

Lab 1 exercises

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Exercise 1

Sum up all even numbers from 10 to 1002 (look at the help page of `sum()` and `seq()`)

```
## solution

sum(seq(10, 1002, 2))
```

```
## [1] 251482
```

Exercise 2

Create a vector of strings where the elements are "Hello", "world!", "How", "are", and "you?". Combine all of these words together into one string, separated by underscores (look at help page of `paste()`)

```
## Solution

vec <- c('Hello', 'world!', 'How', 'are', 'you?')
paste(vec, collapse='_')
```

```
## [1] "Hello_world!_How_are_you?"
```

Exercise 3

What happens when you sum "1" with 2?

```
## Solution
```

```
# RStudio cannot run the code and give error report -- Error in sum("1", 2) : invalid 'type' (character)
```

Exercise 4

You can comment out code using hashtags `#` at the start of a line. That is, the code will no longer run. Comments are great to make code more readable. Comment out the code in the previous chunk and rerun.

In exercise 3, RStudio treats argument “1” as a character type, not as a numeric type, so it cannot run the code. What we could do is removing double-quotes.

```
## Solution
```

```
sum(1,2)
```

```
## [1] 3
```

Exercise 5

If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23. Find the sum of all the multiples of 3 or 5 below 1000.

```
## Solution 1
```

```
N <- (1:999)
sum(N[N%%3==0 | N%%5==0])
```

```
## [1] 233168
```

```
## or
```

```
sum(unique(c(seq(3,999,3),seq(5,999,5))))
```

```
## [1] 233168
```

Exercise 6 (Extra Credit)

What is the sum of all integers that are either (divisible by 4 and less than 700) or (divisible by 3 and between 500 and 1000)?

```
## Solution
```

```
sum(unique(c(seq(0,699,4),seq(501,999,3))))
```

```
## [1] 175950
```

```
## or
```

```
intvec <- (1:1000)
(((intvec%%4)==0) & intvec < 700) |
  (((intvec%%3)==0) & intvec > 500) ->
  logvec
print(sum(intvec[logvec]))
```

```
## [1] 175950
```