**Regular expressions**

A regular expression is a sequence of characters that forms a search pattern. When you search for data in a text, you can use this search pattern to describe what you are searching for.

# Patterns

Brackets are used to find a range of characters:

|  |  |
| --- | --- |
| Expression | Description |
| [abc] | Find any of the characters between the brackets |
| [0-9] | Find any of the digits between the brackets |
| (x|y) | Find any of the alternatives separated with | |

**Metacharacters** are characters with a special meaning:

|  |  |
| --- | --- |
| Metacharacter | Description |
| . | Any Character Except New Line |
| \d | Digit (0-9) |
| \D | Not a Digit (0-9) |
| \w | Word Character (a-z, A-Z, 0-9, \_) |
| \W | Not a Word Character |
| \s | Whitespace (space, tab, newline) |
| \S | Not Whitespace (space, tab, newline) |
|  |  |
| \b | Word Boundary |
| \B | Not a Word Boundary |
| ^ | Beginning of a String |
| $ | End of a String |
|  |  |
| [] | Matches Characters in brackets ([abd] will look for one of the 3, [0-9] is like \d) |
| [^ ] | Matches Characters NOT in brackets |
| | | Either Or |
| ( ) | Group |

# Quantifiers

**Quantifiers** define quantities, they are placed after character or metacharacter:

|  |  |
| --- | --- |
| Quantifier | Description |
| \* | 0 or More |
| + | 1 or More |
| ? | 0 or One |
| {3} | Exact Number |
| {3,4} | Range of Numbers (Minimum, Maximum) |

# Examples

* Let’s create a pattern to include all of the following phone number

321-555-4321

123.555.1234

* Let’s only use meta characters:

\d\d\d[-.]\d\d\d[-.]\d\d\d\d

* Now let’s also use some quantifiers:

\d{3}[-.]\d{3}[-.]\d{4}

* Let’s construct a pattern to match all of the following names

1. Mr. Schafer
2. Mr Smith
3. Ms Davis
4. Mrs. Robinson
5. Mr. T

M(r|s|rs)\.?\s[A-Z]\w\*

1. CoreyMSchafer@gmail.com
2. corey.schafer@university.edu
3. [corey-321-schafer@my-work.net](mailto:corey-321-schafer@my-work.net)

[a-zA-Z0-9\_.+-]+@[a-zA-Z0-9-]+\.[a-zA-Z0-9-.]+