Security

Validation and sanitisation

Input Validation

- In a web app, validation should be carried out on every form element to guarantee that the input is correct.
- Processing incorrect input values can make your application give unpredictable results.
- Risks include
  - SQL Injection
  - Cross-site scripting
  - Buffer overflows
  - Leakage of site internal design through error messages
- Validation for security should always be carried out on the **server** side
  - HTML form attributes and JavaScript validation can be an aid to users but are useless for security

Validation in Hapi

- Modern frameworks have extensive features to support data validation and sanitisation.
- e.g.
  - **joi** for input validation
  - **disinfect** for sanitisation

Regular Expressions

- `Joi.string().regex()` checks the value provided is a string matching a particular **regular expression**
- Example

```
Joi.string().regex(/^[a-zA-Z0-9]{3,}$/)
```

[ ]	specifies alternative options
+	indicates one or more

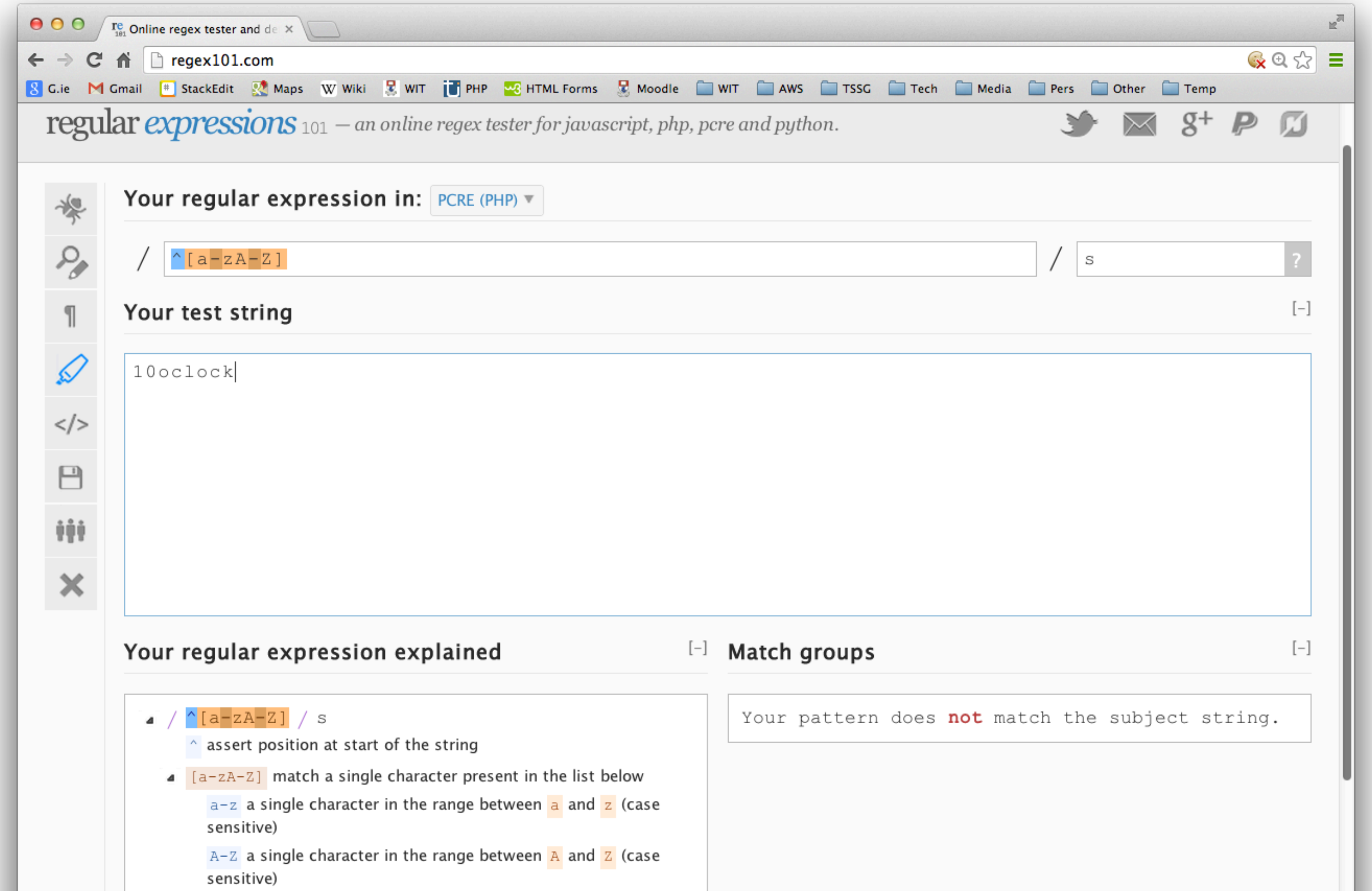
This pattern checks if the input string has a minimum of 3 characters and only contains alphanumeric characters.

Regular Expressions

- A **regular expression (regex)** is a sequence of characters that specify a pattern to be matched.
- Very powerful concept as many computing applications involve pattern matching – for example:
    - Search engines
    - Natural (human language processing)
    - Intrusion detection
    - Computer forensics
    - Intelligence gathering (e.g. NSA…)
- A full treatment of regular expressions is beyond the scope of this module
    - Several textbooks just on regular expressions + many online resources

Regular Expressions

- A useful online regex tester: http://regex101.com/ (others exists as well)


Online regex tester and de
regex101.com
G.ie
Gmail
StackEdit
Maps
Wiki
WIT
PHP
HTML Forms
Moodle
WIT
AWS
TSSG
Tech
Media
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Other
Temp
regular expressions 101 — an online regex tester for javascript, php, pcre and python.

Your regular expression in: PCRE (PHP)

/ `^[a-zA-Z]` / s

Your test string

```
10oclock
```

Your regular expression explained

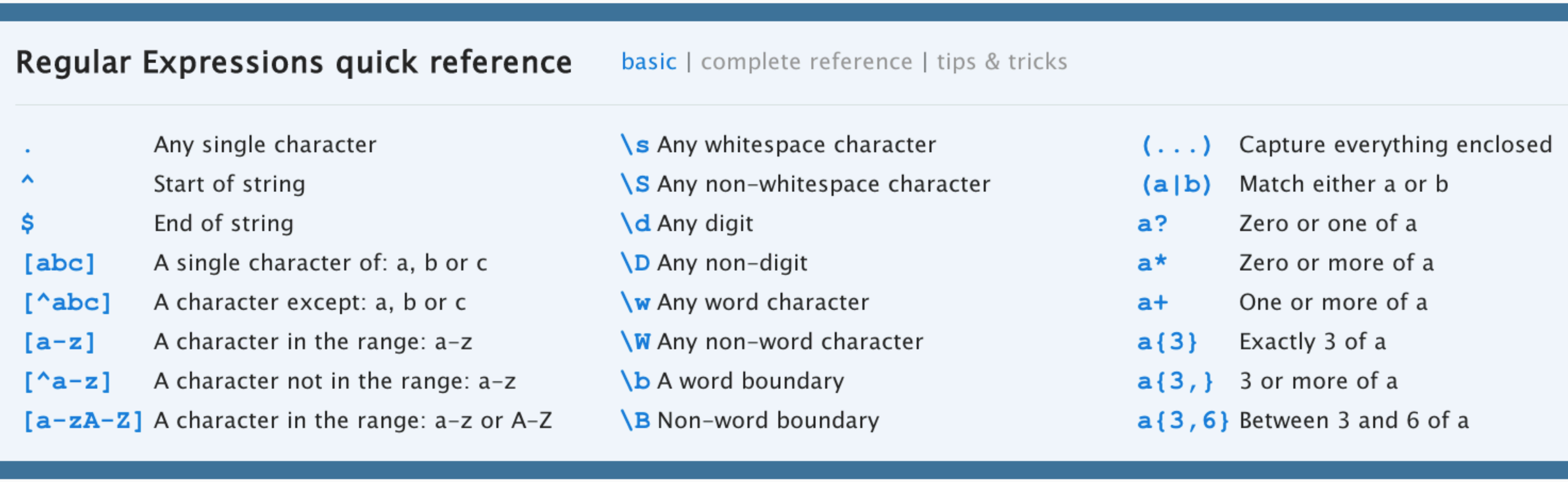
```
/ ^[a-zA-Z] / s
```

- `^` assert position at start of the string
- `[a-zA-Z]` match a single character present in the list below
  - `a-z` a single character in the range between `a` and `z` (case sensitive)
  - `A-Z` a single character in the range between `A` and `Z` (case sensitive)

Match groups

```
Your pattern does not match the subject string.
```

RegEx Quick Reference



Regular Expressions quick reference basic | complete reference | tips & tricks

`.`	Any single character	`\s`	Any whitespace character	`(...)`	Capture everything enclosed
`^`	Start of string	`\S`	Any non-whitespace character	`(a|b)`	Match either a or b
`$`	End of string	`\d`	Any digit	`a?`	Zero or one of a
`[abc]`	A single character of: a, b or c	`\D`	Any non-digit	`a*`	Zero or more of a
`[^abc]`	A character except: a, b or c	`\w`	Any word character	`a+`	One or more of a
`[a-z]`	A character in the range: a-z	`\W`	Any non-word character	`a{3}`	Exactly 3 of a
`[^a-z]`	A character not in the range: a-z	`\b`	A word boundary	`a{3,}`	3 or more of a
`[a-zA-Z]`	A character in the range: a-z or A-Z	`\B`	Non-word boundary	`a{3,6}`	Between 3 and 6 of a

disinfect

- Can be based on route query, payload, and params
- Options:
  - **deleteEmpty** - remove empty query or payload keys.
  - **deleteWhitespace** - remove whitespace query, payload, or params keys.
  - **disinfectQuery** - sanitize query strings.
  - **disinfectParams** - sanitize url params.
  - **disinfectPayload** - sanitize payload.
  - **genericSanitizer** - custom synchronous function to do the sanitization of query, payload, and params.
  - **querySanitizer** - custom synchronous function to do the sanitization of query strings.
  - **paramsSanitizer** - custom synchronous function to do the sanitization of url params.
  - **payloadSanitizer** - custom synchronous function to do the sanitization of payload.