Data Handling

Lecture 2:

Programming with Data

Prof. Dr. Ulrich Matter

Updates

https://app.nuvolos.cloud/enroll/class/1PD9sApvyCI

Recap

DEVELOPING EMPLOYEES

Prioritize Which Data Skills Your Company Needs with This 2×2 Matrix

by Chris Littlewood

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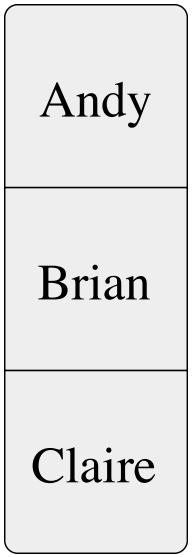
Basic Programming Concepts

1
2
3


Andy
Brian
Claire

```r
# basic arithmetic
2+2
```

```
## [1] 4
```

```r
sum_result <- 2+2
sum_result
```

```
## [1] 4
```

```r
sum_result -2
```

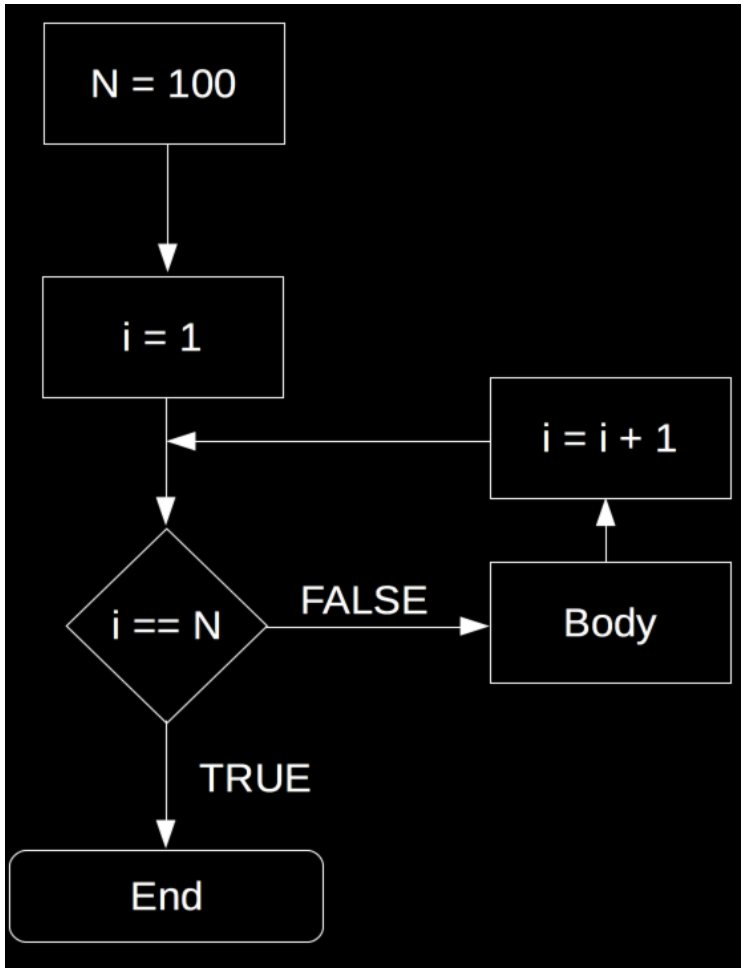
```
## [1] 2
```

```r
4*5
```

```
## [1] 20
```

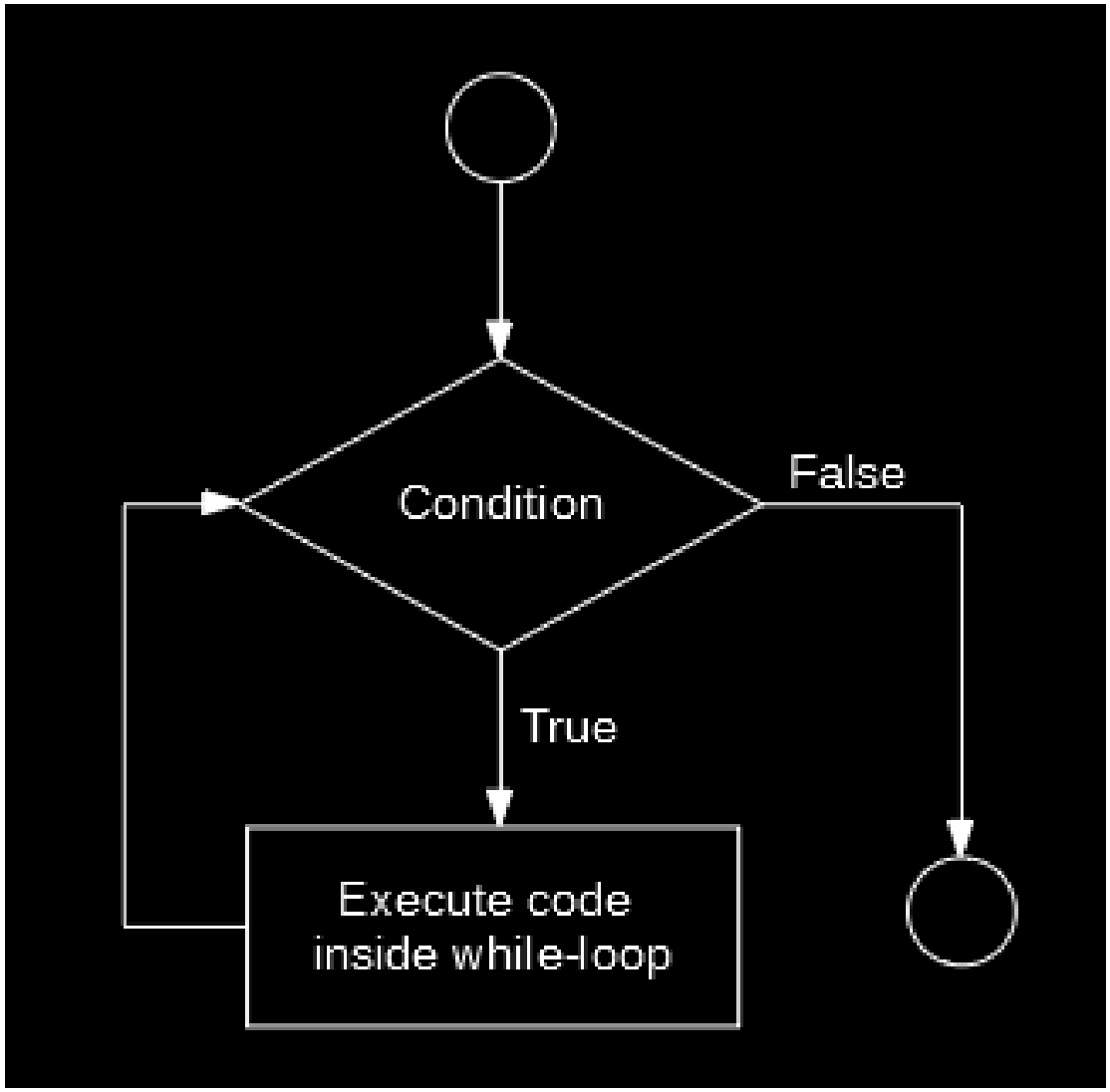
```r
20/5
```

```
## [1] 4
```


N = 100
i = 1
i = i + 1
i == N
FALSE
Body
TRUE
End

```r
# number of iterations
n <- 100
# start loop
for (i in 1:n) {

     # BODY
}
```


Condition
False
True
Execute code
inside while-loop

while-loop in R

```r
# initiate variable for logical statement
x <- 1
# start loop
while (x == 1) {

     # BODY
}
```

```
2+2 == 4 # is equal to
3+3 == 7
4!=7 # is not equal to
6>3
6<7
6<=6
```

Control statements in R

```
condition <- TRUE

if (condition) {
     print("This is true!")
} else {
     print("This is false!")
}
```

```
## [1] "This is true!"
```

Functions in R

- load existing functions

```
# install a package
install.packages("<PACKAGE NAME>")
# load a package
library(<PACKAGE NAME>)
```

Functions in R

- Write functions

```
myfun <- function(){

}
```

Tutorial: A Function to Compute the Mean

Starting point: we should be aware of how the mean is defined:

$$\bar{x} = \frac{1}{n}\left(\sum_{i=1}^{n} x_i\right) = \frac{x_1 + x_2 + \cdots + x_n}{n}.$$

Preparation

```
#####################################
# Mean Function:
# Computes the mean, given a
# numeric vector.
```

Q&A