SPARQL examples

this document contains sparql examples o learn.

# 1) Graph A

a -(p)-> b - (p)-> c--(q)->-d

| |

+-<-(p)--+

update format:

clear all ;

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

INSERT DATA {

node:a edge:p node:b .

node:b edge:p node:c .

node:c edge:q node:d .

node:d edge:p node:c .

}

## case A) нода и ветка, входщие в заданную ноду:

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

select ?s ?p {

?s ?p node:c .

}

| s | p |
| --- | --- |
| [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) |
| [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) |

## Case B) Нода и ветка входящие в заданную ноду, FILTER:

PREFIX node: <http://sun.flower.ua/>  
PREFIX edge: <http://sun.flower.ua#>  
PREFIX gas: <http://www.bigdata.com/rdf/gas#>

select ?s ?p {   
 ?s ?p ?o.  
 FILTER (?o = node:c)  
}

| s | p |
| --- | --- |
| <http://sun.flower.ua/b> | <http://sun.flower.ua#p> |
| <http://sun.flower.ua/d> | <http://sun.flower.ua#p> |

## Case С) Нода и ветка НЕвходящие в заданную ноду, FILTER:

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

select ?s ?p {

?s ?p ?o.

FILTER (?o != node:c)

}

| s | p |
| --- | --- |
| <http://sun.flower.ua/a> | <http://sun.flower.ua#p> |
| <http://sun.flower.ua/c> | <http://sun.flower.ua#q> |

## Case D) петля из двух нод

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

select ?x ?y ?z ?u

where { ?x ?y ?z .

?z ?u ?w

FILTER (?x = ?w).

}

| x | y | z | u |
| --- | --- | --- | --- |
| [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) | [<http://sun.flower.ua#q>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23q>) |
| [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) | [<http://sun.flower.ua#q>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23q>) | [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) |

## Сase E) – убрать ребро

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

SELECT ?p ?l ?o

Where {

?p ?l ?o

FILTER ( ?l != edge:q )

}

| p | l | o |
| --- | --- | --- |
| [<http://sun.flower.ua/a>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/a>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) |
| [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |
| [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |

# 2) Service

Same graph

clear all ;

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

INSERT DATA {

node:a edge:p node:b .

node:b edge:p node:c .

node:c edge:q node:d .

node:d edge:p node:c .

}

## Case 2-A) formally correct, remove edge:

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

SELECT ?depth ?predecessor ?linkType ?out

where {

?predecessor ?linkType ?out . # figure out what link type(s) connect a vertex with a predecessor

SERVICE gas:service {

gas:program gas:gasClass "com.bigdata.rdf.graph.analytics.BFS" . #ASTAR

gas:program gas:in node:a . # one or more times, specifies the initial frontier.

gas:program gas:target node:d . # only retain vertices along paths to these target vertices.

gas:program gas:out ?out . # exactly once - will be bound to the visited vertices.

gas:program gas:out1 ?depth . # exactly once - will be bound to the depth of the visited vertices.

gas:program gas:out2 ?predecessor . # exactly once - will be bound to the predecessor.

gas:program gas:maxIterations 6 . # optional limit on breadth first expansion.

gas:program gas:maxVisited 100 . # optional limit on the #of visited vertices.

**gas:program gas:traversalDirection 'Undirected'** . #'Reversed' #'Forward' #''

gas:program gas:nthreads 1 .

**gas:program gas:epv <http://sun.flower.ua#q> .**

} .

**FILTER(?linkType!=edge:q)** .

}

Without filter:

| depth | predecessor | linkType | out |
| --- | --- | --- | --- |
| 1 | [<http://sun.flower.ua/a>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/a>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) |
| 2 | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |
| **3** | **[<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>)** | **[<http://sun.flower.ua#q>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23q>)** | **[<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>)** |

With filter

| depth | predecessor | linkType | out |
| --- | --- | --- | --- |
| 1 | [<http://sun.flower.ua/a>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/a>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) |
| 2 | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |

NB – not all predicates!!!!

## Case B) – all predicates:

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

SELECT ?depth ?out ?p ?o {

SERVICE gas:service {

gas:program gas:gasClass "com.bigdata.rdf.graph.analytics.BFS" .

gas:program gas:in node:a . # one or more times, specifies the initial frontier.

gas:program gas:out ?out . # exactly once - will be bound to the visited vertices.

gas:program gas:out1 ?depth . # exactly once - will be bound to the depth of the visited vertices.

gas:program gas:out2 ?predecessor . # exactly once - will be bound to the predecessor.

gas:program gas:maxIterations 4 . # optional limit on breadth first expansion.

gas:program gas:maxVisited 2000 . # optional limit on the #of visited vertices.

}

?out ?p ?o . # extract all links and vertex attributes for the visited vertices.

}

| depth | out | p | o |
| --- | --- | --- | --- |
| 0 | [<http://sun.flower.ua/a>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/a>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) |
| 1 | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |
| 2 | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) | [<http://sun.flower.ua#q>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23q>) | [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) |
| 3 | [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |

## Case C) correct query

PREFIX node: <http://sun.flower.ua/>

PREFIX edge: <http://sun.flower.ua#>

PREFIX gas: <http://www.bigdata.com/rdf/gas#>

SELECT ?depth ?out ?p ?o

where {

?out ?p ?o . # figure out what link type(s) connect a vertex with a predecessor

SERVICE gas:service {

gas:program gas:gasClass "com.bigdata.rdf.graph.analytics.BFS" . #ASTAR

gas:program gas:in node:a . # one or more times, specifies the initial frontier.

gas:program gas:target node:d . # only retain vertices along paths to these target vertices.

gas:program gas:out ?out . # exactly once - will be bound to the visited vertices.

gas:program gas:out1 ?depth . # exactly once - will be bound to the depth of the visited vertices.

gas:program gas:out2 ?predecessor . # exactly once - will be bound to the predecessor.

gas:program gas:maxIterations 6 . # optional limit on breadth first expansion.

gas:program gas:maxVisited 100 . # optional limit on the #of visited vertices.

gas:program gas:traversalDirection 'Undirected' . #'Reversed' #'Forward' #''

gas:program gas:nthreads 1 .

gas:program gas:epv <http://sun.flower.ua#q> .

} .

FILTER(?p!=edge:q) .

}

result

| depth | out | p | o |
| --- | --- | --- | --- |
| 0 | [<http://sun.flower.ua/a>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/a>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) |
| 1 | [<http://sun.flower.ua/b>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/b>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |
| 3 | [<http://sun.flower.ua/d>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/d>) | [<http://sun.flower.ua#p>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua%23p>) | [<http://sun.flower.ua/c>](http://172.17.0.1:9999/blazegraph/" \l "explore:kb:<http://sun.flower.ua/c>) |