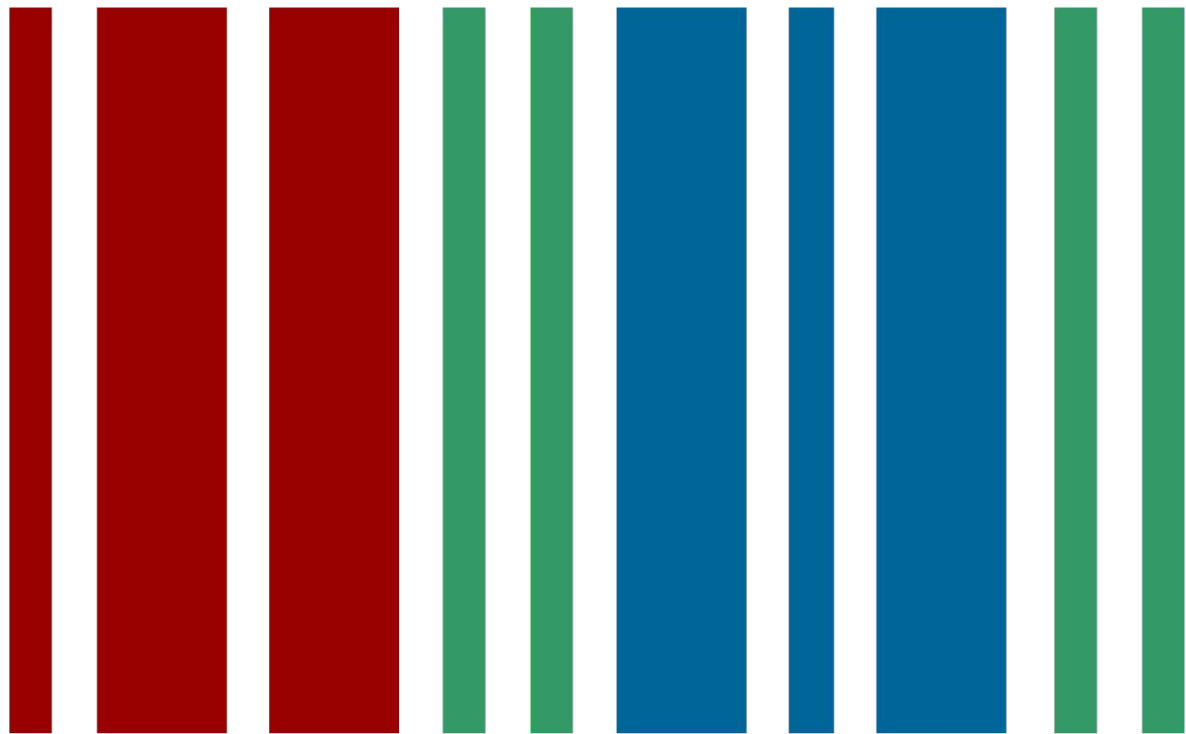


SPARQL: How I Learned to Stop Worrying and Love the Triple

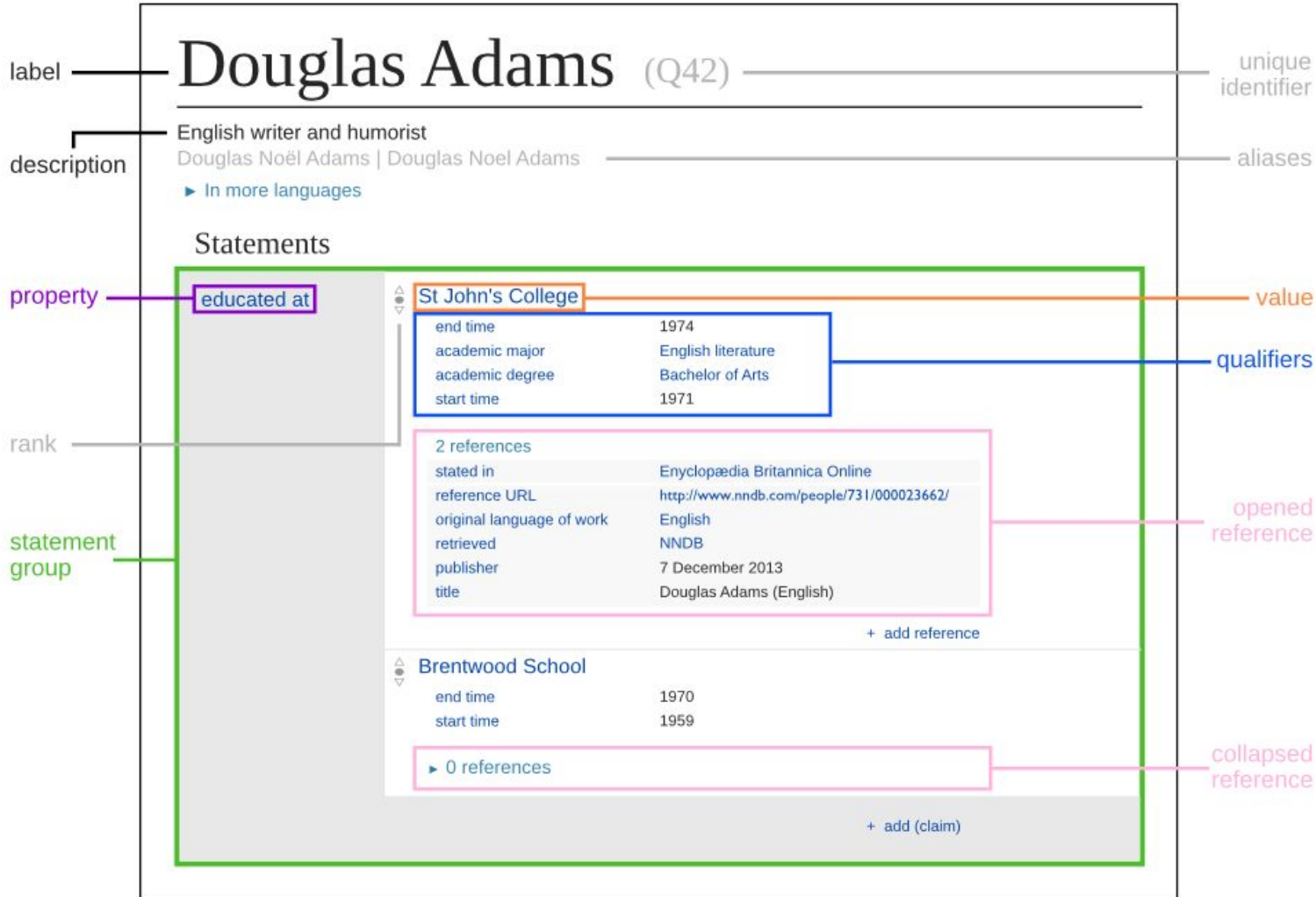
Querying for the pope with the most children

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frimelle*

Wikimania 2016
Hackathon
Esino Lario



WIKIDATA



label

Douglas Adams (Q42)

unique identifier

description

English writer and humorist
Douglas Noël Adams | Douglas Noel Adams
▶ In more languages

aliases

Statements

property

educated at

St John's College

value

end time	1974
academic major	English literature
academic degree	Bachelor of Arts
start time	1971

qualifiers

rank

2 references	
stated in	Encyclopædia Britannica Online
reference URL	http://www.nndb.com/people/731/000023662/
original language of work	English
retrieved	NNDB
publisher	7 December 2013
title	Douglas Adams (English)

opened reference

statement group

Brentwood School

end time	1970
start time	1959

▶ 0 references

collapsed reference

+ add reference

+ add (claim)

Initial question

Who is the pope with the most children?

What does he look like?

How many popes had children?

Was ist RDF?

RDF triple language

Subject Predicate Object

Alan Turing (Q7251) instance of (P31) human (Q5)

Uses URIs

<<http://www.wikidata.org/entity/Q7251>> <<http://www.wikidata.org/prop/direct/P31>> <<http://www.wikidata.org/entity/Q5>>

Turtle (Terse RDF Triple Language)

@prefix wd: <<http://www.wikidata.org/entity/>>

@prefix wdt: <<http://www.wikidata.org/prop/direct/>>

wd:Q7251 wdt:P31 wd:Q5 .

Was ist SPARQL?

W3C standardized RDF query language to form complex queries to SELECT and retrieve data from an endpoint.

Return all items, which are instance of human, limited to 200 items.

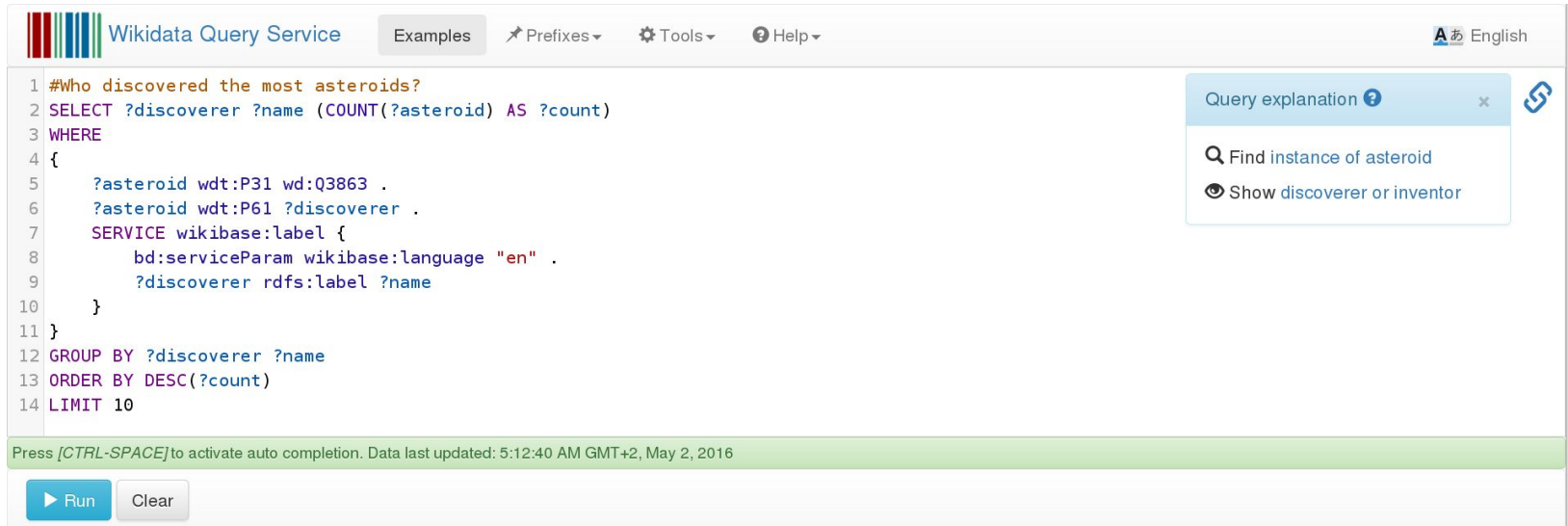
```
PREFIX wd: <http://www.wikidata.org/entity/>
```

```
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
```

```
SELECT ?subject WHERE { ?subject wdt:P31 wd:Q5 . } LIMIT 200
```

Exploring Wikidata's linked data

Easy to use GUI: <https://query.wikidata.org/>



The screenshot shows the Wikidata Query Service interface. At the top, there is a navigation bar with the Wikidata logo, the text "Wikidata Query Service", and several menu items: "Examples", "Prefixes", "Tools", and "Help". On the right side of the navigation bar, there is a language selector set to "English".

The main area contains a SPARQL query editor with the following code:

```
1 #Who discovered the most asteroids?
2 SELECT ?discoverer ?name (COUNT(?asteroid) AS ?count)
3 WHERE
4 {
5   ?asteroid wdt:P31 wd:Q3863 .
6   ?asteroid wdt:P61 ?discoverer .
7   SERVICE wikibase:label {
8     bd:serviceParam wikibase:language "en" .
9     ?discoverer rdfs:label ?name
10  }
11 }
12 GROUP BY ?discoverer ?name
13 ORDER BY DESC(?count)
14 LIMIT 10
```

Below the query editor, there is a green status bar that reads: "Press [CTRL-SPACE] to activate auto completion. Data last updated: 5:12:40 AM GMT+2, May 2, 2016".

At the bottom of the interface, there are two buttons: "Run" (with a play icon) and "Clear".

On the right side of the query editor, there is a "Query explanation" panel. It has a close button (x) and a link icon. The panel contains two items:

- Find instance of asteroid
- Show discoverer or inventor

Results can also be accessed in various machine readable formats

Exploring Wikidata's linked data

Show data for Alan Turing (Q7251) limited to 100

```
SELECT ?predicate ?object WHERE {  
  wd:Q7251 ?predicate ?object  
} LIMIT 100
```

[On Wikidata Query Service](#)

Extract of the result

predicate	object
rdfs:label	Alan Turing
rdfs:label	آلان تورنج
skos:altLabel	Алан Цюрынг
wdt:P101	wd:Q21198

Turing's field of work (P101) is computer science (Q21198)

Exploring Wikidata's linked data

Show all fields of work (P101) of Alan Turing

```
SELECT ?object ?objectLabel WHERE {  
  wd:Q7251 wdt:P101 ?object .  
  SERVICE wikibase:label {  
    bd:serviceParam wikibase:language "en" .  
  }  
} LIMIT 100
```

[On Wikidata Query Service](#)

object	objectLabel
wdt:Q21198	computer science
wdt:Q897511	cryptanalysis

Find the pope with the most children

Let's write some queries together!

```
SELECT DISTINCT ?father ?fatherLabel
WHERE
{
  ?subj wdt:P22 ?father .
  ?father wdt:P31 wd:Q5 .
  SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
}
LIMIT 50
```

An item with the “father” (P22) ?father

This father is “instance of” (P31) human (Q5)

The service to get labels

Limited to 50

```
SELECT DISTINCT ?father ?fatherLabel
WHERE
{
  ?subj wdt:P22 ?father .
  ?father wdt:P31 wd:Q5 .
  SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
}
LIMIT 50
```

An item with the “father” (P22) ?father

This father is “instance of” (P31) human (Q5)

The service to get labels

Limited to 50

```
SELECT DISTINCT ?father ?fatherLabel
WHERE
{
  ?subj wdt:P22 ?father .
  ?father wdt:P31 wd:Q5 .
  SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
}
LIMIT 50
```

An item with the “father” (P22) ?father

This father is “instance of” (P31) human (Q5)

The service to get labels

Limited to 50
















```
SELECT DISTINCT ?father ?fatherLabel
WHERE
{
  ?subj wdt:P22 ?father .
  ?father wdt:P31 wd:Q5 .
  SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
}
LIMIT 50
```

An item with the “father” (P22) ?father

This father is “instance of” (P31) human (Q5)

The service to get labels

Limited to 50

father	 fatherLabel
 wd:Q23	George Washington
 wd:Q42	Douglas Adams
 wd:Q76	Barack Obama
 wd:Q91	Abraham Lincoln
 wd:Q157	François Hollande
 wd:Q207	George W. Bush
 wd:Q254	Wolfgang Amadeus Mozart
 wd:Q296	Claude Monet
 wd:Q301	El Greco
 wd:Q303	Elvis Presley
 wd:Q307	Galileo Galilei
 wd:Q329	Nicolas Sarkozy
 wd:Q331	Ricardo Lagos
 wd:Q346	Louis IX of France

```
SELECT DISTINCT ?father ?fatherLabel
WHERE
{
    ?subj wdt:P22 ?father .
    ?father wdt:P39 wd:Q19546 .
    SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
}
LIMIT 50
```

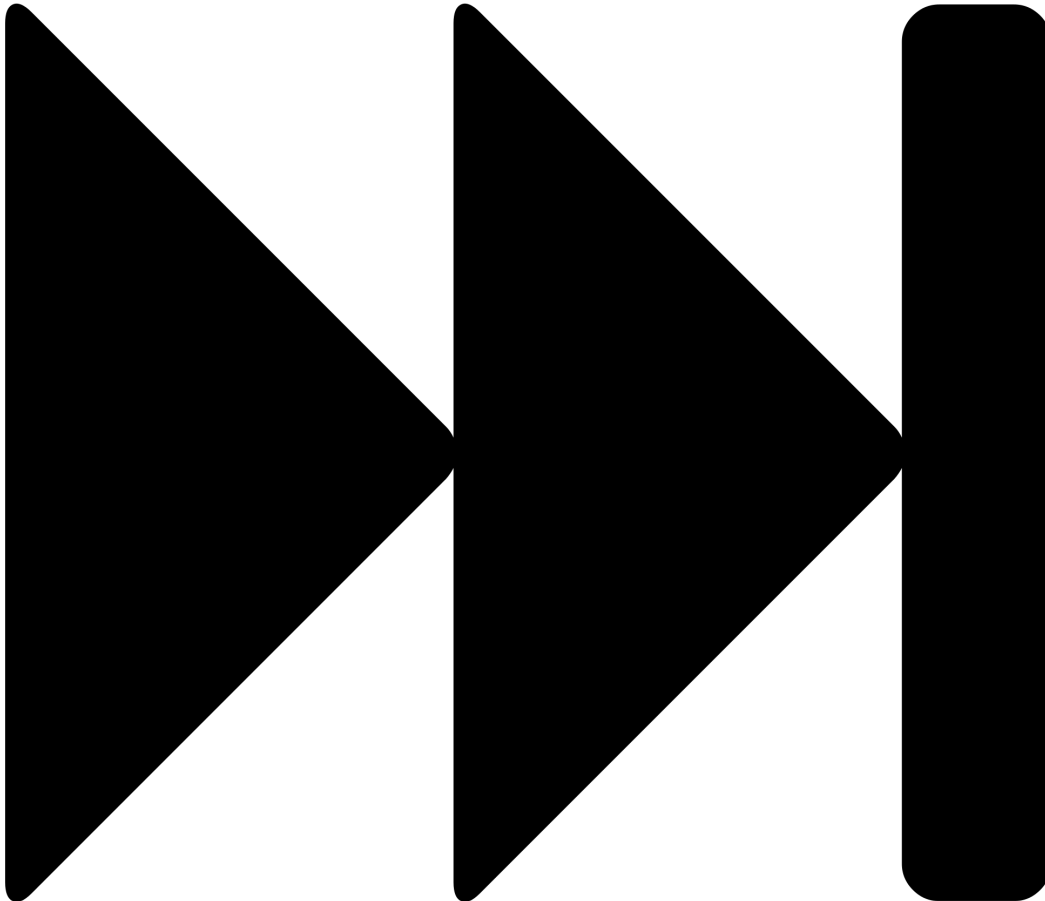
An item with the “father” (P22) ?father

This father has “position held” (P31) “pope” (Q19546)

The service to get labels

Limited to 50

father	fatherLabel
Q wd:Q80516	Julius II
Q wd:Q160931	Hormisdas
Q wd:Q134682	Anastasius I
Q wd:Q83029	Gregory XIII
Q wd:Q108316	Alexander VI
Q wd:Q133001	Paul III
Q wd:Q173995	Adrian II



All popes with number of children

```
SELECT (SAMPLE(?father) as ?father) ?fatherLabel (SAMPLE(?picture) as ?picture) (COUNT(?father) as ?children)
```

```
WHERE
```

```
{
```

```
    ?subj wdt:P22 ?father .
```

```
    ?father wdt:P31 wd:Q5 .
```

```
    ?father wdt:P39 wd:Q19546 .
```

```
    OPTIONAL {
```

```
        ?father wdt:P18 ?picture .
```

```
    }
```







```
    SERVICE wikibase:label { bd:serviceParam wikibase:language "en" }
```

```
}
```

```
GROUP BY ?fatherLabel
```

```
ORDER BY DESC(?children)
```

```
LIMIT 50
```

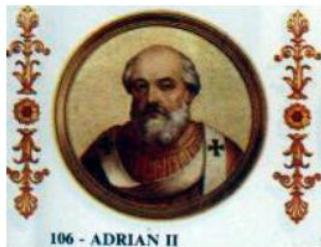
father	fatherLabel	picture	children
Q wd:Q108316	Alexander VI	 commons:Pope Alexander Vi.jpg	5
Q wd:Q133001	Paul III	 commons:Tizian 083b.jpg	3
Q wd:Q173995	Adrian II	 commons:Adrian II.jpg	1
Q wd:Q134682	Anastasius I	 commons:Anastasius I.jpg	1
Q wd:Q160931	Hormisdas	 commons:Pope Hormisdas.jpg	1
Q wd:Q80516	Julius II	 commons:Pope Julius II.jpg	1
Q wd:Q83029	Gregory XIII	 commons:Gregory XIII.jpg	1



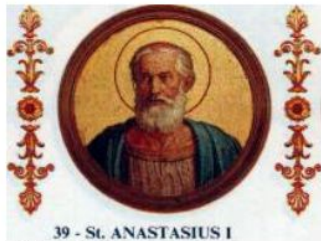
children: 5
picture: [commons:Pope Alexander Vi.jpg](#)
father: [Q wd:Q108316](#)
fatherLabel: Alexander VI



children: 3
picture: [commons:Tizian 083b.jpg](#)
father: [Q wd:Q133001](#)
fatherLabel: Paul III



children: 1
picture: [commons:Adrian II.jpg](#)
father: [Q wd:Q173995](#)
fatherLabel: Adrian II



children: 1
picture: [commons:Anastasius I.jpg](#)
father: [Q wd:Q134682](#)
fatherLabel: Anastasius I



children: 1
picture: [commons:Pope Hormisdas.jpg](#)
father: [Q wd:Q160931](#)
fatherLabel: Hormisdas



children: 1
picture: [commons:Pope Julius II.jpg](#)
father: [Q wd:Q80516](#)
fatherLabel: Julius II



children: 1
picture: [commons:Gregory XIII.jpg](#)
father: [Q wd:Q83029](#)
fatherLabel: Gregory XIII

We have maps, too



```
1 #Map of U1 subway stations in Berlin
2 #defaultView:Map
3 SELECT ?stationLabel ?coord
4 WHERE {
5   ?station wdt:P81 wd:Q99691 .
6   ?station wdt:P625 ?coord
7   SERVICE wikibase:Label { bd:serviceParam wikibase:language "de" }
8 }
```

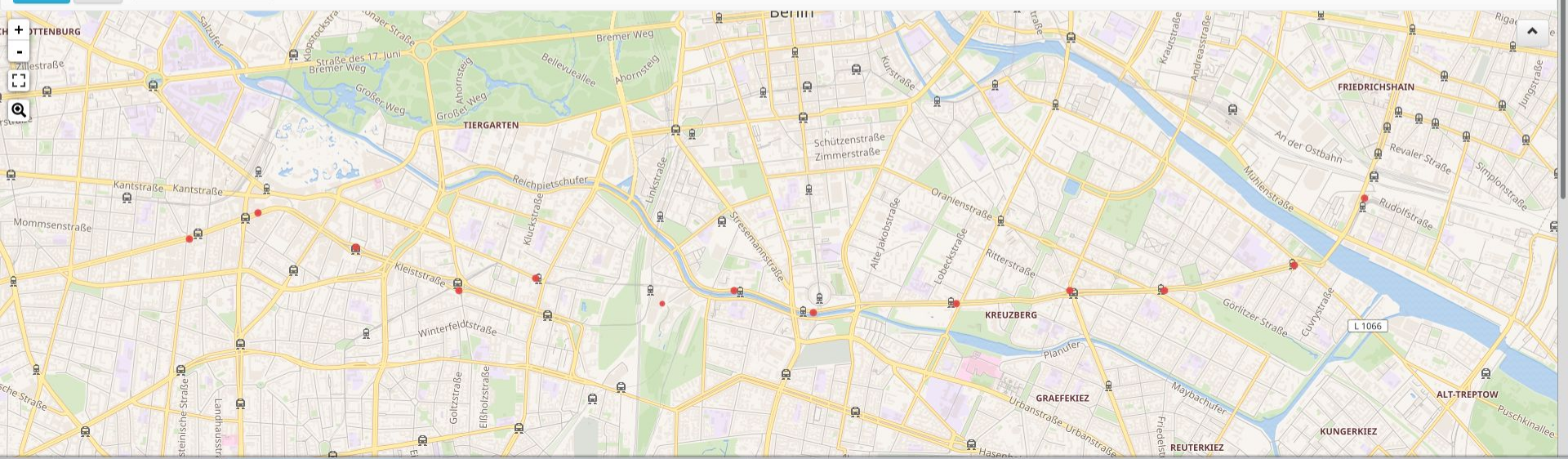
Query explanation

- Find
- Show

Press **[CTRL-SPACE]** to activate auto completion. Data last updated: 10:40:57 AM GMT+2, May 5, 2016

Run Clear 13 Results in 3182 ms

Display Download Link



Ressources

[Wikidata Query Service Beta](https://query.wikidata.org/)

<https://query.wikidata.org/>

[Mediawiki: RDF Dump Format](https://www.mediawiki.org/wiki/Wikibase/Indexing/RDF_Dump_Format)

https://www.mediawiki.org/wiki/Wikibase/Indexing/RDF_Dump_Format

[Prefixes used for Wikidata](https://www.mediawiki.org/wiki/Wikibase/Indexing/RDF_Dump_Format#Prefixes_used)

https://www.mediawiki.org/wiki/Wikibase/Indexing/RDF_Dump_Format#Prefixes_used

[Mediawiki: Query Examples](https://www.mediawiki.org/wiki/Wikibase/Indexing/SPARQL_Query_Examples)

https://www.mediawiki.org/wiki/Wikibase/Indexing/SPARQL_Query_Examples

[github: wikidata query rdf docs](https://github.com/wikimedia/wikidata-query-rdf/tree/master/docs)

<https://github.com/wikimedia/wikidata-query-rdf/tree/master/docs>

[Wikidata turtle dumps](https://dumps.wikimedia.org/wikidatawiki/entities/)

<https://dumps.wikimedia.org/wikidatawiki/entities/>

[W3C RDF Primer](http://www.w3.org/2007/02/turtle/primer/)

<http://www.w3.org/2007/02/turtle/primer/>