

Data Types and Factors

Spoken Tutorial Project

<https://spoken-tutorial.org>

National Mission on Education through ICT

<http://sakshat.ac.in/>

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Learning Objectives

We will learn how to:



Learning Objectives

We will learn how to:

- ▶ **Find types of vectors**



Learning Objectives

We will learn how to:

- ▶ Find types of vectors
- ▶ Identify categorical variables



Learning Objectives

We will learn how to:

- ▶ Find types of vectors
- ▶ Identify categorical variables
- ▶ Use factor and levels function



Pre-requisites



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► Data frames in R



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- ▶ Data frames in R
- ▶ How to set working directory in RStudio



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- ▶ Data frames in R
- ▶ How to set working directory in RStudio

Please locate the relevant tutorials on
<https://spoken-tutorial.org/>



System Specifications



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- ▶ **Ubuntu Linux OS v 16.04**



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- ▶ **R v 3.4.4**



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- ▶ **RStudio v 1.1.456**



System Specifications

- ▶ **Ubuntu Linux OS v 16.04**
- ▶ **R v 3.4.4**
- ▶ **RStudio v 1.1.456**

R version 3.2.0 or higher



Download Files

We will use:



Download Files

We will use:

- ▶ A data frame **CaptaincyData.csv**



Download Files

We will use:

- ▶ A data frame **CaptaincyData.csv**
- ▶ A script file **myFactor.R**



Download Files

We will use:

- ▶ A data frame **CaptaincyData.csv**
- ▶ A script file **myFactor.R**

Download these files from the **Code files** link of this tutorial



R - Objects

In R language,



R - Objects

In R language,

- ▶ **Variables are not declared as some data type**



R - Objects

In R language,

- ▶ **Variables are not declared as some data type**
- ▶ **Variables are assigned with R-Objects**



R - Objects

In R language,



R - Objects

In R language,

- ▶ The data type of the R-Object becomes the data type of the variable



R - Objects

In R language,

- ▶ **The data type of the R-Object becomes the data type of the variable**

It means, everything in R is an object



Types of R - Objects

The frequently used R-Objects are:



Types of R - Objects

The frequently used R-Objects are:

- ▶ **Vectors**



Types of R - Objects

The frequently used R-Objects are:

- ▶ **Vectors**
- ▶ **Lists**



Types of R - Objects

The frequently used R-Objects are:

- ▶ **Vectors**
- ▶ **Lists**
- ▶ **Matrices**



Types of R - Objects

The frequently used R-Objects are:

- ▶ **Vectors**
- ▶ **Lists**
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- ▶ **Factors**



Types of R - Objects

The frequently used R-Objects are:

- ▶ **Vectors**
- ▶ **Lists**
- ▶ **Matrices**
- ▶ **Factors**
- ▶ **Data Frames**



Types of Vectors in R

R language has the following atomic vector types:



Types of Vectors in R

R language has the following atomic vector types:

- **Logical**



Types of Vectors in R

R language has the following atomic vector types:

- ▶ **Logical**
- ▶ **Integer**

Types of Vectors in R

R language has the following atomic vector types:

- ▶ **Logical**
- ▶ **Integer**
- ▶ **Numeric**



Types of Vectors in R

R language has the following atomic vector types:

- ▶ **Logical**
- ▶ **Integer**
- ▶ **Numeric**
- ▶ **Complex**



Types of Vectors in R

R language has the following atomic vector types:

- ▶ Logical
- ▶ Integer
- ▶ Numeric
- ▶ Complex
- ▶ Character

Factors in R

Factors are such variables in R which



Factors in R

Factors are such variables in R which

- ▶ **Take on a limited number of different values**



Factors in R

Factors are such variables in R which

- ▶ **Take on a limited number of different values**
- ▶ **Are often referred to as categorical variables**



Summary

We have learnt how to:

- ▶ Find types of vectors
- ▶ Identify categorical variables
- ▶ Use factor and levels function



Assignment

1. Using built-in dataset `iris`, find out the categorical variables
2. Can you find a variable which is categorical, but R reads it as numeric?

If yes, change it to categorical



About the Spoken Tutorial Project

- ▶ Watch the video available at http://spoken-tutorial.org/What_is_a_Spoken_Tutorial
- ▶ It summarises the Spoken Tutorial project



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- ▶ Gives certificates to those who pass an online test
- ▶ For more details, please write to contact@spoken-tutorial.org



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- ▶ Explain your question briefly
- ▶ Someone from the **FOSSEE** team will answer them. Please visit

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Forum to answer questions

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- ▶ Choose the Software and post your question



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- ▶ We give honorarium and certificates to those who do this

For more details, please visit these sites:

<https://r.fossee.in/>
<https://fossee.in/>



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- ▶ It is supported by the National Mission on Education through ICT, MHRD, Government of India
- ▶ More information on this Mission is available at:

<http://spoken-tutorial.org/NMEICT-Intro>



Thank You

- ▶ The script for this tutorial was contributed by Shaik Sameer (FOSSEE Fellow 2018)
- ▶ The video has been created by Sudhakar Kumar, IIT Bombay

