# elasticsearch
for developer

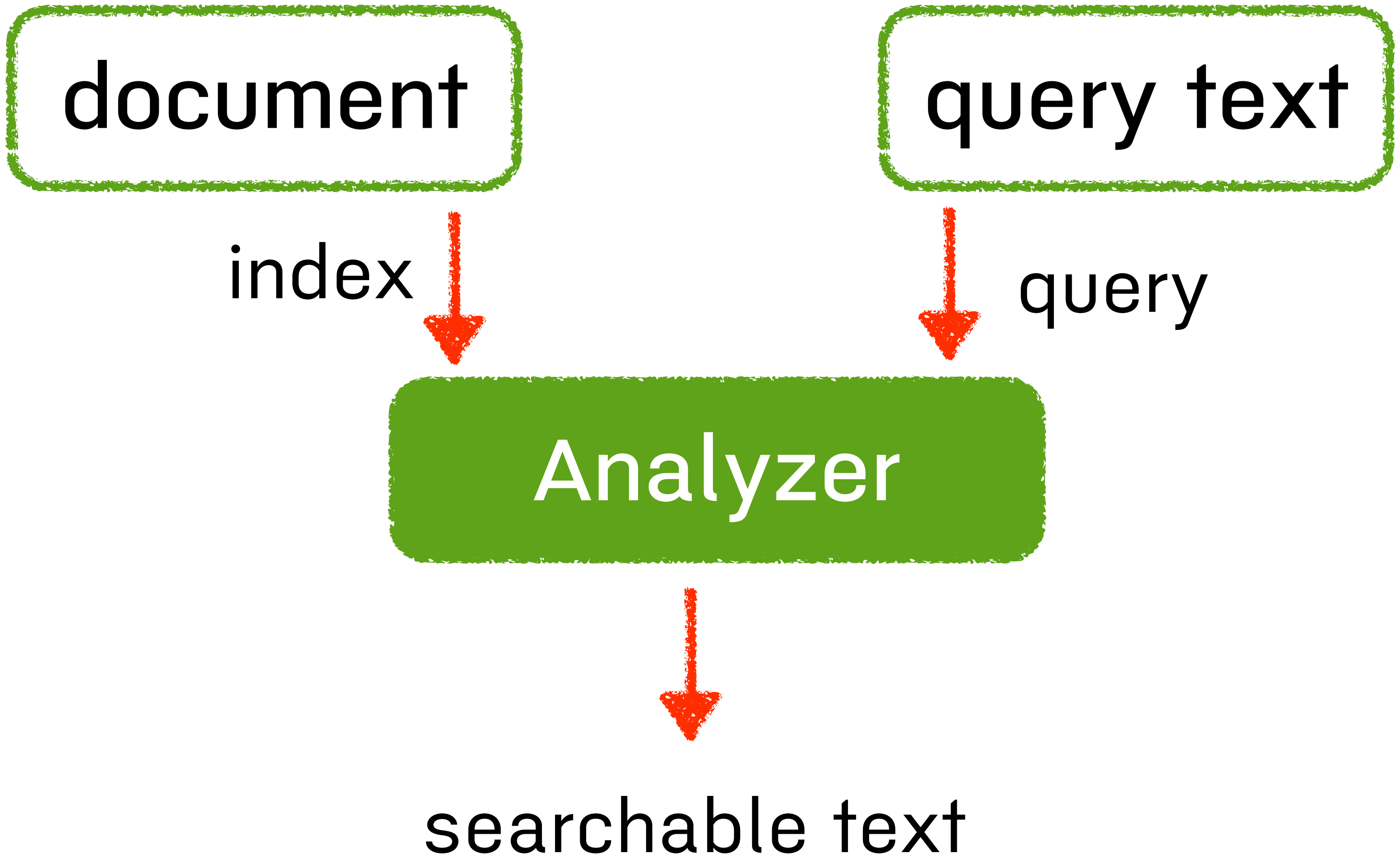
Analyzer

book_04.txt

SPRINT3R

Siam Chamnankit Co., Ltd., Odd-e (Thailand) Co., Ltd. and Alliance

Analyzer



Try to retrive data

```
GET /store/book/_search?q=2015
GET /store/book/_search?q=2015-01-15
GET /store/book/_search?q=published_date:2015-01-15
GET /store/book/_search?q=published_date:2015
```

Why ?

GET /store/book/_search?q=2015 3

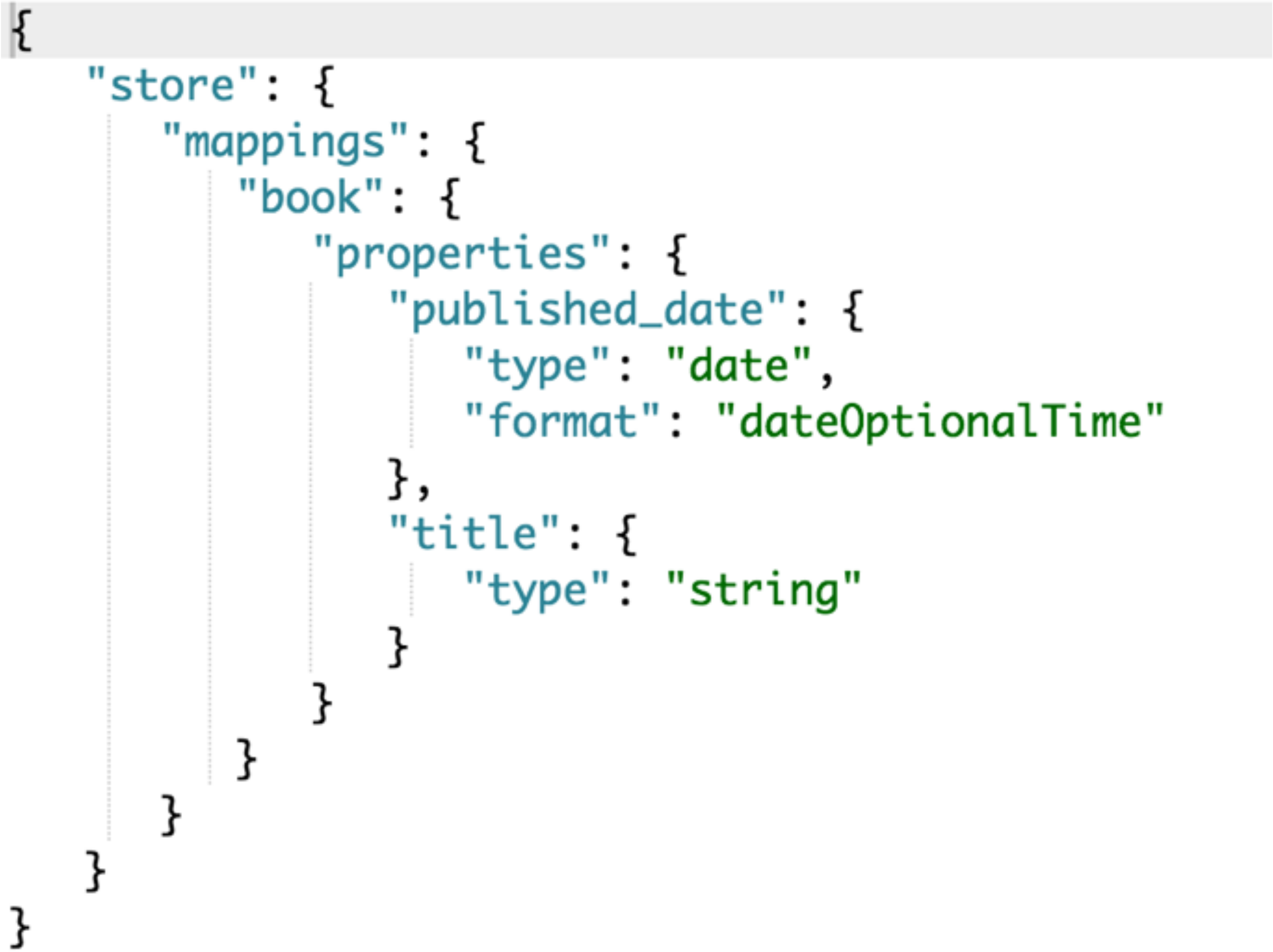
GET /store/book/_search?q=2015-01-15 3

GET /store/book/_search?q=published_date:2015-01-15 1

GET /store/book/_search?q=published_date:2015 0

Get mapping

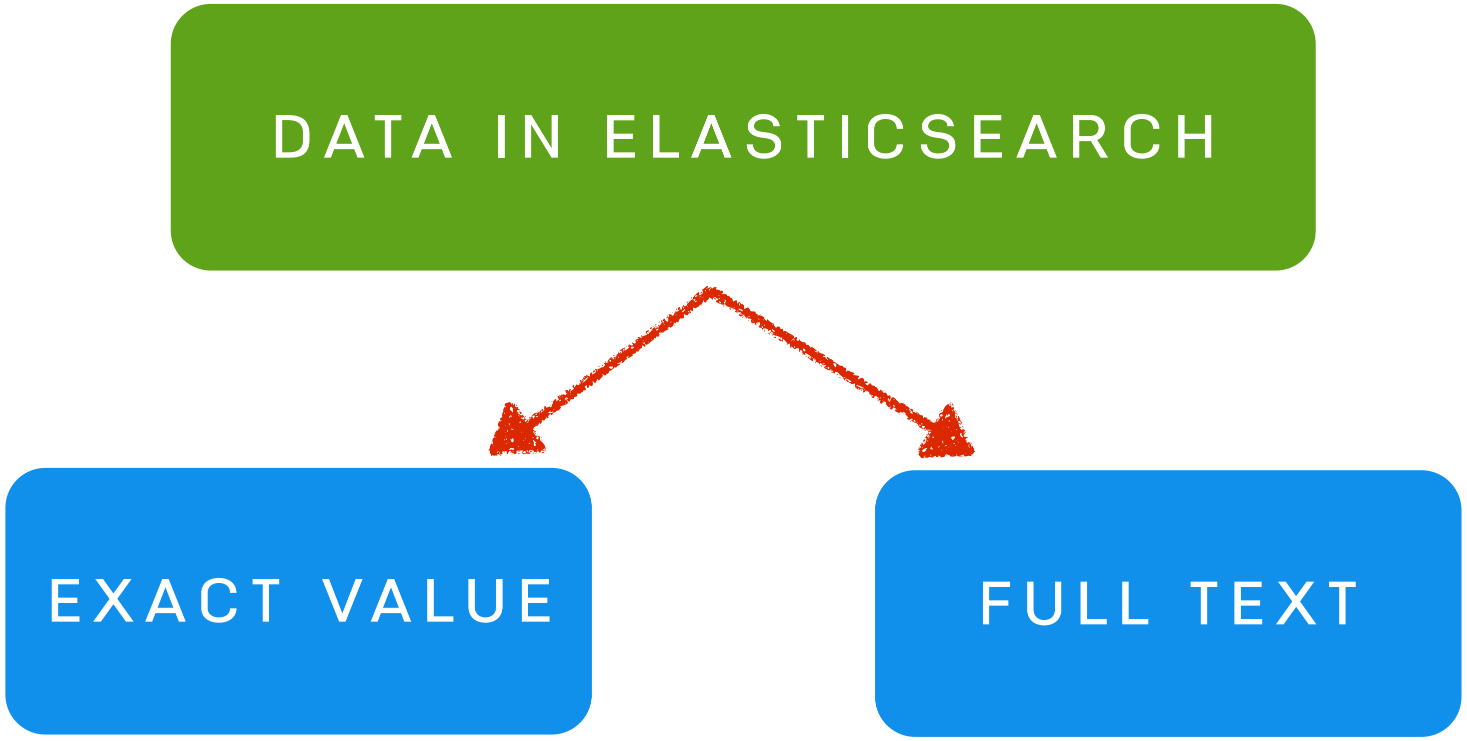
GET /store/_mapping/**book**



```
{
    "store": {
        "mappings": {
            "book": {
                "properties": {
                    "published_date": {
                        "type": "date",
                        "format": "dateOptionalTime"
                    },
                    "title": {
                        "type": "string"
                    }
                }
            }
        }
    }
}
```

Exact value vs Full text

คือเหตุผลที่เราควรแยก search engine ออกจาก database



DATA IN ELASTICSEARCH

EXACT VALUE

FULL TEXT

Exact value

“Foo” != “foo”

“2015” != “2015-01-15”

Full text

Human language

Natural language

Relevant with the query

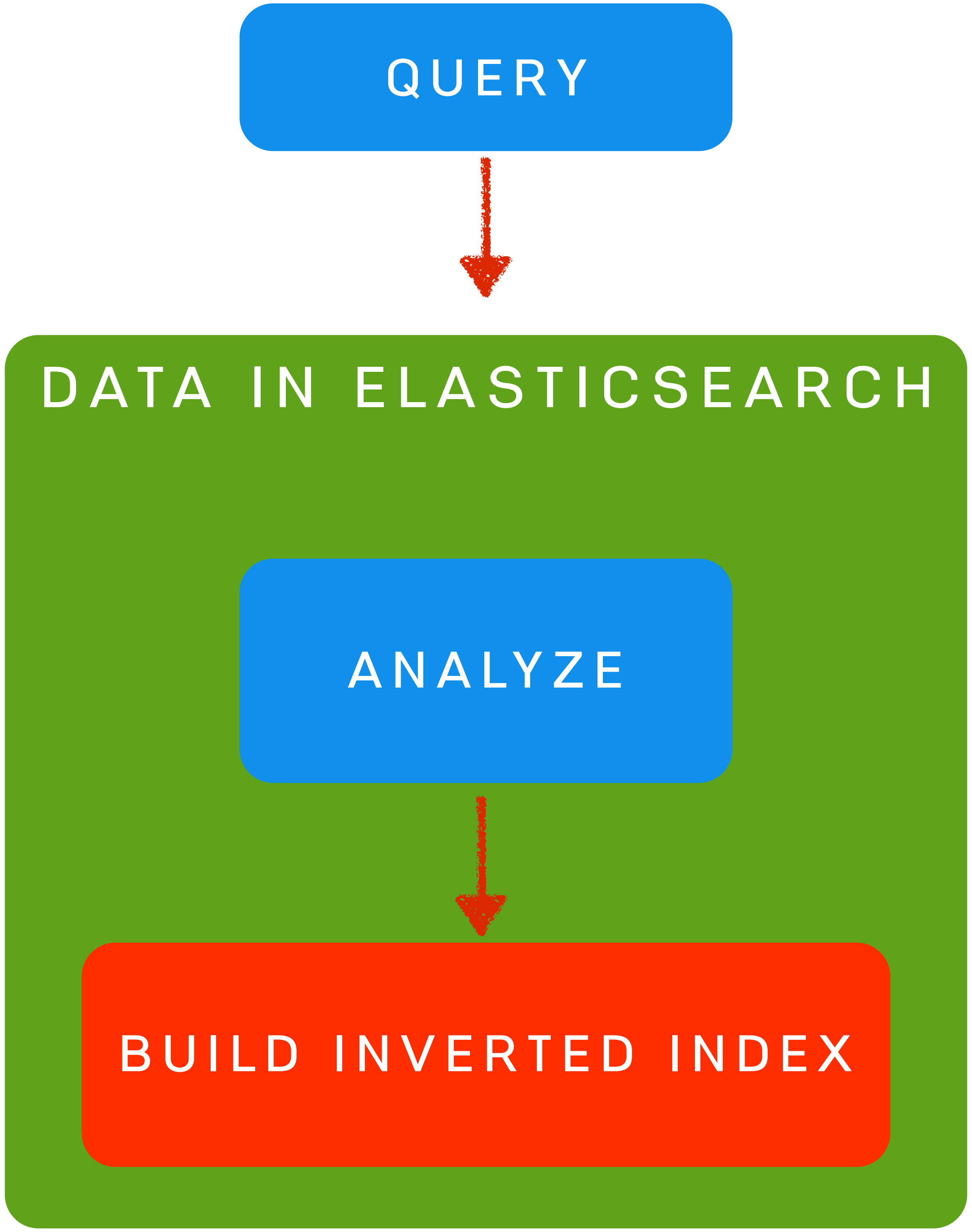
Full text

TH => Thailand

jump => jumped, jumps, jumping

search => Elasticsearch

How Elasticsearch Do ?



QUERY

DATA IN ELASTICSEARCH

ANALYZE

BUILD INVERTED INDEX

Inverted index

ออกแบบมาเพื่อ Fast full text search

THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG

Inverted index ?

Inverted index

1. The quick brown fox jumped over the lazy dog

2. Quick brown foxes leap over lazy dogs in summer

Term	Document 1	Document 2
Quick		X
the	X	
quick	X	
brown	X	X
fox	X	
foxes		X
jumped	X	
over	X	
the	X	

Inverted index

เมื่อค้นหาคำว่า quick brown

Term	Document 1	Document 2
quick	X	
brown	X	X
Total	**2**	**1**

ปัญหาของ Inverted index

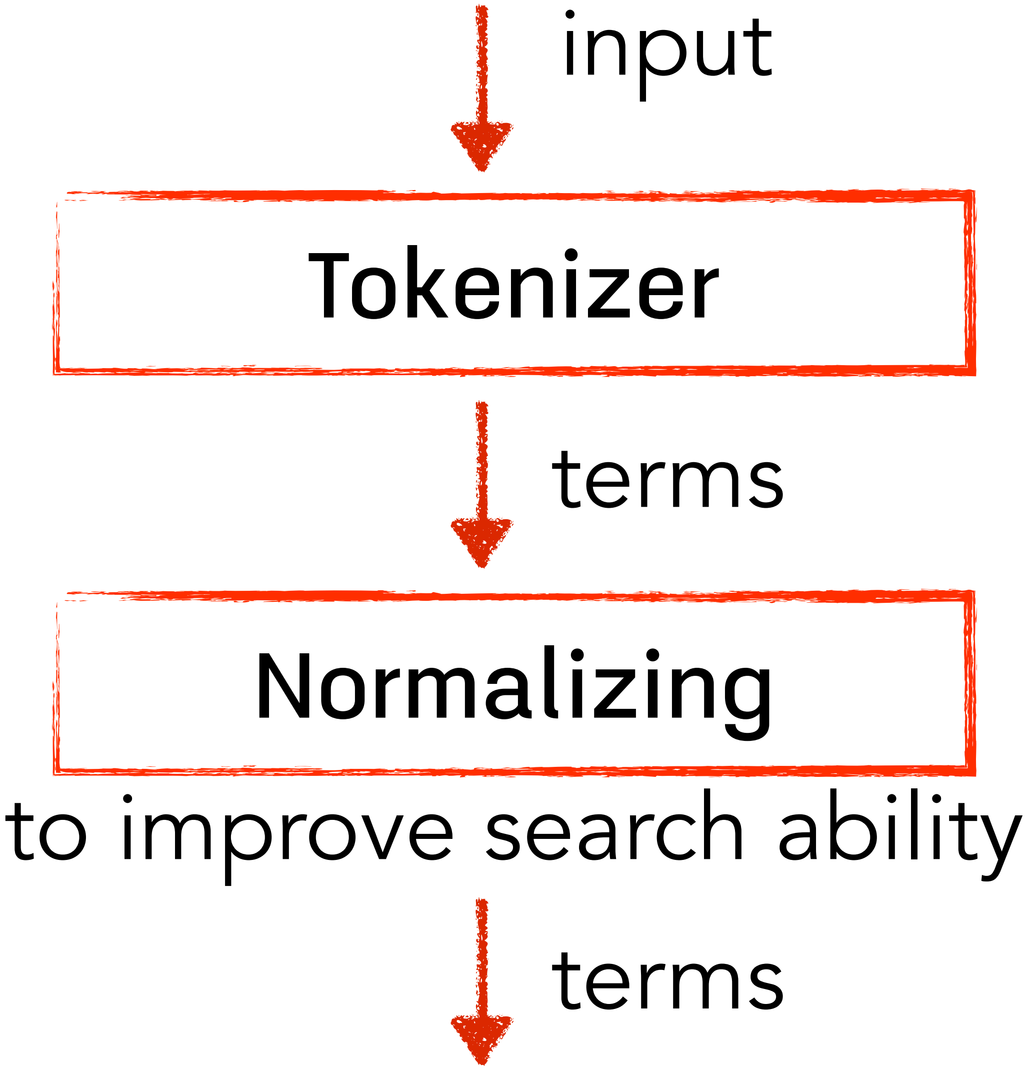
Term	Document 1	Document 2
Quick		X
quick	X	
brown	X	X
fox	X	
foxes		X
over	X	
jumped	X	
leap	X	

ข้อมูลถูกจัดการอย่างไร ?

การแบ่งคำ การจัดรูปแบบคำ การกรองข้อมูล

ANALYSIS PROCESS

Analysis process



input

Tokenizer

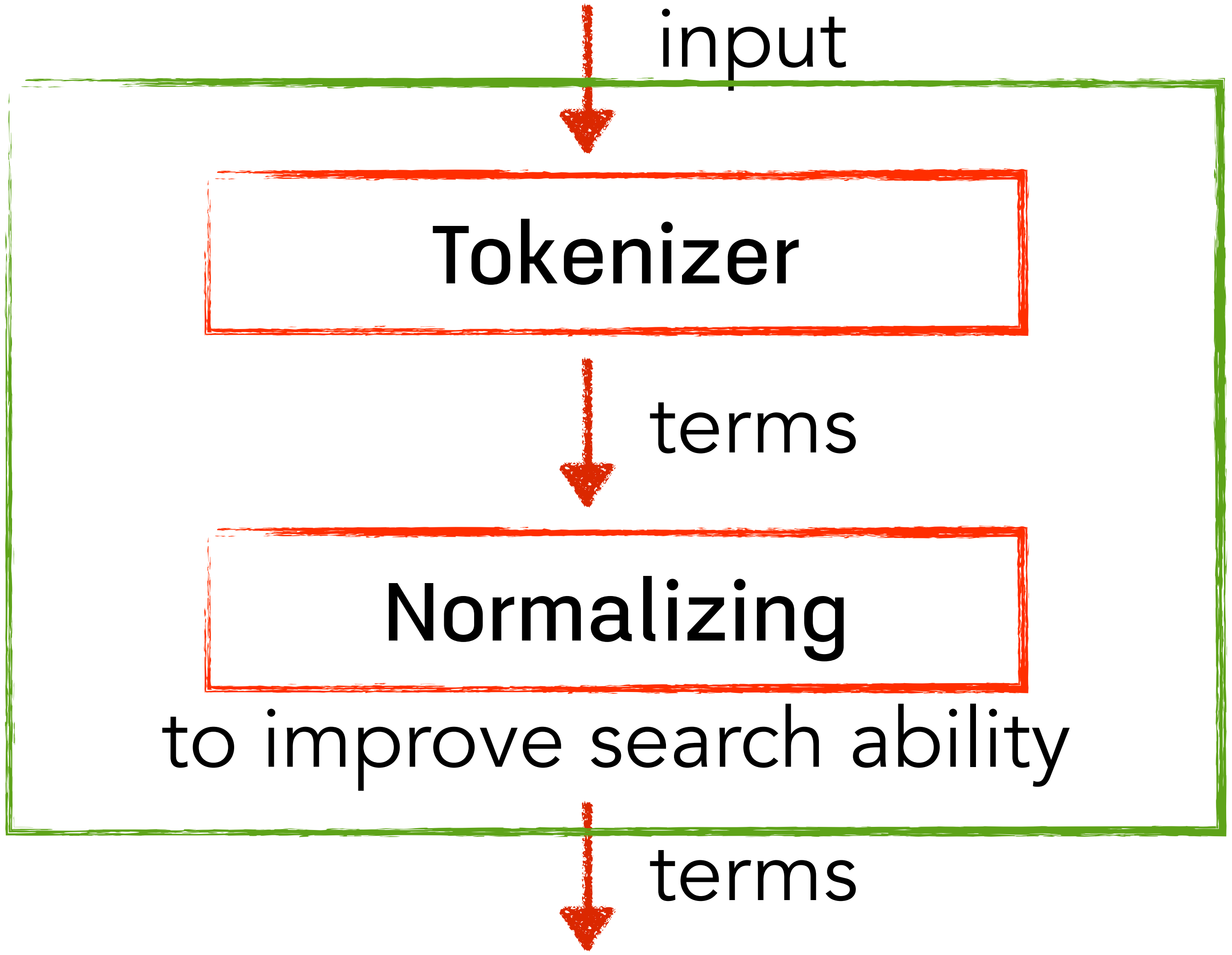
terms

Normalizing

to improve search ability

terms

Analyzer



input

Tokenizer

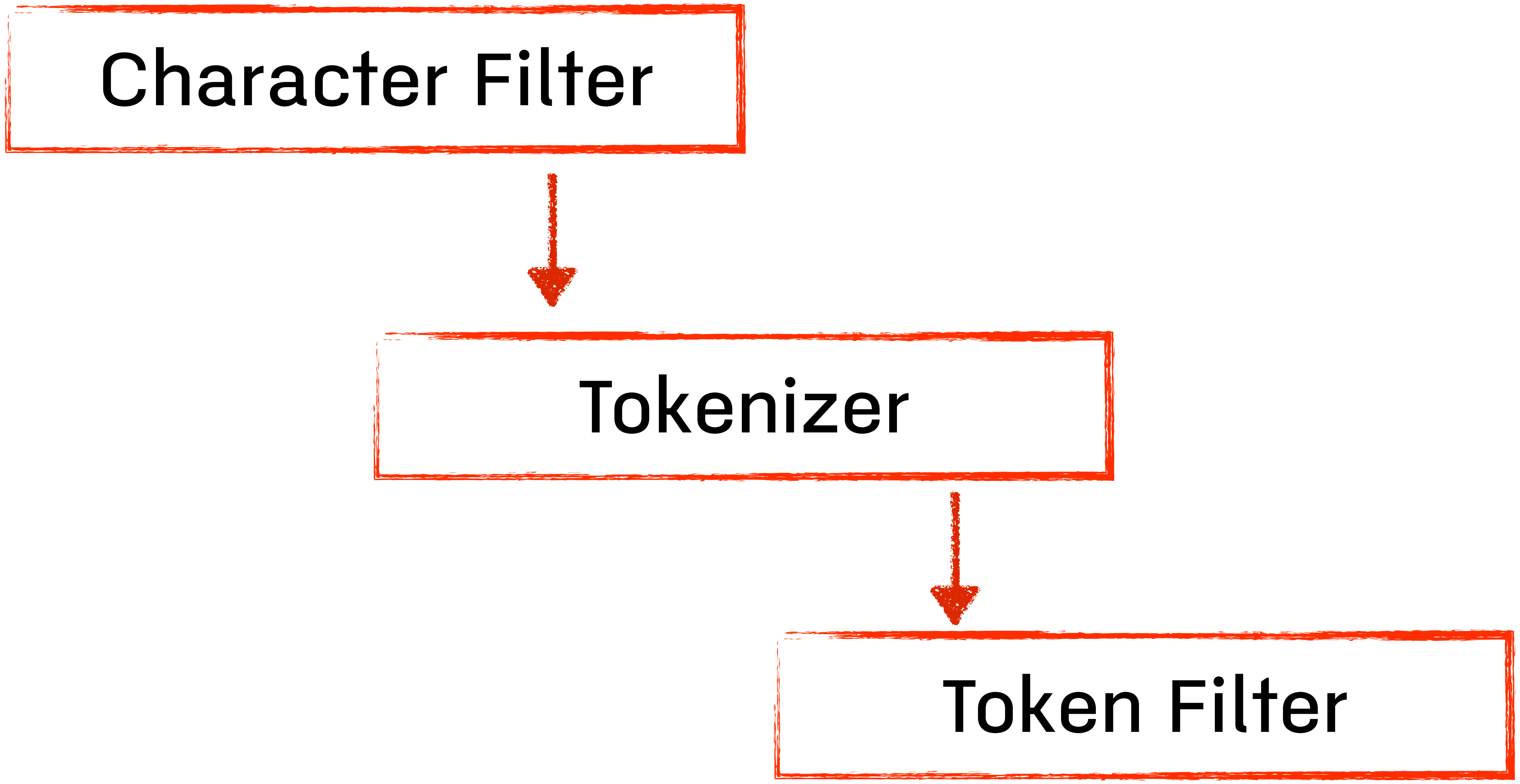
terms

Normalizing

to improve search ability

terms

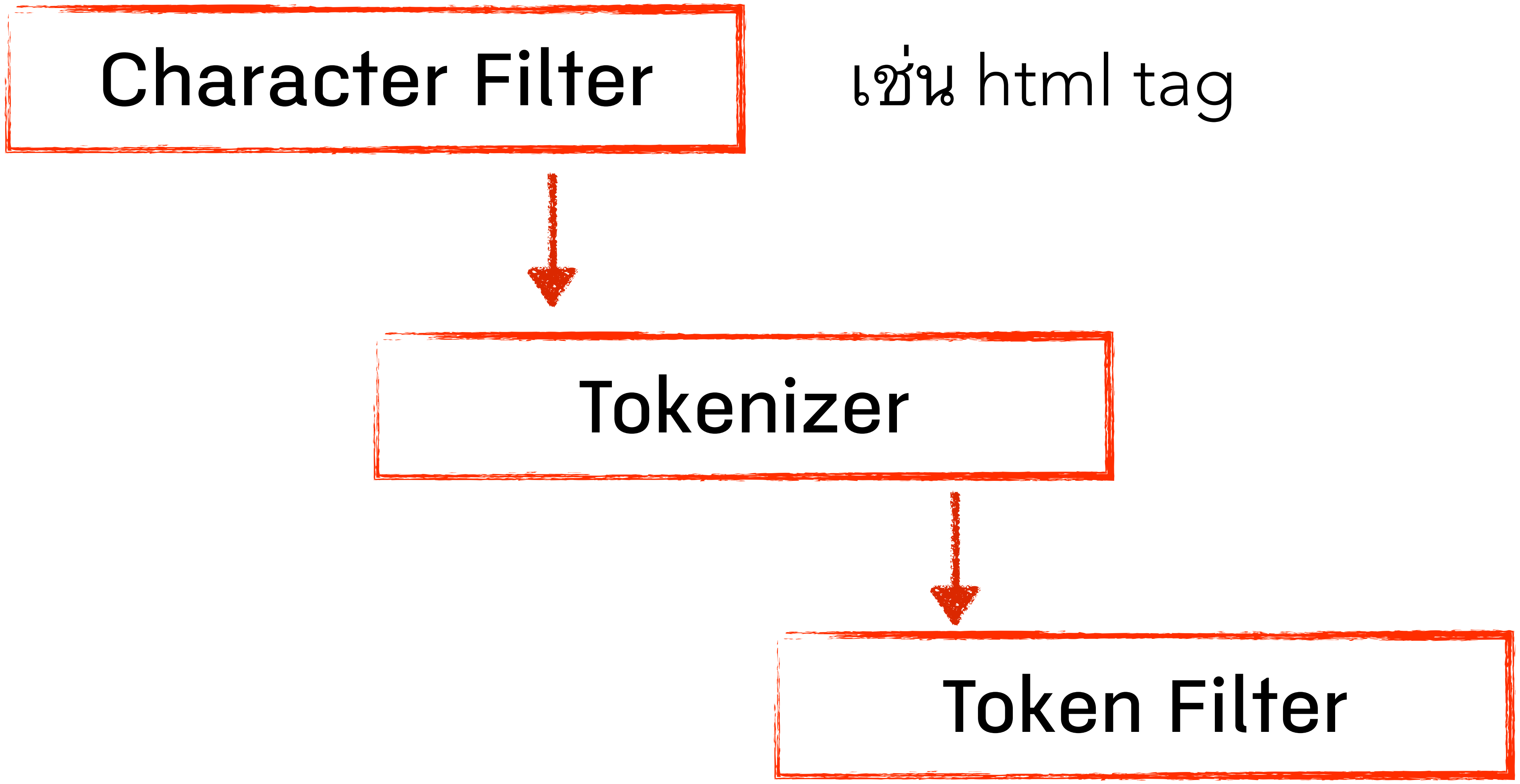
Analyzer


Character Filter

Tokenizer

Token Filter

Analyzer



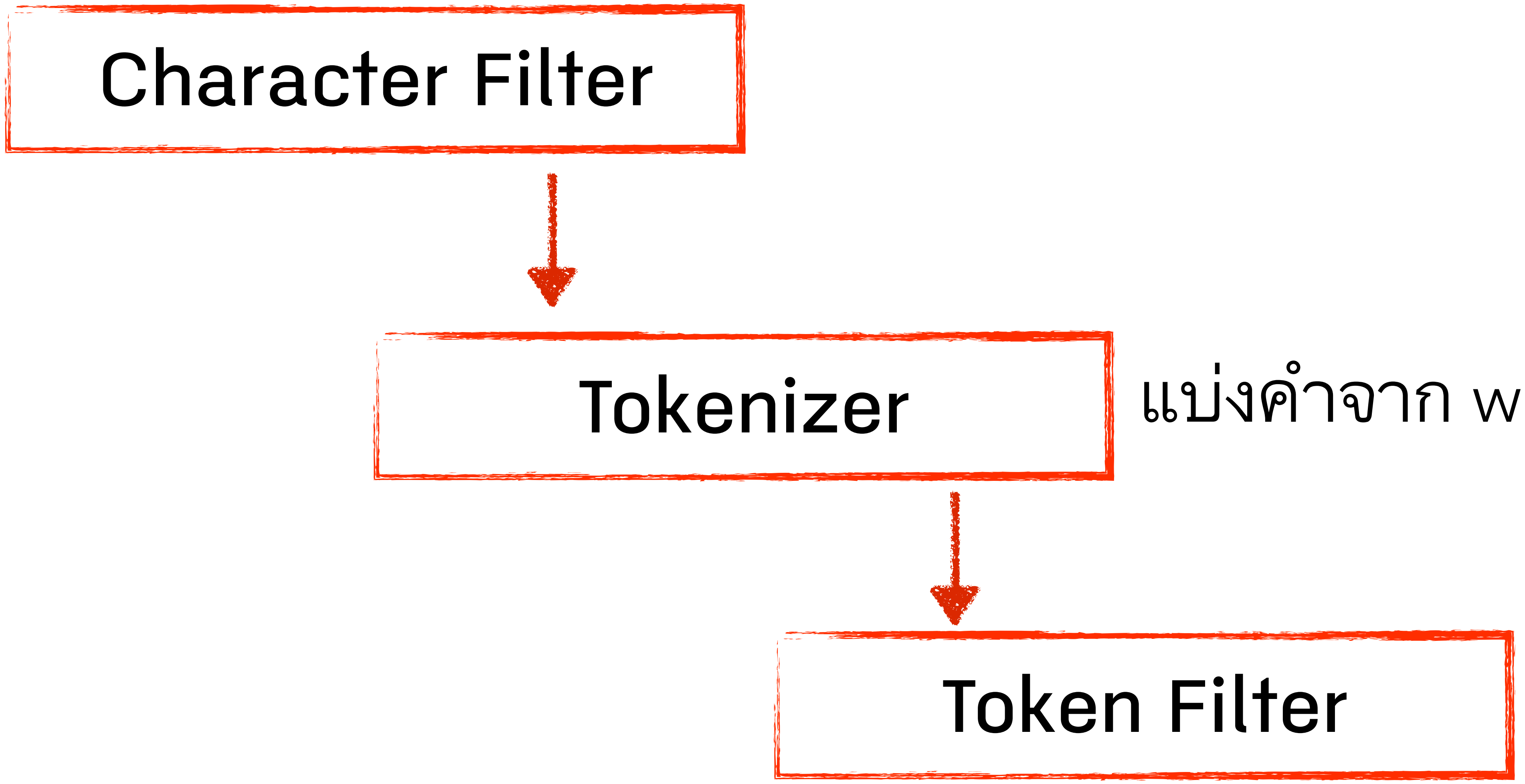
Character Filter

Tokenizer

Token Filter

เช่น html tag

Analyzer



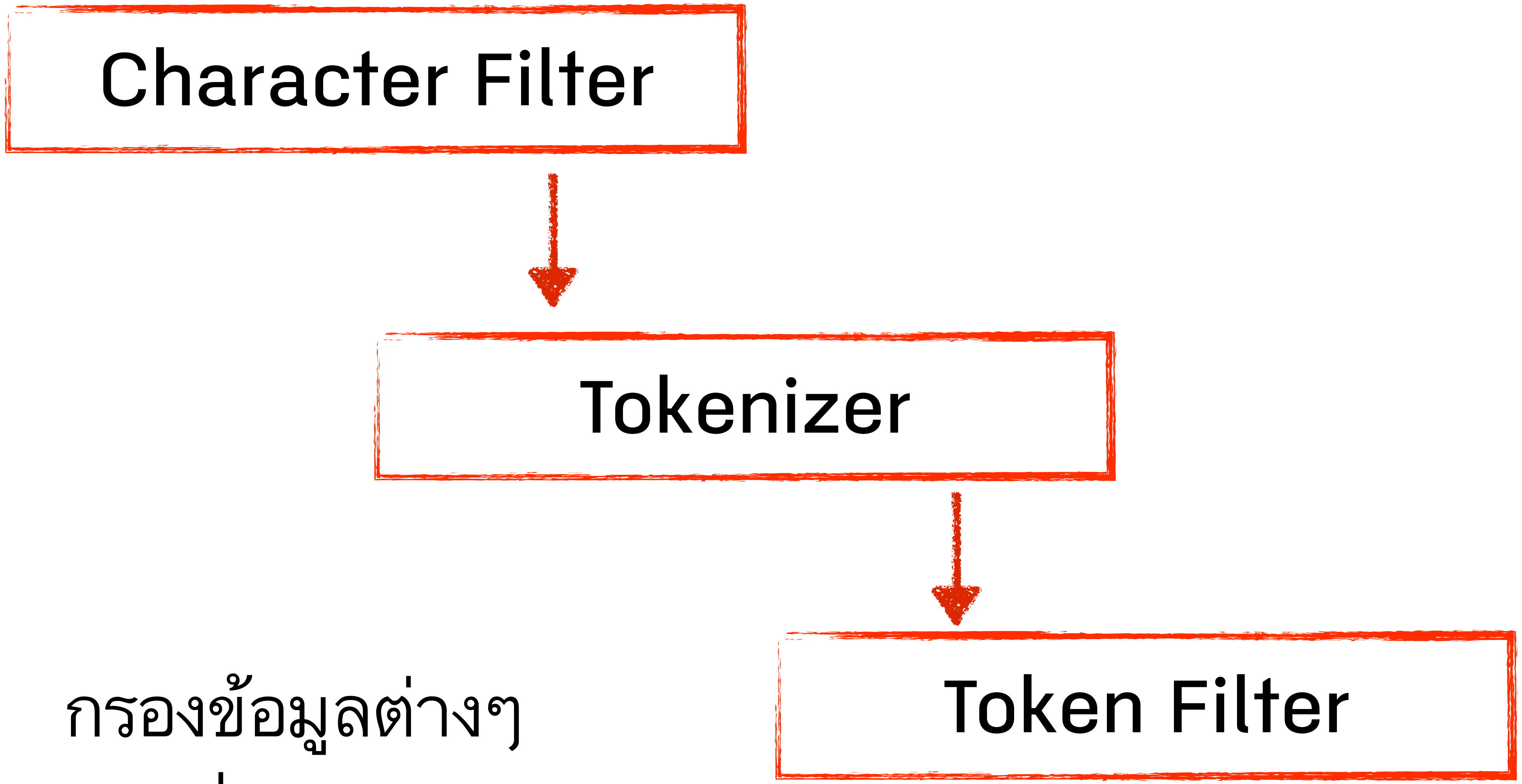
Character Filter

Tokenizer

แบ่งคำจาก white space

Token Filter

Analyzer



Character Filter

Tokenizer

Token Filter

กรองข้อมูลต่างๆ

Lowercase

Stopword

Synonyms

Build-in analyzer

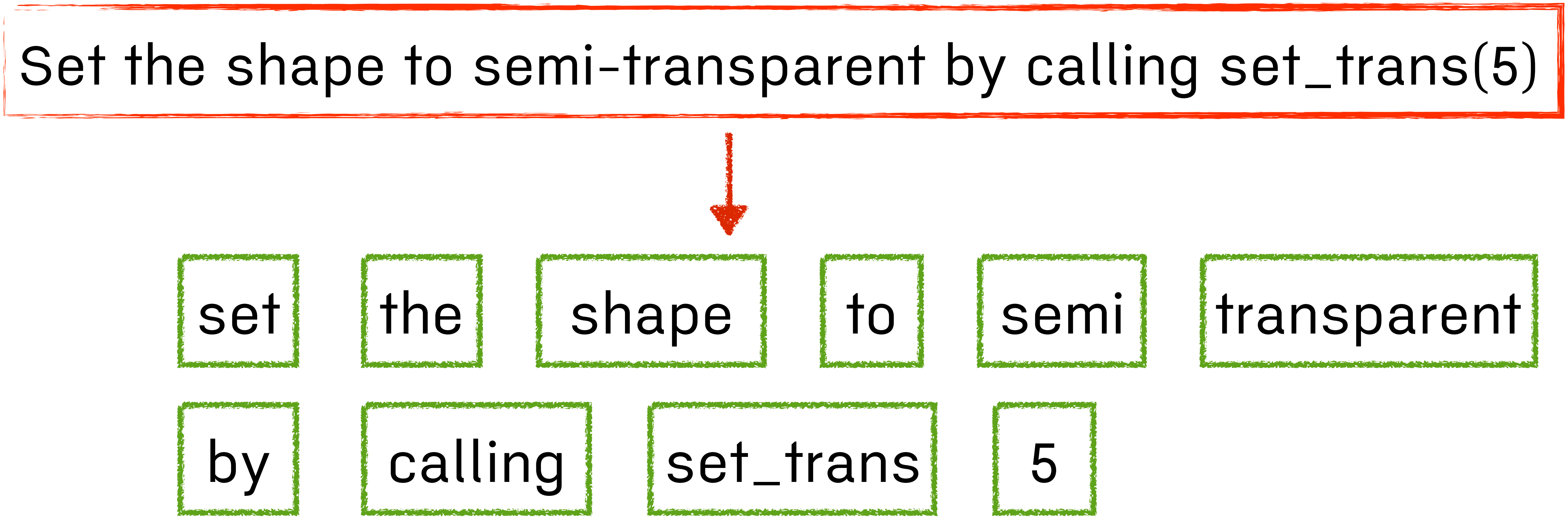
Standard analyzer [default]

Simple analyzer

Whitespace analyzer

Language analyzer

Standard analyzer



Set the shape to semi-transparent by calling set_trans(5)

set

the

shape

to

semi

transparent

by

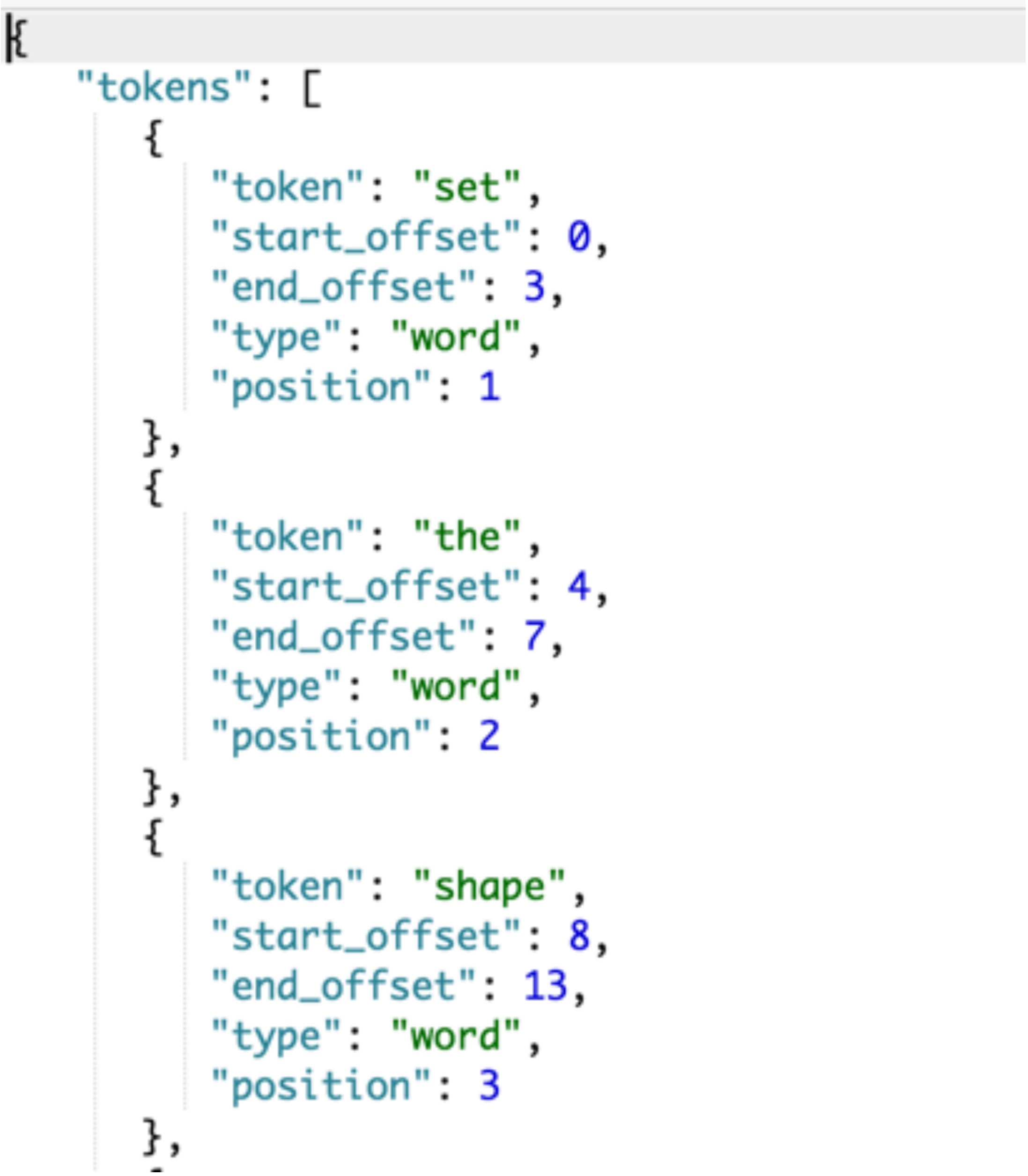
calling

set_trans

5

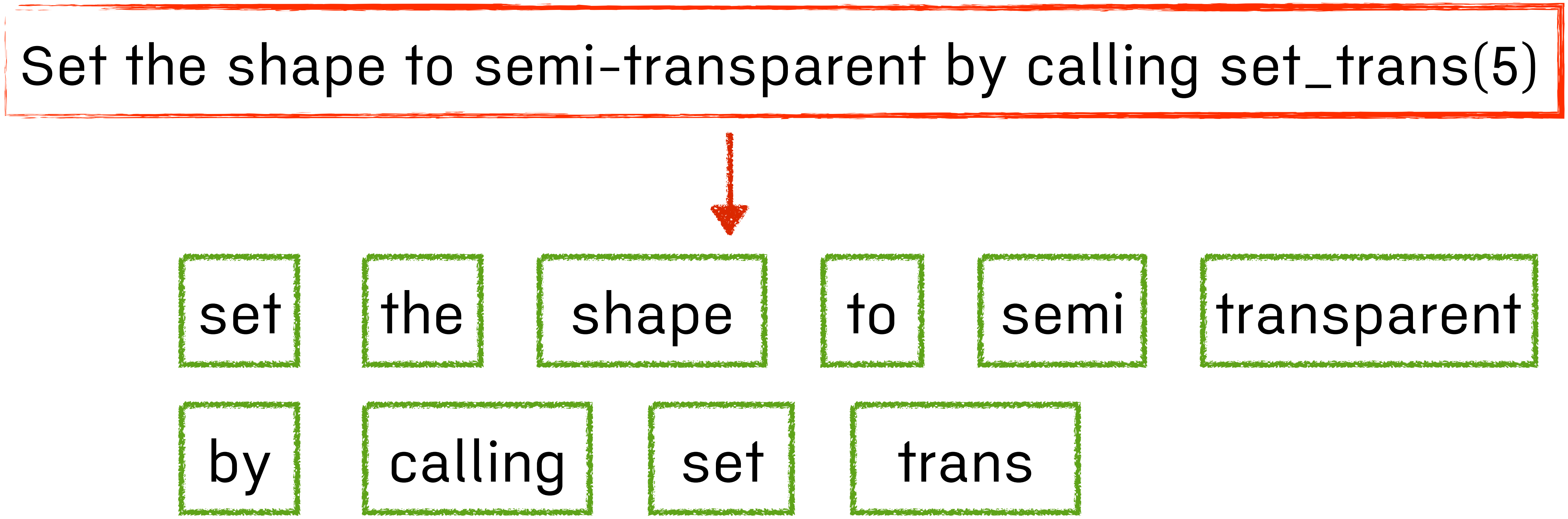
Test standard analyzer

GET /_analyze?analyzer=**standard**&text=xxx



```
{
    "tokens": [
        {
            "token": "set",
            "start_offset": 0,
            "end_offset": 3,
            "type": "word",
            "position": 1
        },
        {
            "token": "the",
            "start_offset": 4,
            "end_offset": 7,
            "type": "word",
            "position": 2
        },
        {
            "token": "shape",
            "start_offset": 8,
            "end_offset": 13,
            "type": "word",
            "position": 3
        },
```

Simple analyzer



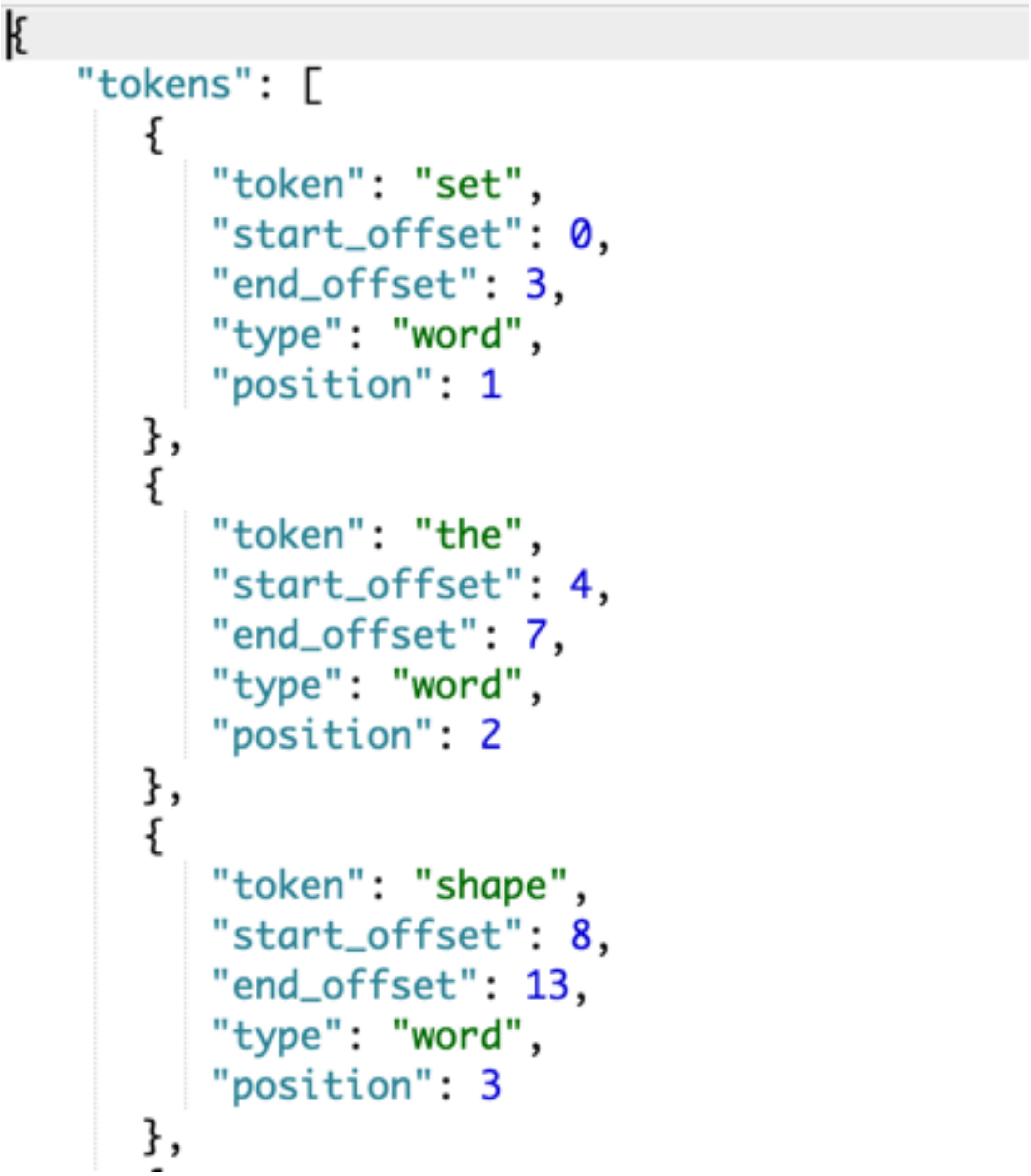
Set the shape to semi-transparent by calling set_trans(5)

set the shape to semi transparent

by calling set trans

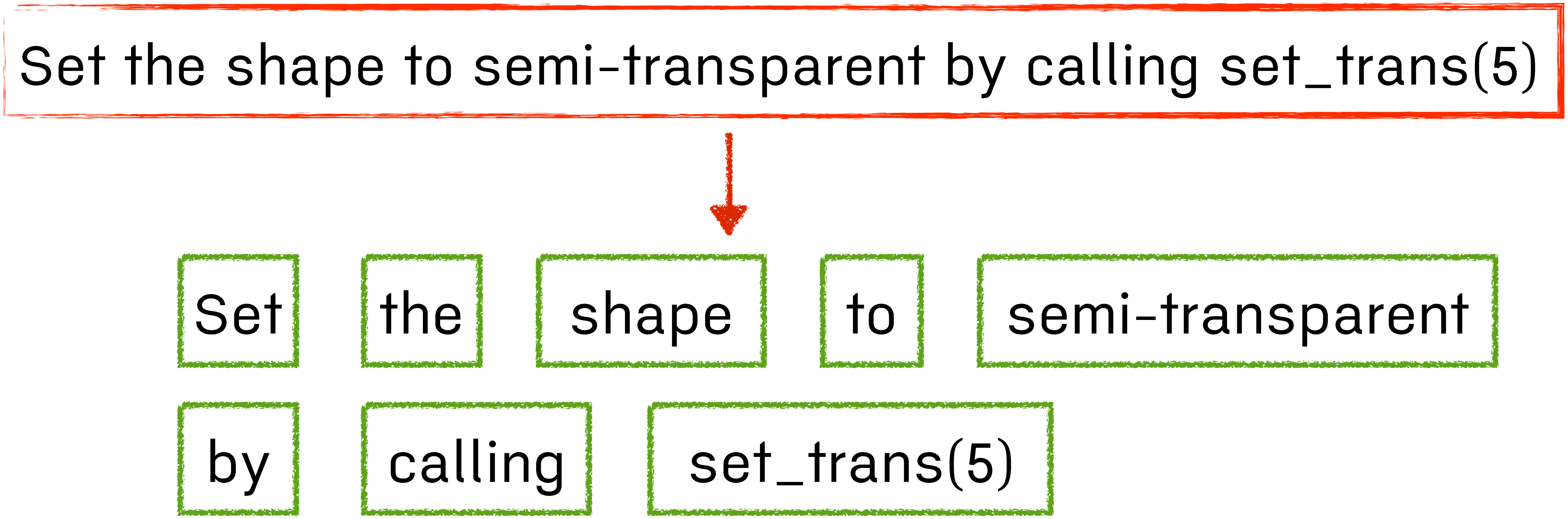
Test simple analyzer

GET /_analyze?analyzer=**simple**&text=xxx



```
{
    "tokens": [
        {
            "token": "set",
            "start_offset": 0,
            "end_offset": 3,
            "type": "word",
            "position": 1
        },
        {
            "token": "the",
            "start_offset": 4,
            "end_offset": 7,
            "type": "word",
            "position": 2
        },
        {
            "token": "shape",
            "start_offset": 8,
            "end_offset": 13,
            "type": "word",
            "position": 3
        },
```

Whitespace analyzer



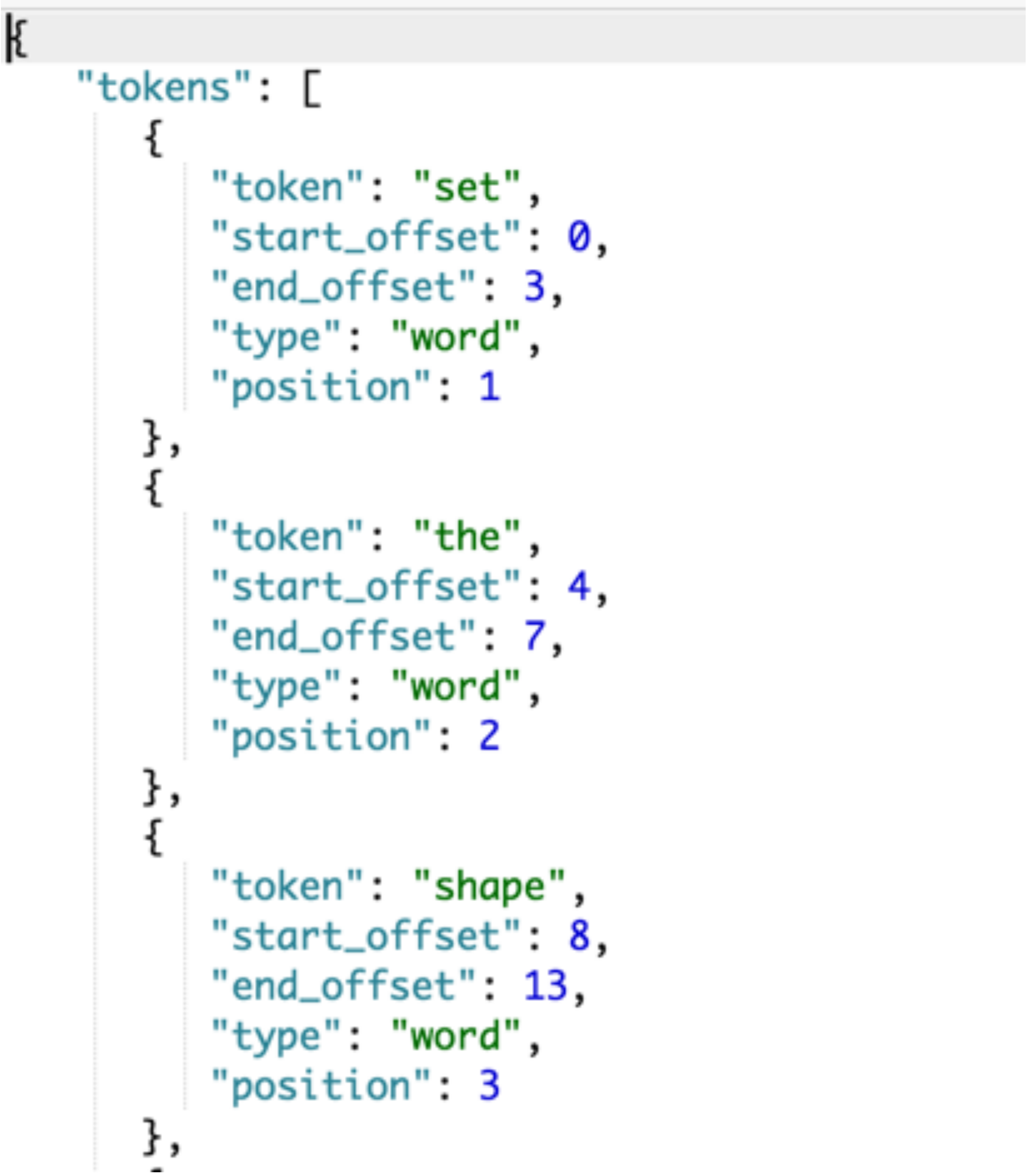
Set the shape to semi-transparent by calling set_trans(5)

Set | the | shape | to | semi-transparent

by | calling | set_trans(5)

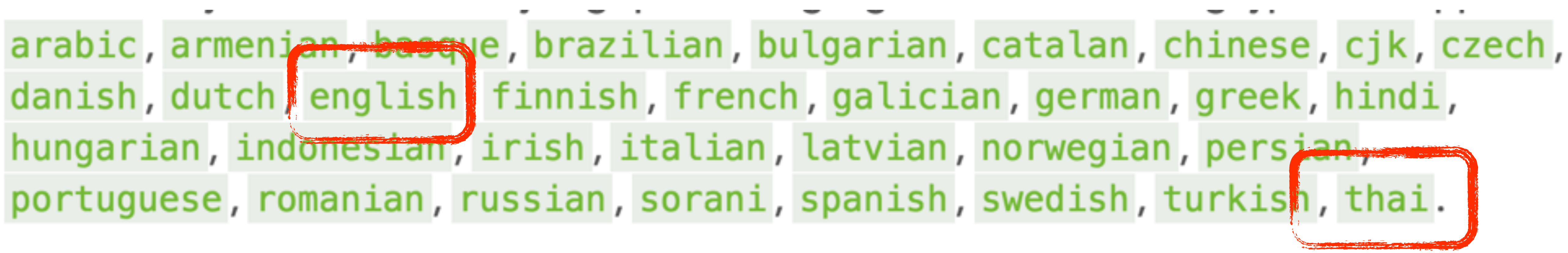
Test whitespace analyzer

GET /_analyze?analyzer=**whitespace**&text=xxxx



```
{
  "tokens": [
    {
      "token": "set",
      "start_offset": 0,
      "end_offset": 3,
      "type": "word",
      "position": 1
    },
    {
      "token": "the",
      "start_offset": 4,
      "end_offset": 7,
      "type": "word",
      "position": 2
    },
    {
      "token": "shape",
      "start_offset": 8,
      "end_offset": 13,
      "type": "word",
      "position": 3
    },
```

Language analyzer



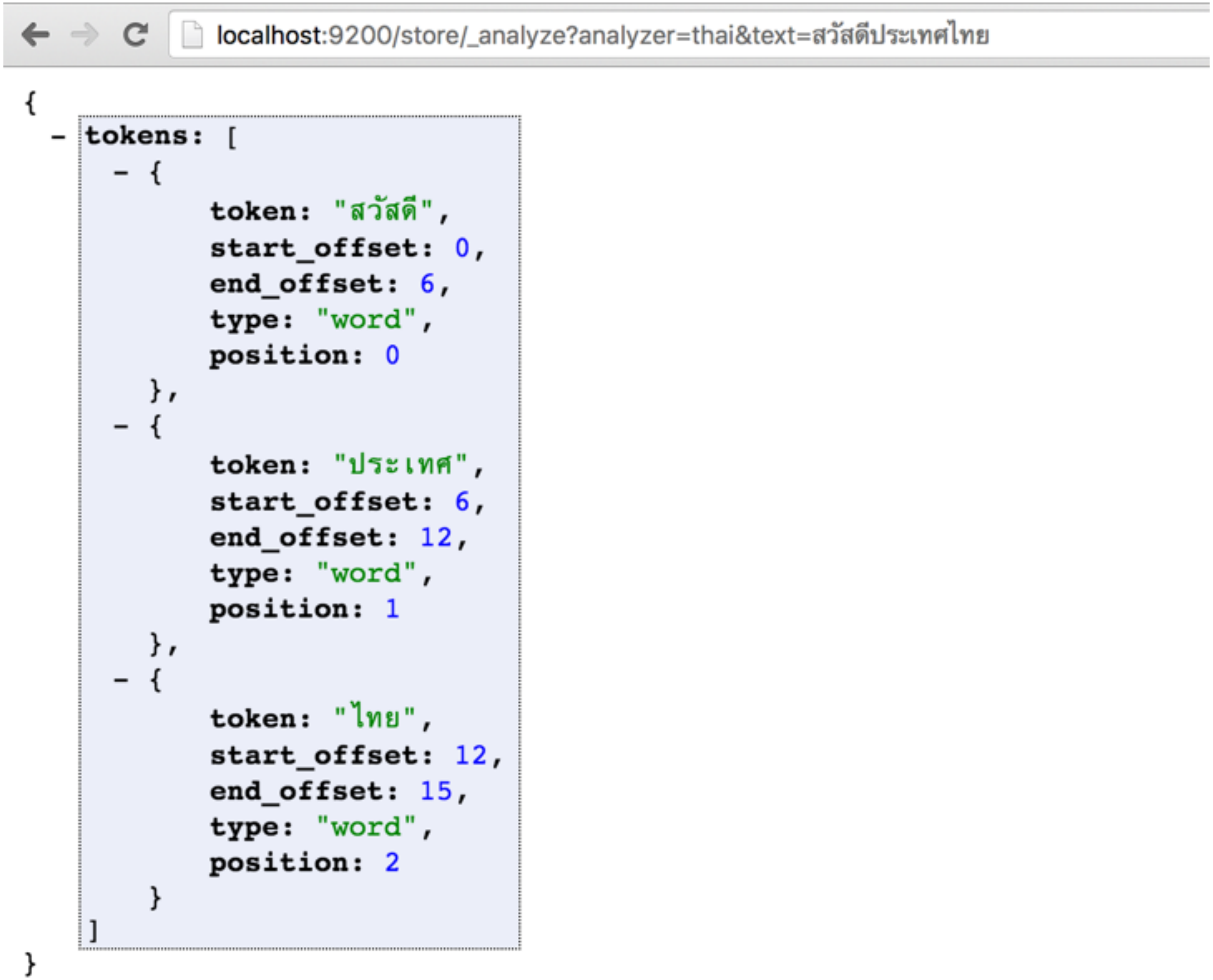
arabic, armenian, basque, brazilian, bulgarian, catalan, chinese, cjk, czech, danish, dutch, english, finnish, french, galician, german, greek, hindi, hungarian, indonesian, irish, italian, latvian, norwegian, persian, portuguese, romanian, russian, sorani, spanish, swedish, turkish, thai.

Stopwords

Excluding words

http://www.elasticsearch.org/guide/en/elasticsearch/reference/current/analysis-lang-analyzer.html

Test thai analyzer



localhost:9200/store/_analyze?analyzer=thai&text=สวัสดีประเทศไทย

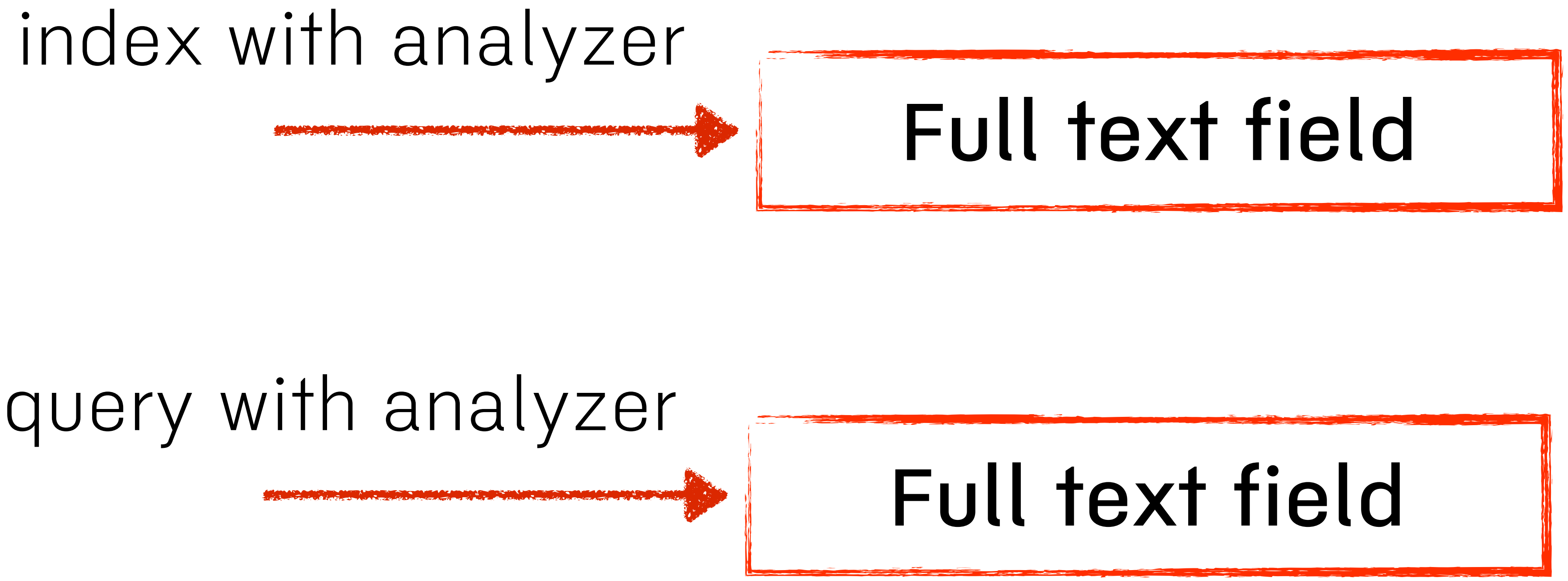
```
{
  - tokens: [
      - {
            token: "สวัสดี",
            start_offset: 0,
            end_offset: 6,
            type: "word",
            position: 0
        },
      - {
            token: "ประเทศ",
            start_offset: 6,
            end_offset: 12,
            type: "word",
            position: 1
        },
      - {
            token: "ไทย",
            start_offset: 12,
            end_offset: 15,
            type: "word",
            position: 2
        }
    ]
}
```

When to use Analyzer ?

Index a document

Query string

When to use Analyzer ?



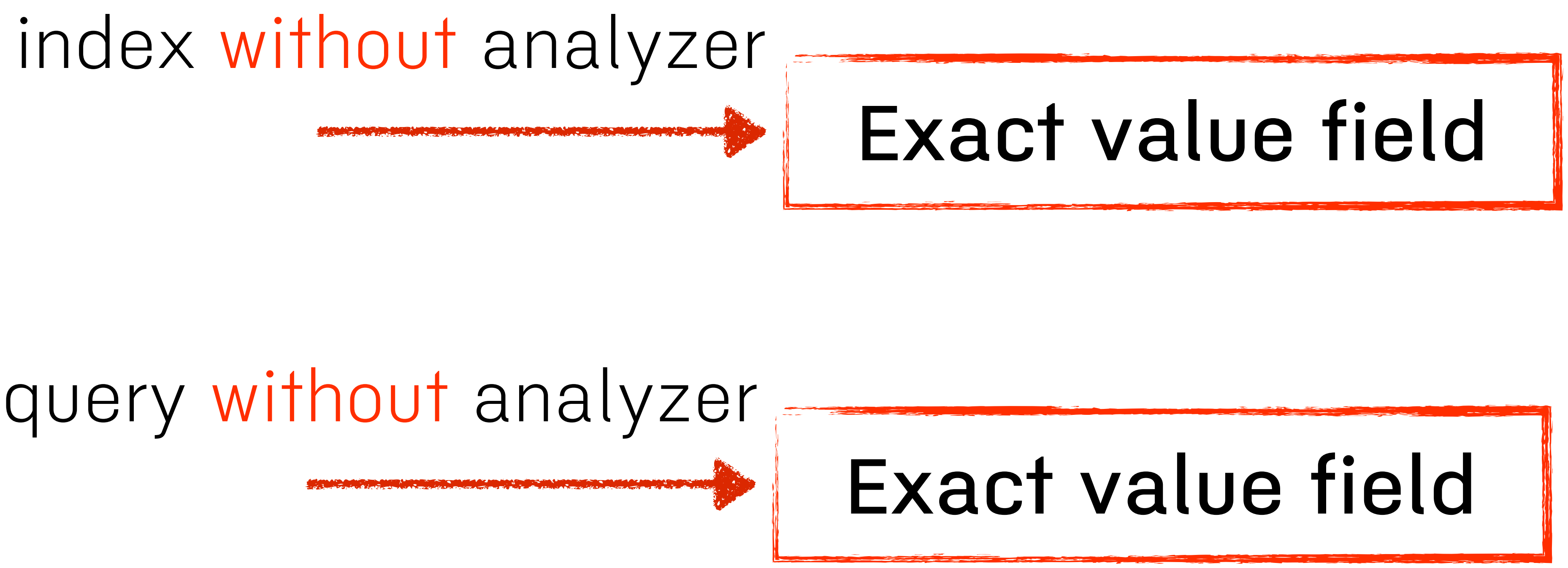
index with analyzer

Full text field

query with analyzer

Full text field

When to use Analyzer ?



index without analyzer

Exact value field

query without analyzer

Exact value field

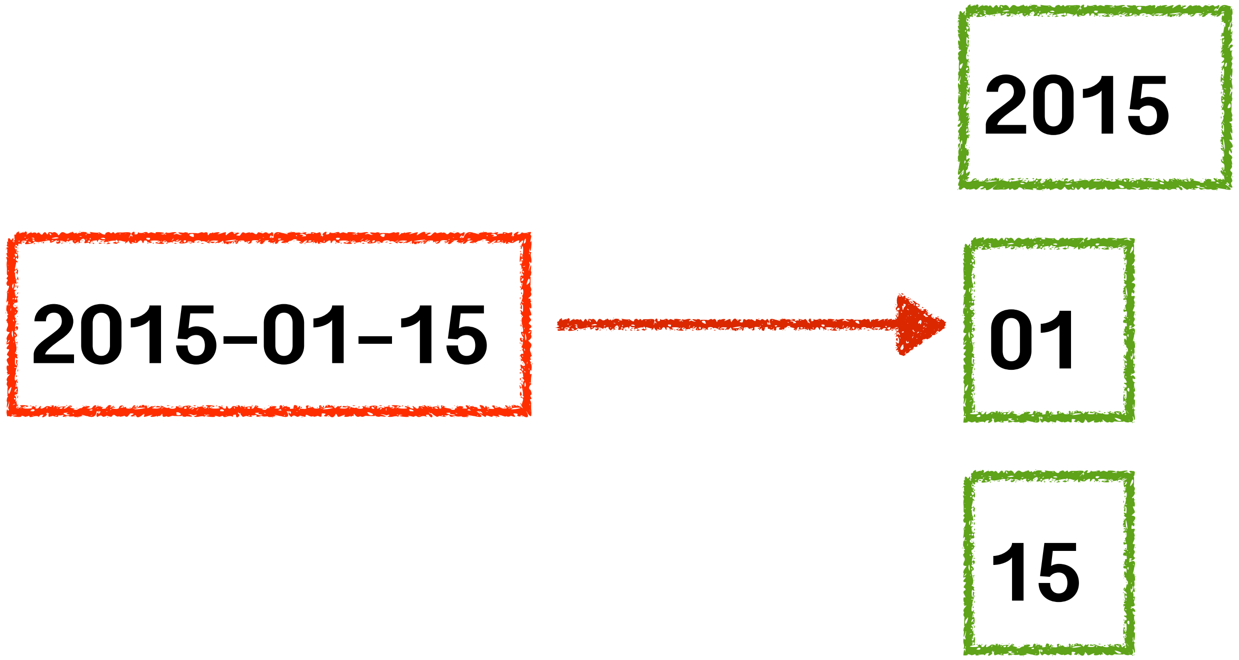
Why ?

```
GET /store/book/_search?q=2015 3
GET /store/book/_search?q=2015-01-15 3
GET /store/book/_search?q=published_date:2015-01-15 1
GET /store/book/_search?q=published_date:2015 0
```

Why ?

date field เก็บข้อมูลแบบ Exact value

_all field คือ full text field



2015-01-15

2015

01

15