPUT



2.Imagine that you have selected data from the All Electronics data warehouse for analysis. The data set will be huge! The following data are a list of All Electronics prices for commonly sold items (rounded to the nearest dollar). The numbers have been sorted: 1, 1, 5, 5, 5, 5, 5, 8, 8, 10, 10, 10, 10, 12, 14, 14, 14, 15, 15, 15, 15, 15, 15, 18, 18, 18, 18, 18, 0, 20, 20, 20, 20, 20, 21, 21, 21, 21, 25, 25, 25, 25, 25, 28, 28, 30

dataset using an equal-frequency partitioning method with bin equal to 3 (ii) apply data smoothing using bin means and bin boundary.
(iii) Plot Histogram for the above frequency division

OUTPUT

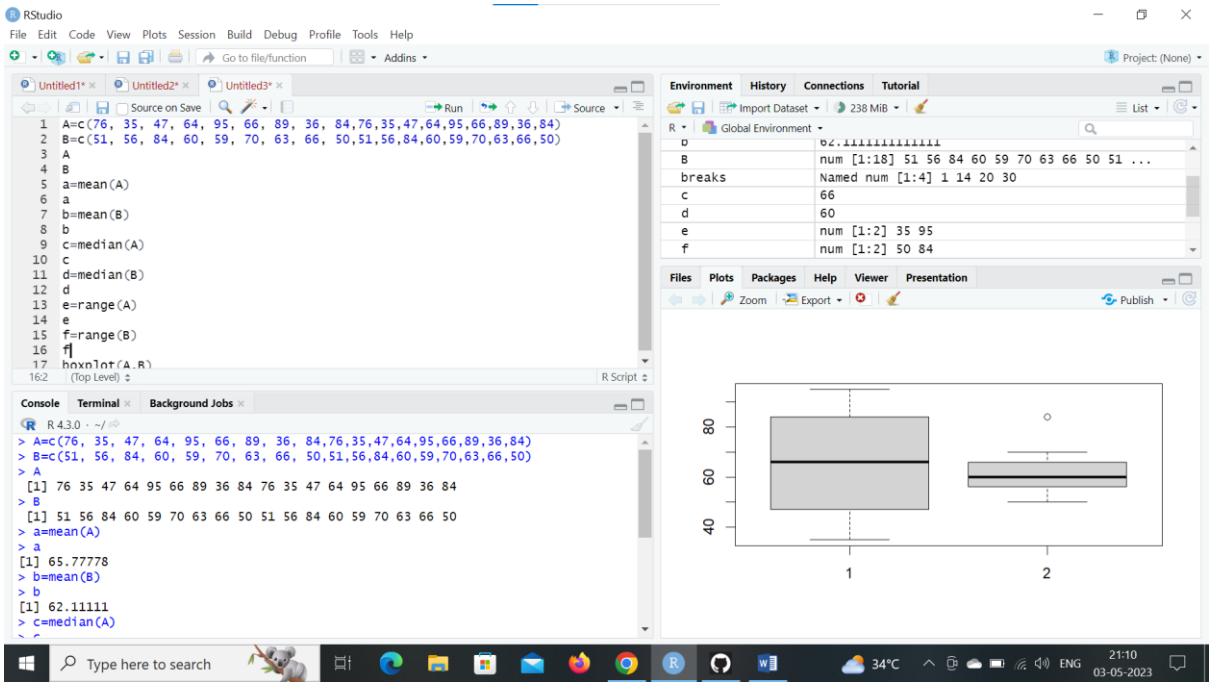


3. Two Maths teachers are comparing how their Year 9 classes performed in the end of year exams. Their results are as follows:
Class A: 76, 35, 47, 64, 95, 66, 89, 36, 84,76,35,47,64,95,66,89,36,84

Class B: 51, 56, 84, 60, 59, 70, 63, 66, 50,51,56,84,60,59,70,63,66,50

(i) Find which class had scored higher mean, median and range.
(ii) Plot above in boxplot and give the inferences

OUTPUT

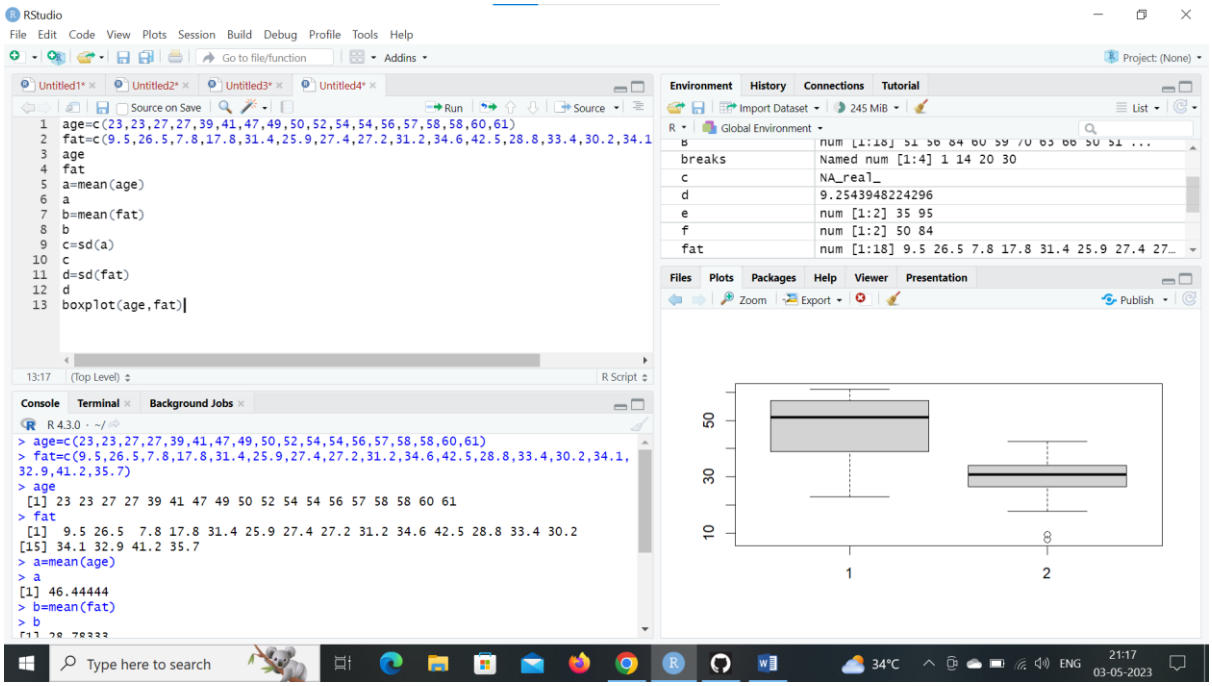


4. Suppose that a hospital tested the age and body fat data for 18 randomly selected adults with the following results:

age	23	23	27	27	39	41	47	49	50
%fat	9.5	26.5	7.8	17.8	31.4	25.9	27.4	27.2	31.2
age	52	54	54	56	57	58	58	60	61
%fat	34.6	42.5	28.8	33.4	30.2	34.1	32.9	41.2	35.7

(a) Calculate the mean, median, and standard deviation of age and %fat. (b) Draw the boxplots for age and %fat.

OUTPUT

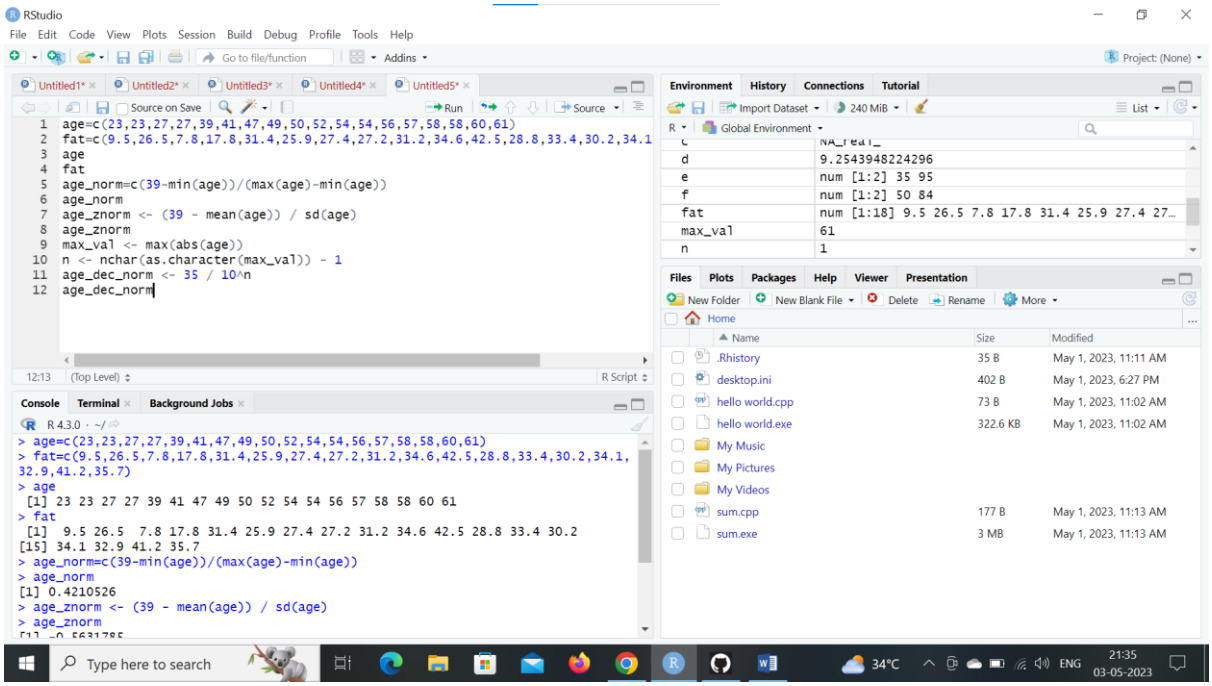


5. suppose that a hospital tested the age and body fat data for 18 randomly selected adults with the following results:

age	23	23	27	27	39	41	47	49	50
%fat	9.5	26.5	7.8	17.8	31.4	25.9	27.4	27.2	31.2
age	52	54	54	56	57	58	58	60	61
%fat	34.6	42.5	28.8	33.4	30.2	34.1	32.9	41.2	35.7

(i) Use min-max normalization to transform the value 39 for age onto the range [0.0, 1.0].
(ii) Use z-score normalization to transform the value 39 for age, where the standard deviation of age is 12.94 years.
(iii) Use normalization by decimal scaling to transform the value 35 for age. Perform the above functions using R – tool

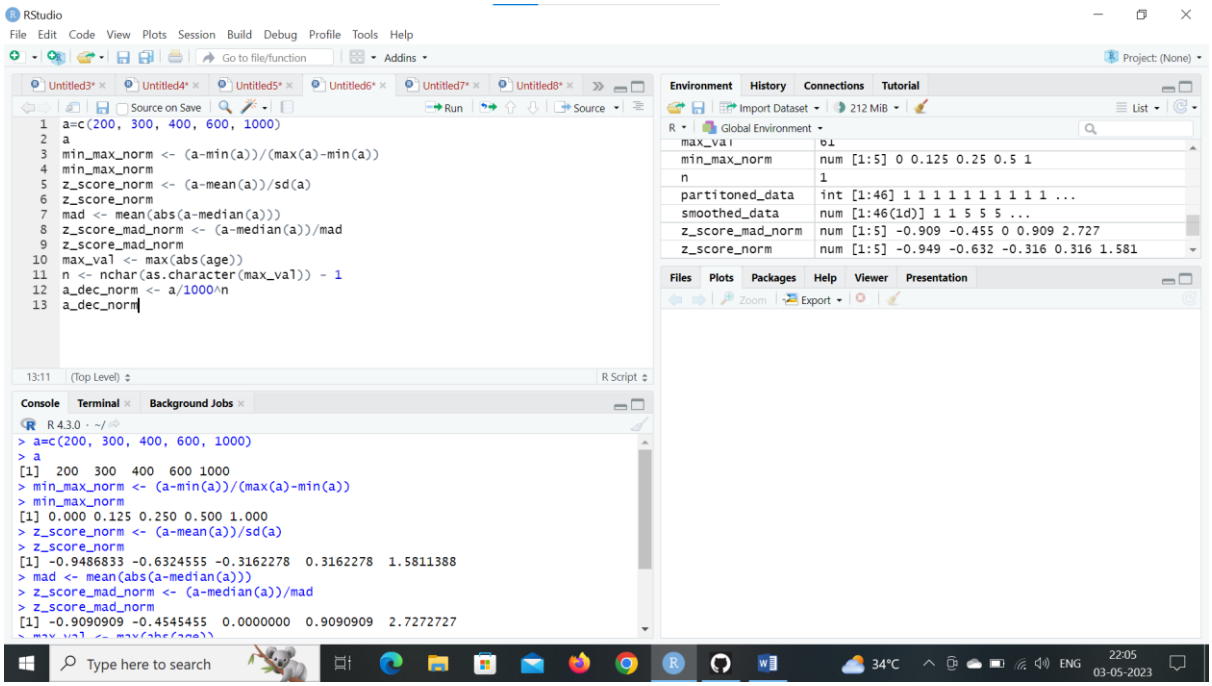
OUTPUT



6. Use following group of data: 200, 300, 400, 600, 1000
(a) min-max normalization by setting min = 0 and max = 1 (b)
(b) z-score normalization
(c) (c) z-score normalization using the mean absolute deviation instead of standard

deviation (d) normalization by decimal scaling

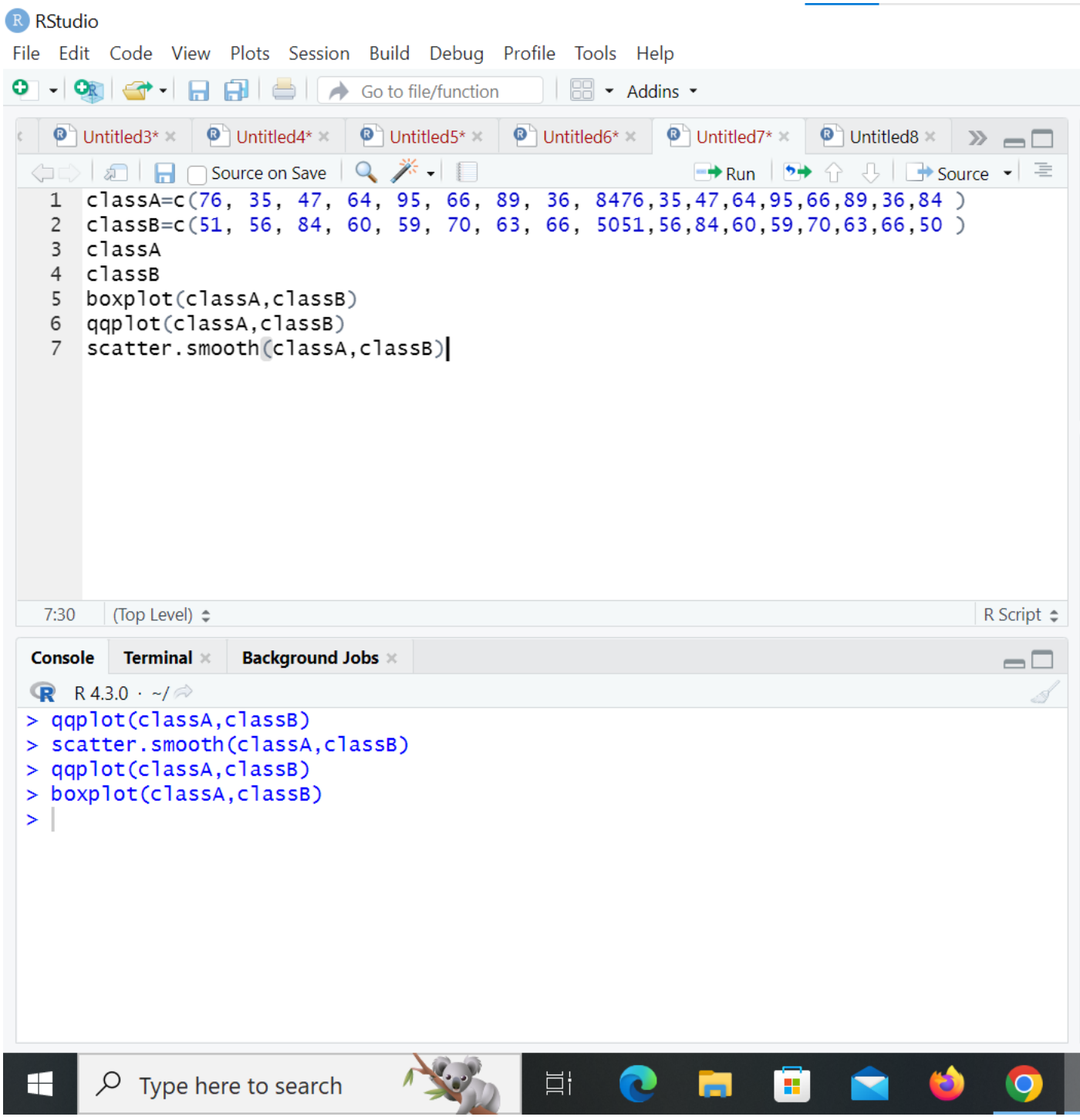
OUTPUT

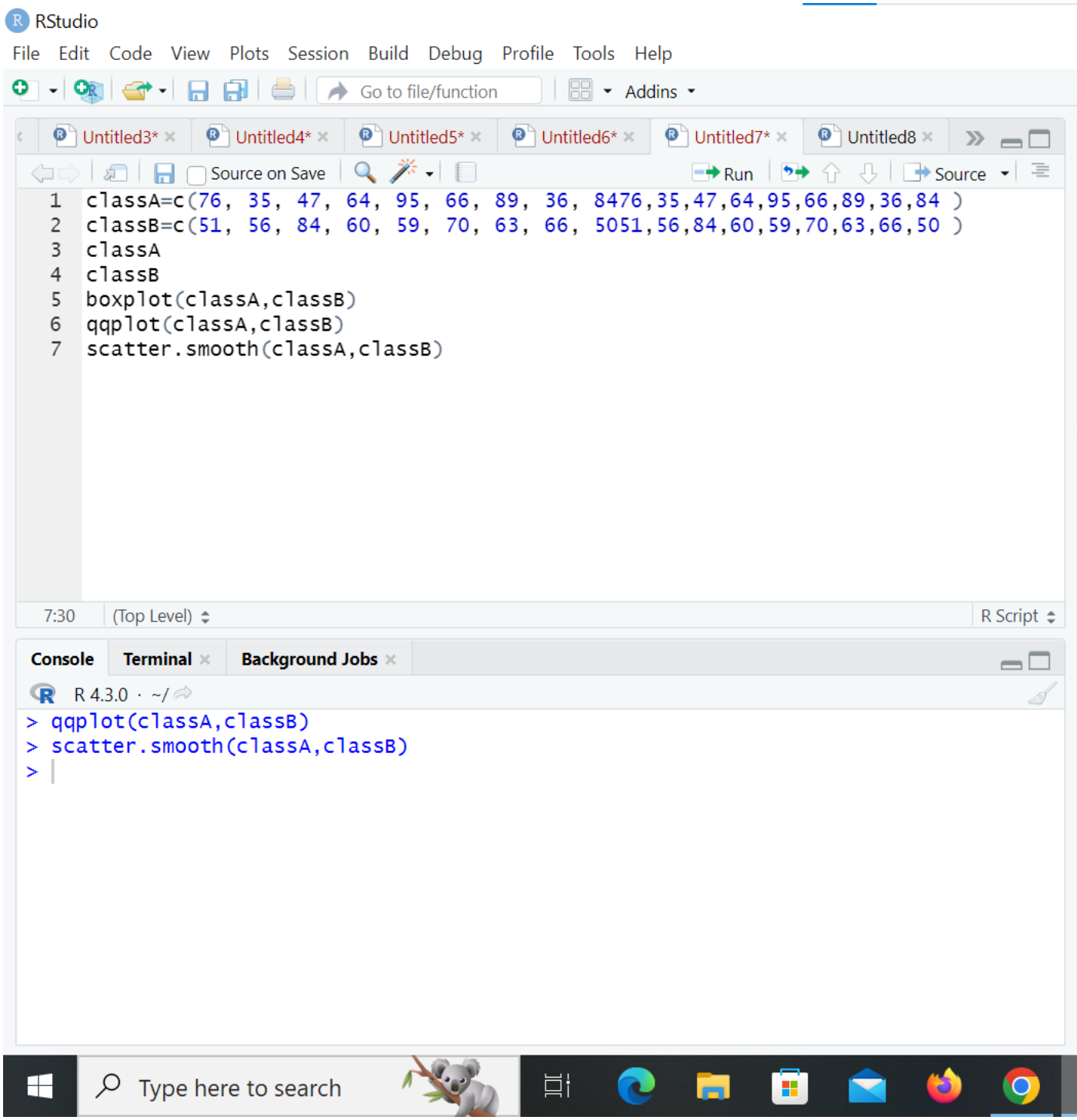


7. Two Maths teachers are comparing how their Year 9 classes performed in the end of year exams. Their results are as follows:
Class A: 76, 35, 47, 64, 95, 66, 89, 36, 8476,35,47,64,95,66,89,36,84

Class B: 51, 56, 84, 60, 59, 70, 63, 66, 5051,56,84,60,59,70,63,66,50

Draw the boxplot,scatter plot,qq plot for class a and b

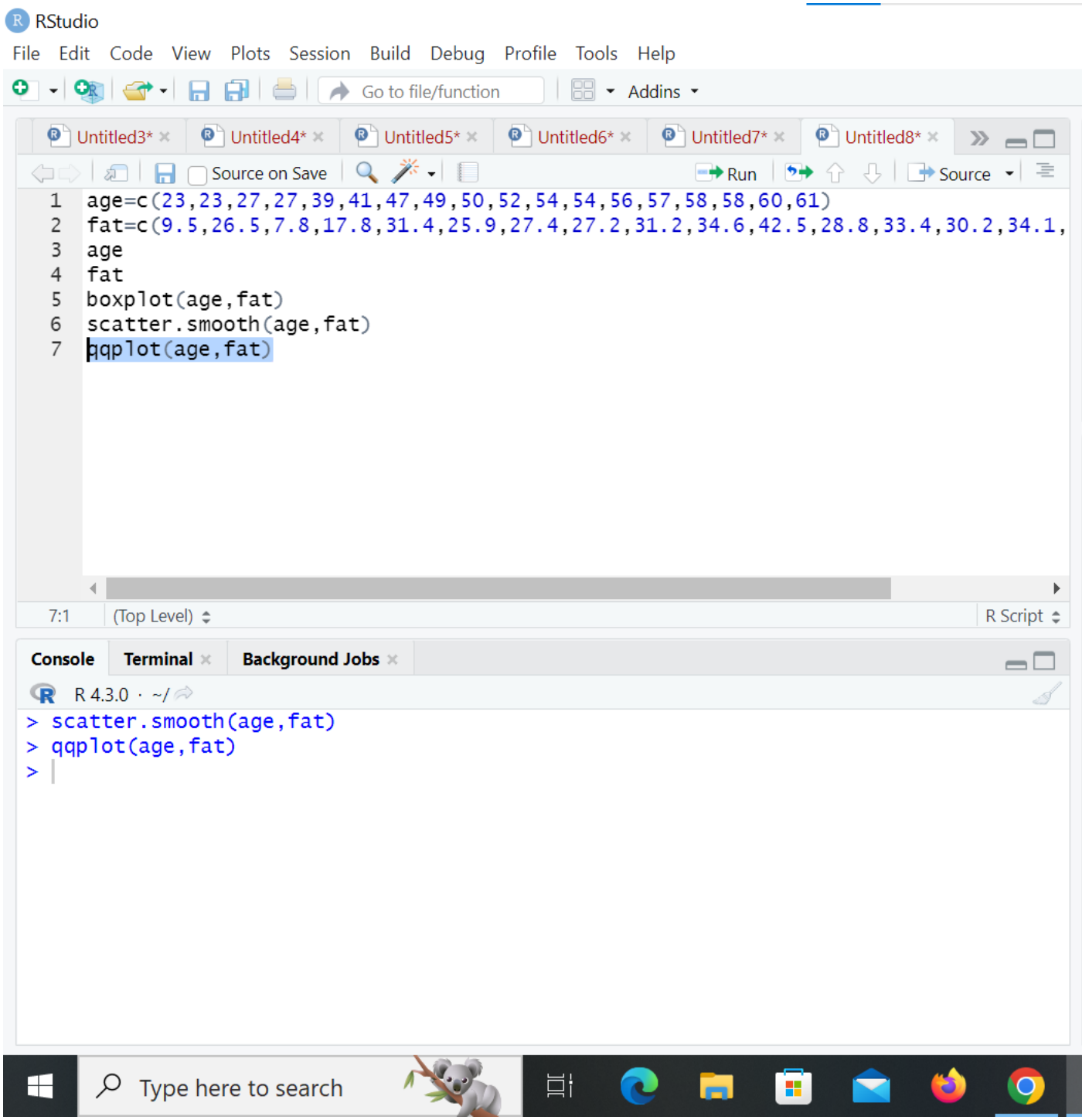




8. . suppose that a hospital tested the age and body fat data for 18 randomly selected adults with the following results:

age	23	23	27	27	39	41	47	49	50
%fat	9.5	26.5	7.8	17.8	31.4	25.9	27.4	27.2	31.2
age	52	54	54	56	57	58	58	60	61
%fat	34.6	42.5	28.8	33.4	30.2	34.1	32.9	41.2	35.7

Draw the boxplot,scatter plot,qq plot


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Untitled3* Untitled4* Untitled5* Untitled6* Untitled7* Untitled8*
Source on Save
Run
Source
1 age=c(23,23,27,27,39,41,47,49,50,52,54,54,56,57,58,58,60,61)
2 fat=c(9.5,26.5,7.8,17.8,31.4,25.9,27.4,27.2,31.2,34.6,42.5,28.8,33.4,30.2,34.1,
3 age
4 fat
5 boxplot(age,fat)
6 scatter.smooth(age,fat)
7 qqplot(age,fat)
7:1
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R Script
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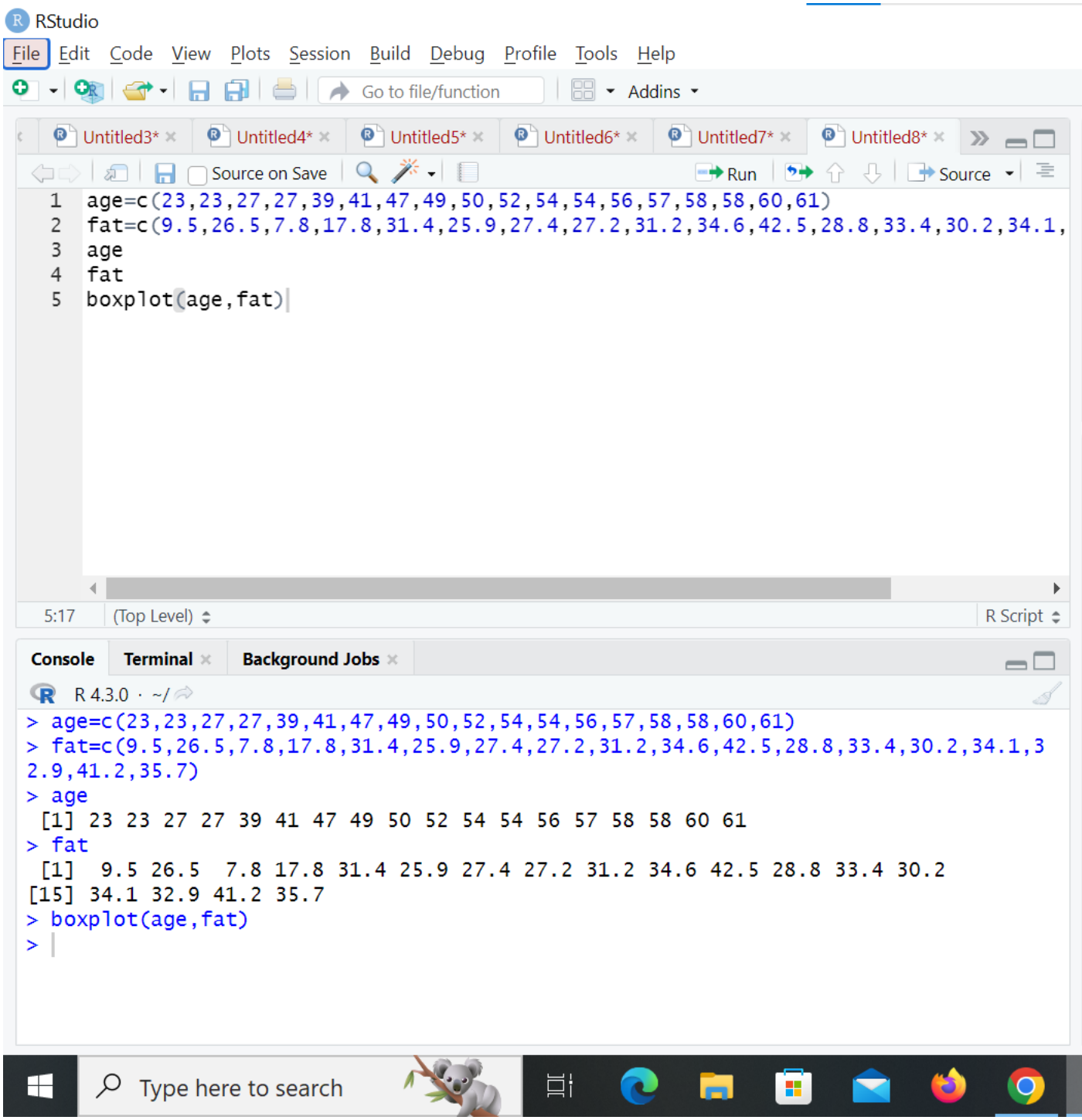
R 4.3.0 · ~/
> scatter.smooth(age,fat)
> qqplot(age,fat)
>
Type here to search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Source
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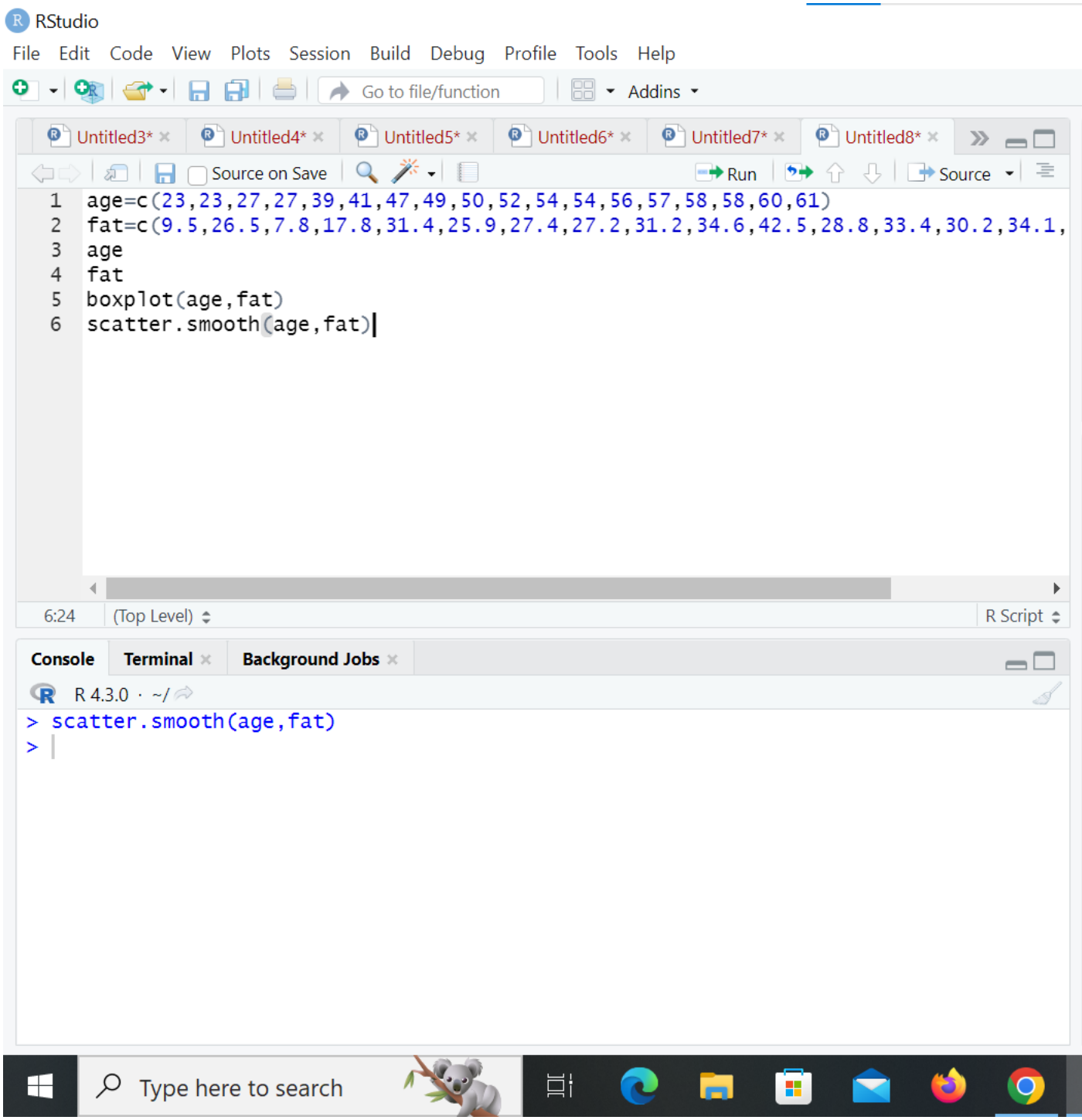
3 age
4 fat
5 boxplot(age,fat)
5:17
(Top Level)
R Script
Console
Terminal
Background Jobs
R 4.3.0 · ~/
> age=c(23,23,27,27,39,41,47,49,50,52,54,54,56,57,58,58,60,61)
> fat=c(9.5,26.5,7.8,17.8,31.4,25.9,27.4,27.2,31.2,34.6,42.5,28.8,33.4,30.2,34.1,3
2.9,41.2,35.7)
> age
[1] 23 23 27 27 39 41 47 49 50 52 54 54 56 57 58 58 60 61
> fat
[1] 9.5 26.5 7.8 17.8 31.4 25.9 27.4 27.2 31.2 34.6 42.5 28.8 33.4 30.2
[15] 34.1 32.9 41.2 35.7
> boxplot(age,fat)
>
Type here to search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Source on Save
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Source
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2 fat=c(9.5,26.5,7.8,17.8,31.4,25.9,27.4,27.2,31.2,34.6,42.5,28.8,33.4,30.2,34.1,
3 age
4 fat
5 boxplot(age,fat)
6 scatter.smooth(age,fat)
6:24
(Top Level)
R Script
Console
Terminal
Background Jobs
R 4.3.0 · ~/
> scatter.smooth(age,fat)
>
Type here to search