STRING MANIPULATION WITH STRINGR

Welcome!

You will learn:

- stringr for manipulating strings
- Regular expressions using rebus


"TTAAGGAACGATCGTACGCATGATAGGGTTTTGCA
GTGATATTAGTGTCTCGGTTGACTGGATCTCATCAA
TAGTCTGGATTTTGTTGATAAGTACCTGCTGCAATG
CATCAATGGATTTACACATCACTTTAATAAATATGCT
GTAGTGGCCAGTGGTGTAATAGGCCTCAACCACTT
CTTCTAAGCTTTCCAATTTTTTCAAGGCGGAAGGGT
AATCTTTGGCACTTTTCAAGATTATGCCAATAAAGC
AGCAAACGTCGTAACCCAGTTGTTTTGGGTTAACG
TGTACACAAGCTGCGGTAATGATCCCTGCTTGCCG
CATCTTTTCTACTCTTACATGAATAGTTCCGGGGCT
AACAGCGAGGTTTTTGGCTAATTCAGCATAGGGTG
TGCGTGCATTTTCCATTAATGCTTTCAGGATGCTGC
GATCGAGATTATCGATCTGATAAATTTCACTCAT"

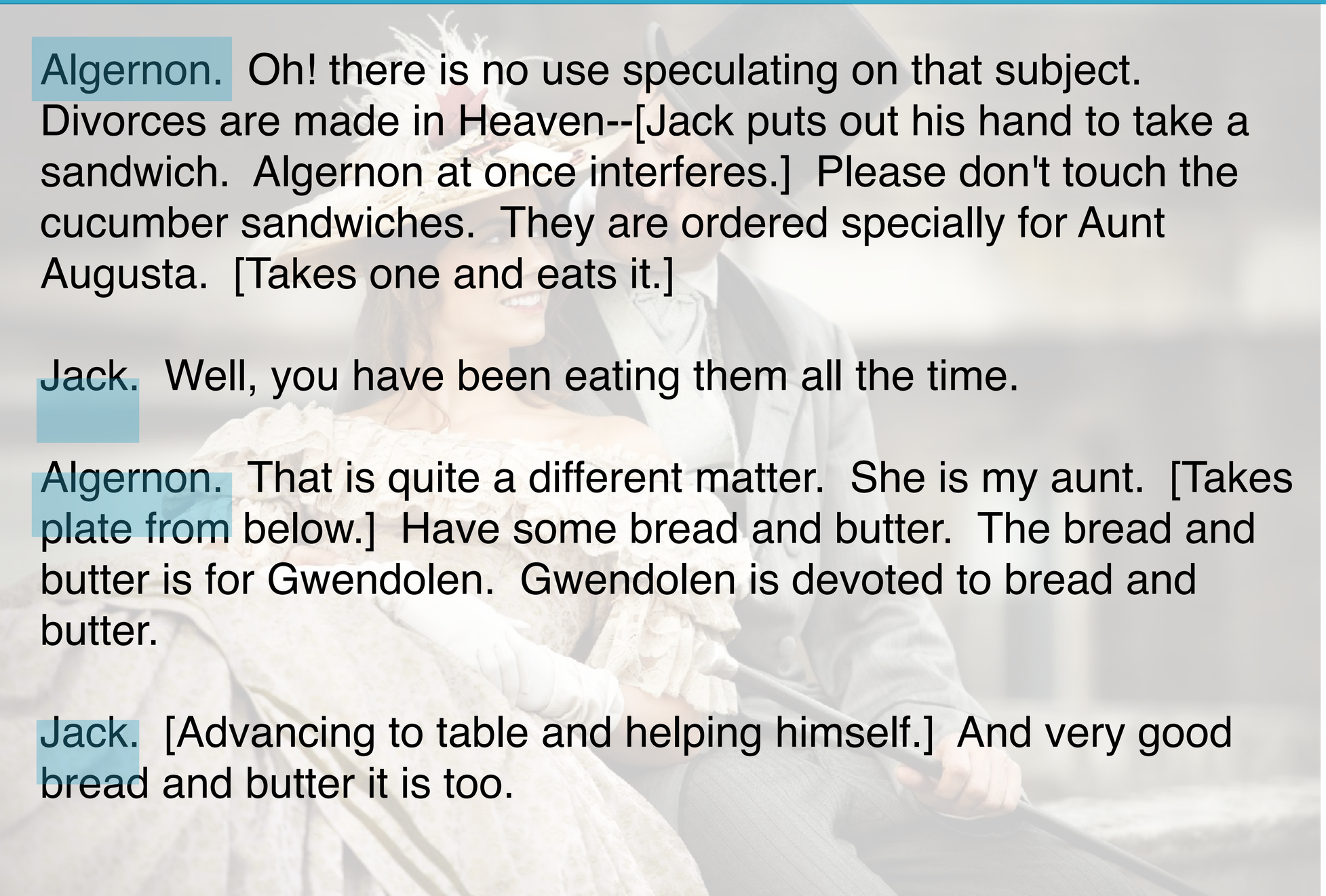

"TTAAGGAACGATCGTACGCATGATAGGGTTTTGCA
GTGATATTAGTGTCTCGGTTGACTGGATCTCATCAA
TAGTCTGGATTTTGTTGATAAGTACCTGCTGCAATG
CATCAATGGATTTACACATCACTTTAATAAATATGCT
GTAGTGGCCAGTGGTGTAATAGGCCTCAACCACTT
CTTCTAAGCTTTCCAATTTTTTCAAGGCGGAAGGGT
AATCTTTGGCACTTTTCAAGATTATGCCAATAAAGC
AGCAAACGTCGTAACCCAGTTGTTTTGGGTTAACG
TGTACACAAGCTGCGGTAATGATCCCTGCTTGCCG
CATCTTTTCTACTCTTACATGAATAGTTCCGGGGCT
AACAGCGAGGTTTTTGGCTAATTCAGCATAGGGTG
TGCGTGCATTTTCCATTAATGCTTTCAGGATGCTGC
GATCGAGATTATCGATCTGATAAATTTCACTCAT"

"62 YO F PT TRIPPED ON SHOELACE FALLING DOWN STAIRS HURTING RIBS,HIP DX CONTUSION RIBS"

62 year old female

```
[1] "Call me at 555-555-0191"
[2] "123 Main St"
[3] "(555) 555 0191"
[4] "Phone: 555.555.0191 Mobile: 555.555.0192"
```

```
[1] "Call me at XXX-XXX-XXXX"
[2] "XXX Main St"
[3] "(XXX) XXX XXXX"
[4] "Phone: XXX.XXX.XXXX Mobile: XXX.XXX.XXXX"
```



Algernon. Oh! there is no use speculating on that subject. Divorces are made in Heaven--[Jack puts out his hand to take a sandwich. Algernon at once interferes.] Please don't touch the cucumber sandwiches. They are ordered specially for Aunt Augusta. [Takes one and eats it.]

Jack. Well, you have been eating them all the time.

Algernon. That is quite a different matter. She is my aunt. [Takes plate from below.] Have some bread and butter. The bread and butter is for Gwendolen. Gwendolen is devoted to bread and butter.

Jack. [Advancing to table and helping himself.] And very good bread and butter it is too.

Chapter 1

- How to enter strings
- How to control numbers as strings
- Combine strings into sentences and tables

Entering strings

```
> "hi!"
[1] "hi!"
```

Entering strings

```
> "hi!"
[1] "hi!"

> # I said "hi!"
> "I said "hi!""
Error: unexpected symbol in ""I say "hi"
```

Entering strings

```
> "hi!"
[1] "hi!"

> # I said "hi!"
> "I said "hi!""
Error: unexpected symbol in ""I say "hi"

> 'I said "hi!"'
[1] "I said \"hi!\""
```

A single quote

An escape sequence

Entering strings

```
> "hi!"
[1] "hi!"

> # I said "hi!"
> "I said "hi!""
Error: unexpected symbol in ""I say "hi"

> 'I said "hi!"'
[1] "I said \"hi!\""



> "I said \"hi!\""
[1] "I said \"hi!\""
```

An escaped double quote

When to use " vs. '

```
> "hi!"
[1] "hi!"
```

No quotes in the string, use double quotes

When to use " vs. '

```
> "hi!"
[1] "hi!"
```

No quotes in the string, use double quotes

```
> 'I said "hi!"'
[1] "I said \"hi!\""
```

Doubles quotes in the string, use single quotes

When to use " vs. '

```
> "hi!"
[1] "hi!"
```

No quotes in the string, use double quotes

```
> 'I said "hi!"'
[1] "I said \"hi!\""
```

Doubles quotes in the string, use single quotes

```
> "I'd say \"hi!\""
[1] "I'd say \"hi!\""
```

Doubles and single quotes in the string, use double quotes

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Let’s practice!

STRING MANIPULATION WITH STRINGR

Turning numbers into strings

Turning a number into a string

```
> estimate <- 1.34019029100

> as.character(estimate)
[1] "1.340190291"

> format(estimate, digits = 3)
[1] "1.34"

> formatC(estimate, format = "f", digits = 2)
[1] "1.34"
```

$1.34

Fixed and scientific formats

- Fixed: decimal point between ones and tenths
- Scientific: decimal point after first digit

6371 km

6371.0

6.371×10^3

Fixed and scientific formats

1989000000000000000000000000000 kg ⟶ 1.989×10^{30}

0.000000000008 kg ⟶ 8×10^{-12} kg

```
> 1989000000000000000000000000000
[1] 1.989e+30


> 0.000000000008
[1] 8e-12
```

format() and formatC()

```
> x <- c(1989000000000000000000000000000, 0.000000000008)

> format(x, scientific = TRUE)
[1] "1.989e+30" "8.000e-12"

> format(x, scientific = FALSE)
[1] "1988999999999999901909255192576.000000000000"
[2] "                              0.000000000008"

> formatC(x, format = "f")
[1] "1988999999999999901909255192576.0000"
[2] "0.0000"

> formatC(x, format = "e")
[1] "1.9890e+30" "8.0000e-12"

> formatC(x, format = "g")
[1] "1.989e+30" "8e-12"
```

STRING MANIPULATION WITH STRINGR

Let’s practice!

STRING MANIPULATION WITH STRINGR

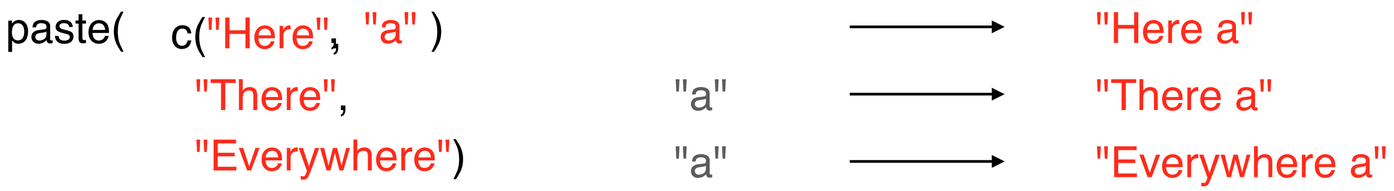
Putting strings together

paste()

```
> paste("E", "I", "E", "I", "O")
[1] "E I E I O"

> paste("E", "I", "E", "I", "O", sep = "-")
[1] "E-I-E-I-O"

> paste(c("Here", "There", "Everywhere"), "a")
[1] "Here a"       "There a"      "Everywhere a"
```



paste()

```
> animal_goes <- "moo"
```

paste()

```
> animal_goes <- "moo"

> paste(c("Here", "There", "Everywhere"), "a", animal_goes)
[1] "Here a moo"       "There a moo"      "Everywhere a moo"
```

paste()

```
> animal_goes <- "moo"

> paste(c("Here", "There", "Everywhere"), "a", animal_goes)
[1] "Here a moo"       "There a moo"      "Everywhere a moo"


> paste(c("Here", "There", "Everywhere"), "a", animal_goes,
        collapse = ", ")
[1] "Here a moo, There a moo, Everywhere a moo"
```

paste()

```
> animal_goes <- "moo"

> paste(c("Here", "There", "Everywhere"), "a", animal_goes)
[1] "Here a moo"       "There a moo"      "Everywhere a moo"

> paste(c("Here", "There", "Everywhere"), "a", animal_goes,
        collapse = ", ")
[1] "Here a moo, There a moo, Everywhere a moo"


> paste(c("Here", "There", "Everywhere"), "a",
        c(animal_goes, animal_goes,
          paste(rep(animal_goes, 2), collapse = "-")),
        collapse = ", ")
[1] "Here a moo, There a moo, Everywhere a moo-moo"
```

paste()

```
> old_mac <- function(animal, animal_goes){
    eieio <- paste("E", "I", "E", "I", "O", sep = "-")
    old_mac <- "Old MacDonald had a farm"
    writeLines(c(
      old_mac,
      eieio,
      paste("And on his farm he had a", animal),
      eieio,
      paste(c("Here", "There", "Everywhere"), "a",
        c(animal_goes, animal_goes,
          paste(rep(animal_goes, 2), collapse = "-")),
        collapse = ", "),
      old_mac,
      eieio))
  }
```

```
> old_mac("cow", "moo")
Old MacDonald had a farm
E-I-E-I-O
And on his farm he had a cow
E-I-E-I-O
Here a moo, There a moo, Everywhere a moo-moo
Old MacDonald had a farm
E-I-E-I-O
```

```
> old_mac("cow", "moo")
Old MacDonald had a farm
E-I-E-I-O
And on his farm he had a cow
E-I-E-I-O
Here a moo, There a moo, Everywhere a moo-moo
Old MacDonald had a farm
E-I-E-I-O


> old_mac("dog", "woof")
Old MacDonald had a farm
E-I-E-I-O
And on his farm he had a dog
E-I-E-I-O
Here a woof, There a woof, Everywhere a woof-woof
Old MacDonald had a farm
E-I-E-I-O
```

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