Lab 1

1) Sometimes their meaning differs. For instance when we use it as an argument in the function, '=' means we are giving value to some value of the function argument name, and also '<-' means we are making a new object and passing the object to the function.

2)

Character
Numeric
Integer
Complex
Logical(True/False)

3)

Integer + Numeric is a successful one but Character + Integer is an unsuccessful operation.

4)

The + operator always returns a numeric data type thus it first cast the first two-element and then does the sum.

5) Vector, Matrix, List, DataFrame, Arrays
6) It can be defined as the c method it is named after create.
7) No, we don't get an error and all the variables convert to strings for instance, in this case, we will have "1", "TRUE", "Tree" and R always try to change all the variables to a type that would work for all variables.
8)

```
feature_1 <- c(50:250)
print(feature_1)
```

9)

```
print(length(feature_1))
```

The sample size is 206.

10)

Mean: 152.5
Variance: 3553.5
Standard Deviation: 59.6
Median: 152.5

11)
12)
13)
14)
15)

16)

Factors used for categorical variables and just accept a limited number of values, on the other side vectors are used for numerical variables and mathematic operations can be done on them.

17)

No, it isn't possible because we can't add a value that is not in our levels. The default levels are the set of values we define at first.
Because all the values in a factor are categorical values thus their types are always considered as char types.

18)
19)

Now we didn't get any error because we have the "South" values in our levels.

20)

In R we show it by NA value.

21)

22)

After calling the mean function for feature_1 we get NA because we can calculate the mean of a vector without some of its numbers. Therefore, it is not available(NA).

23)

It is given a logical vector and returns the indices that are True in the vector.

24)

Null represents an object with null or empty value but NA is used for showing nonavailable variables in R. It can be used for checking whether an object is empty or not.

25)

It is kind of a data structure that can have value with the different types in it and that is it different from atomic vectors.

26)

[ ] is an array for representing a list without any element but [[ ]] is a list with one element with value []

27)

The first one print a list that contains 2 but the second and the third one extract the list. % just works like [[]] so it could be considered as a syntax sugar.

28)

3 with the nrow function.

29)

35 with ncol function.

30)

The first one can be done by slicing method and giving the index of the column and the other one is using $ with the feature name after it.

31)

It is a vector and the table function returns the number of occurrences of each value in this vector.

32)

The tree property and we can check it by calling the class function on the column which consists of tree values

33)

34) It is still a data frame because it has values of different types and we should still save the names of the columns

35)

36)

37)

38)

39)

40)