

# Query Strings

# Query String

- Allow users to send information in the URL
- Common Application:
  - User types a query in a search engine
  - Their query is sent in the URL as a query string

# URL Recall

Protocol://host:port/path?query\_string#fragment

- Query String - [Optional] Contains key-value pairs set by the client
- <https://www.google.com/search?q=web+development>
  - HTTPS request to Google search for the phrase "web development"
- <https://duckduckgo.com/?q=web+development&ia=images>
  - An HTTPS request to Duck Duck Go image search for the phrase "web development"
- Fragment - [Optional] Specifies a single value commonly used for navigation
- [https://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier](https://en.wikipedia.org/wiki/Uniform_Resource_Identifier)
  - HTTPS Request for the URI Wikipedia page
- [https://en.wikipedia.org/wiki/Uniform\\_Resource\\_Identifier#Definition](https://en.wikipedia.org/wiki/Uniform_Resource_Identifier#Definition)
  - HTTPS Request for the URI Wikipedia page that will scroll to the definition of URI

# Query String Format

<https://duckduckgo.com/?q=web+development&ia=images>

- Preceded by a question mark - ?
- Consists of key-values pairs
  - Key and value separated by =
  - Pairs separated by &
- Can only contain ASCII characters
- Cannot contain white space

# Percent Encoding

- If a non-ASCII character is sent as part of a query string it must be percent encoded
- Specify byte values with a % followed by 2 hex bytes
- 한
  - %ed%95%9c
- " " <-- single space
  - %20

# White Space

- URLs cannot contain spaces
- Spaces can be percent encoded as %20
- Can also replace spaces with +
  - The reserved character + indicates a key mapping to multiple values

# Reserved Characters

- Some ASCII characters are reserved
  - Example: ? begins a query string
- Reserved characters must be % encoded
- Notable characters that are NOT reserved
  - Dash -
  - Dot .
  - Underscore \_
  - Tilda ~

**Reserved**

:	&
/	'
?	(
#	)
[	*
]	+
@	,
!	;
\$	=

# Live Demos