
Bianca Ackermann - Unsplash

# Regex
# (puzzle time!)

Adapted from materials from Dr. Carrier

# Recall…

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Questions:

How many pokemon are Steel type?

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How many pokemon are Steel type?

How many pokemon are Steel *and* Psychic type?

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How many pokemon are Steel *or* Psychic type?

# Advanced searching

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Regular expression (regex)

- Defines a ***set*** of strings
- Basic strings can represent themselves
  - e.g., `dog` is just the string dog
- However, we also have *special* characters
  - These allow us to match multiple strings

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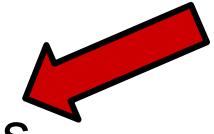

Applies to item directly to the left of the +

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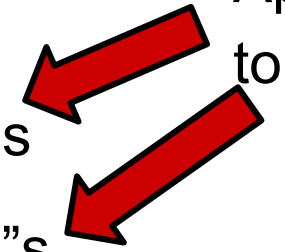

Applies to item directly to the left of the + or *

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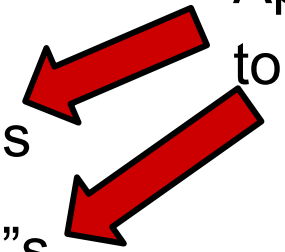

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What does `lo+l` match?

# The basics

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What does `lo+l` match?

Where does this differ from `lo*l`?

# More basics

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Which ones of these wouldn’t match? Why?

“ab” “abab” “” “ba” “ababababab” “aba” “aab”

# A common character

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cat file_*
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```
file_.*
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# Applying restrictions

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How do `(ab)+` and `[ab]+` differ?

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Note we can also use tr-like character classes:

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[[:digit:]] [a-z]
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Two sets of `[]`
Outer: This is a character class
Inner + colons: We are use a tr-style set

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`[[:digit:]] [a-z]`

We can also invert them: `[^[:digit:]] [^0]`

# Matching the forbidden characters

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```
foo\.txt
```

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```
Steel|Psychic
```

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a dog|cat
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Matches “a dog” or “cat”. Does not match “a cat”

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Matches “a dog” or “cat”. Does not match “a cat”
The | operator is greedy. Bound it with parens:

```
a (dog|cat)
```

# More counts

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`a{n,m}` matches between n and m “a”s

# Final characters

^a matches “a”s at the beginning of the line

a$ matches “a”s at the end of the line

# Some examples

What do these match?

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```
The (dog|cat) ra+n away$
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^bee+s*
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^bee+s*
[Ll][ol]{2}[ol]*
```

# Some examples

Create a regex to:

Match “ab” “aba” “abb” “abba” “abab” “abbb” “abaa”
and nothing else

# Order of operations

| | ERE Precedence (from high to low) | |
|---|---|---|
| 1 | Collation-related bracket symbols | [==] [::] [..] |
| 2 | Escaped characters | \<special character> |
| 3 | Bracket expression | [] |
| 4 | Grouping | () |
| 5 | Single-character-ERE duplication | * + ? {m,n} |
| 6 | Concatenation | |
| 7 | Anchoring | ^ $ |
| 8 | Alternation | \| |

Table from POSIX docs, formatting from StackOverflow

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You can use them with `grep` with `-E`:

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grep -E “ab[ab]{2}” file.txt
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Note that other commands use /pattern/ to denote regex!