

Introduction to

FUNCTIONS

Part 1

```
function (<arguments>) {  
    ## do stuff  
}
```

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    ## do stuff  
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    ## do stuff  
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    ## do stuff  
}
```

```
function (<arguments>) {  
    ## do stuff  
}
```

```
function (<arguments>) {  
    ## do stuff  
    return(<object>)  
}
```

Let's write a

range2

function


```
range2 <- function(x) {  
  min <- min(x)  
  max <- max(x)  
  return(c(min, max))  
}
```

```
range2 <- function(x) {  
  min <- min(x)  
  max <- max(x)  
  return(c(min, max))  
}
```

```
range3 <- function(x) {  
  min <- min(x)  
  max <- max(x)  
  c(min, max)  
}
```

```
range4 <- function(x) {  
  min <- min(x)  
  max <- max(x)  
}
```

```
range4(c(1, 6, 9, 2, 3))
```

What will this return?

ARGUMENTS

```
add_two_values <-  
  function(a, b) {  
    a + b  
  }
```

```
add_two_values <-  
  function(a, b) {  
    a + b  
  }
```

```
add_two_values <-  
  function(a, b = 5) {  
    a + b  
  }
```

```
auc_partial(idv, dv, range = c(0, Inf))
```

What is required?


```
write.table(x, file = "", append = FALSE, quote = TRUE,  
  sep = " ", eol = "\n", na = "NA", dec = ".",  
  row.names = TRUE, col.names = TRUE,  
  qmethod = c("escape", "double"), fileEncoding = "")
```

What is required?

Let's write a

na_replacer

function

Let's write a

unique_non_numeric
function

Let's write a

`write_csv_meta`

function

What do you do about **all** the
additional arguments?



```
write_custom <- function(x, file, sep = ",",  
  row.names=FALSE, na = ".",  
  quote = FALSE, ...) {  
  data.table::fwrite(x, file, sep = sep,  
    row.names = row.names, na = na,  
    quote = quote, ...)  
}
```

```
write_custom(x = data,  
             file = "data.csv",  
             append=TRUE,  
             eol = "\r\n")
```


● ● ● caveats

1. Only one ... per function
2. no 'default' ... values
3. arguments after ... in a function **MUST** be matched by full name

```
write_custom(na = "NA",  
             data,  
             file = "data.csv")
```

How does R **match arguments**?

Argument matching order

1. Exact match for named argument
2. Partial matches for named argument
3. Positional match
4. Put everything else into ...

Anonymous functions

```
lapply(<x>, function(x) {  
    #...  
})
```

```
lapply(list(Theoph, sd_oral_richpk),  
       function(x) {  
         names(x) <- toupper(names(x))  
         return(head(x))  
       })
```

```
lapply(c(2, 5, 8), seq, 10, 1)
```

In `rnorm`, generate a set of samples with 10 numbers, a mean of 0, and sd of 2, 5, and 8

```
rnorm(n, mean, sd)
```

```
lapply(c(2, 5, 8), function(x) {  
    rnorm(10, mean = 0, sd = x)  
})
```

Function expressions

```
dp1yr::select_if(function(x) {  
  !is.numeric(x)  
})
```


Function expressions

```
dp1yr::select_if(function(.x) {  
  !is.numeric(.x)  
})
```

```
dp1yr::select_if(~ !is.numeric(.x))
```

Function expressions

Instead of:

`function(x){}` \Rightarrow `~.x`