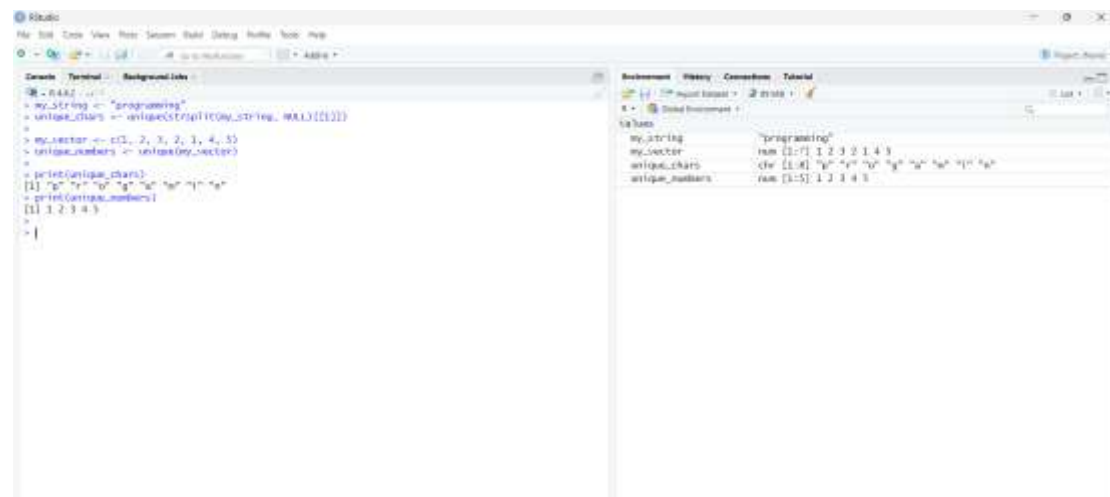


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LAB-4

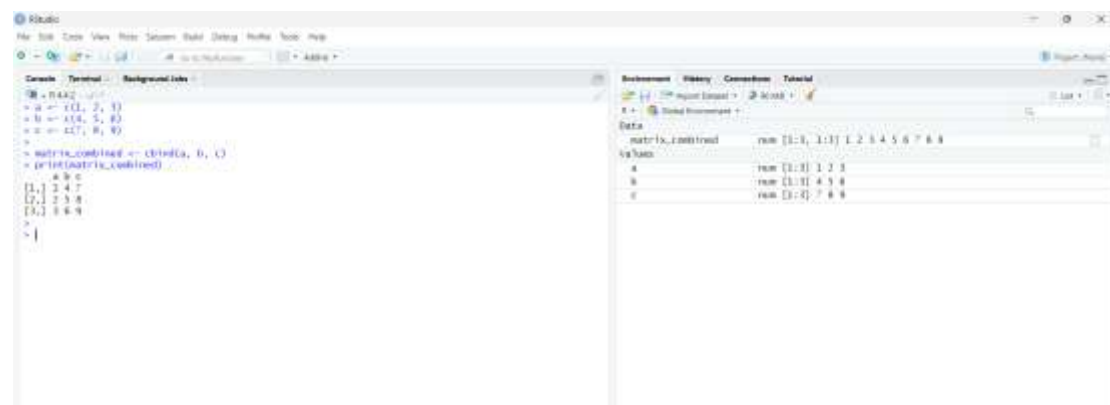
1. Write a R program to get the unique elements of a given string and unique numbers of vector



```
R> # R442 -> |
> my_string <- "programming"
> unique_chars <- unique(strsplit(my_string, ""))
>
> my_vector <- c(1, 2, 3, 2, 1, 4, 5)
> unique_numbers <- unique(my_vector)
>
> print(unique_chars)
[1] "p" "r" "o" "g" "a" "m" "i" "n" "g"
> print(unique_numbers)
[1] 1 2 3 4 5
> |
```

Environment	History	Connections	Tabular
my_string	"programming"		
my_vector	num [1:7] 1 2 3 2 1 4 5		
unique_chars	chr [1:8] "p" "r" "o" "g" "a" "m" "i" "n" "g"		
unique_numbers	num [1:5] 1 2 3 4 5		

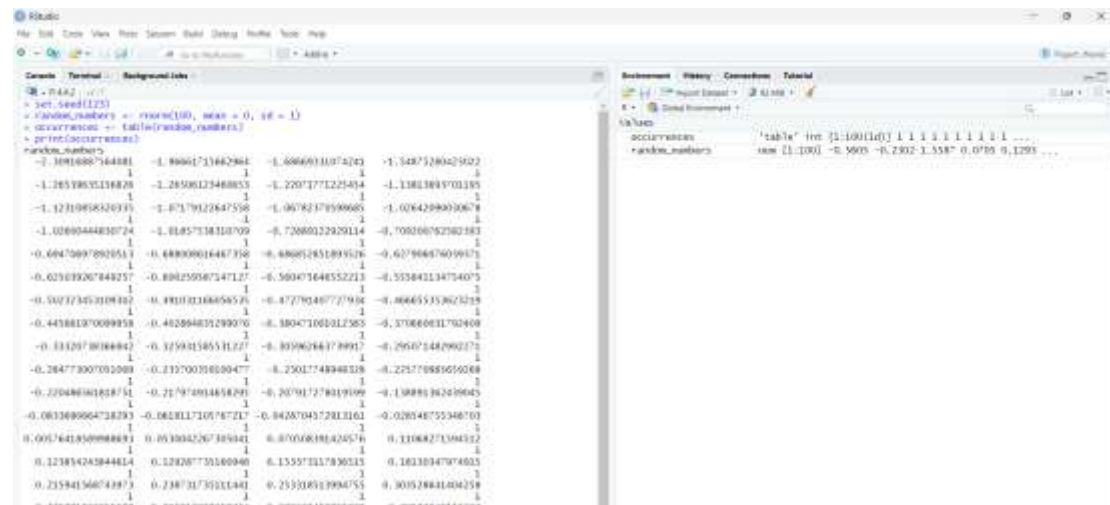
2. Write a R program to create three vectors a,b,c with 3 integers. Combine the three vectors to become a 3x3 matrix where each column represents a vector. Print the content of the matrix.



```
R> # R442 -> |
> a <- c(1, 2, 3)
> b <- c(4, 5, 6)
> c <- c(7, 8, 9)
>
> matrix_combined <- cbind(a, b, c)
> print(matrix_combined)
      a b c
[1,] 1 4 7
[2,] 2 5 8
[3,] 3 6 9
> |
```

Environment	History	Connections	Tabular
matrix_combined	num [1:3, 1:3] 1 2 3 4 5 6 7 8 9		
a	num [1:3] 1 2 3		
b	num [1:3] 4 5 6		
c	num [1:3] 7 8 9		

3. Write a R program to create a list of random numbers in normal distribution and count occurrences of each value.



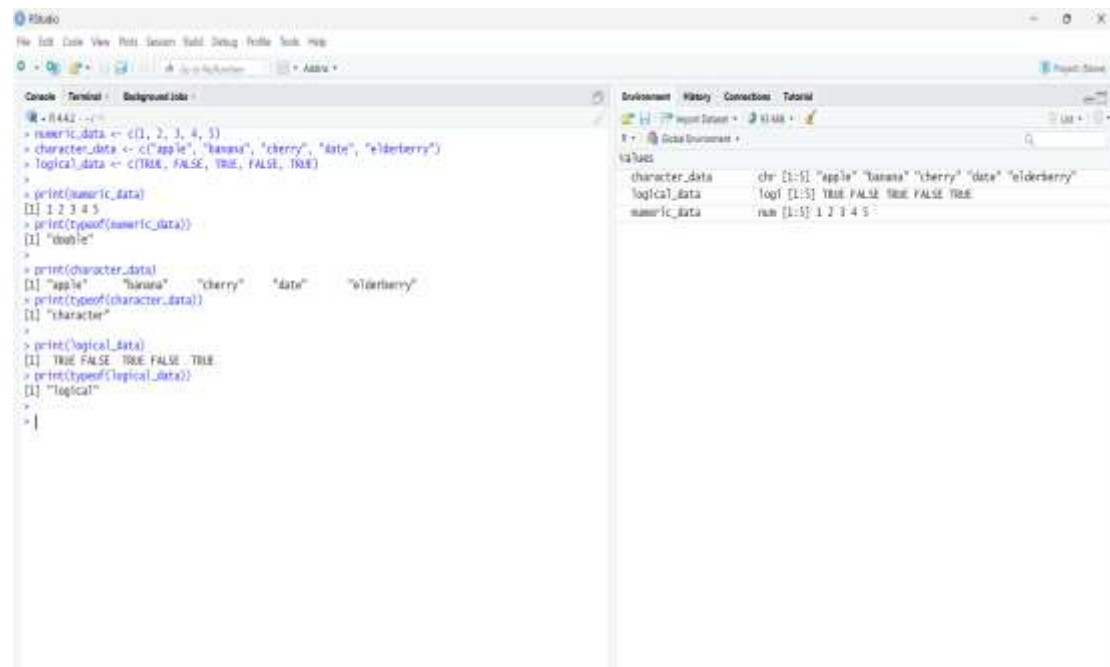
```

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Console Terminal Background Jobs
> # R4.2.2 ->
> set.seed(123)
> random_numbers <- rnorm(100, mean = 0, sd = 1)
> occurrences <- table(random_numbers)
> print(occurrences)
random_numbers
-2.30818887644881 -1.8866173462864 -1.6866931197423 -1.5487528327502
-1.28538535138828 -1.28508123488855 -1.2207771225454 -1.13813885703185
-1.1231983832933 -1.0717912847538 -1.06782379598685 -1.00642886930678
-1.00609444830724 -1.01857138110709 -0.72888022829114 -0.709266782582383
-0.68470897892051 -0.68800901646738 -0.686812851893526 -0.607866576099371
-0.623039207848257 -0.898259587147127 -0.569471648552213 -0.555843134754075
-0.530737353108302 -0.481031388858525 -0.477792407779306 -0.46665533823289
-0.443881370089958 -0.482884831293070 -0.380471001012585 -0.370866031762408
-0.33329738088842 -0.325981585511227 -0.309862643738917 -0.295071442862772
-0.284773007091008 -0.21570030100477 -0.25017748948328 -0.22577085656268
-0.22048838383831 -0.217978814458289 -0.207817278319189 -0.138881362838645
-0.083489864728293 -0.0811117105787217 -0.0428704372813161 -0.028548755348703
0.007461858988881 0.0538842507385842 0.070588381426576 0.11088271384322
0.12389424384484 0.128287731160948 0.15537117830513 0.18338347074883
0.235841368743873 0.238731735113442 0.253318513984755 0.300528841404218

```

4. Write a R program to create three vectors numeric data, character data and logical data. Display the content of the vectors and their type



```

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Console Terminal Background Jobs
> # R4.2.2 ->
> numeric_data <- c(1, 2, 3, 4, 5)
> character_data <- c("apple", "banana", "cherry", "date", "elderberry")
> logical_data <- c(TRUE, FALSE, TRUE, FALSE, TRUE)
>
> print(numeric_data)
[1] 1 2 3 4 5
> print(typeof(numeric_data))
[1] "double"
>
> print(character_data)
[1] "apple" "banana" "cherry" "date" "elderberry"
> print(typeof(character_data))
[1] "character"
>
> print(logical_data)
[1] TRUE FALSE TRUE FALSE TRUE
> print(typeof(logical_data))
[1] "logical"
>

```