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State of the RDF JavaScript Libraries

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Outline

- Work Organization and Team Communication
- Research
  - Survey of RDF JS libraries
  - Analysis Parameters
  - Evaluation and Experiments

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Outline

- Development
  - Architecture
  - Tools and Technologies
  - Development Environment
  - Testing
- Final Outcome
  - Website with Faceted Search and Filtering
  - Documentation
  - Hosted Solution

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Objectives

- Research and comparative analysis of RDF JS libraries
- Based on results obtained, providing an intuitive interface for filtering RDF JS libraries
- Providing easy to use tool for researchers and developers in academics and outside using RDF JS libraries

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Organization

- Meetings
  - Weekly team meeting
  - Online communication with Slack
  - With Mentors on necessity and by email
- Managing code/tasks
  - Github
- Sharing files
  - Google Drive and Slack

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Research Plan

- Search for all RDF JS libs
- Study on common RDF JS libs
- Categorize libs
- Find common and necessary features for comparison
- Designing evaluation plan

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RDF JS Libs Categories

- Parsing
- SPARQL/Queries
- Storage
- UI and Binding

Evaluation Plan

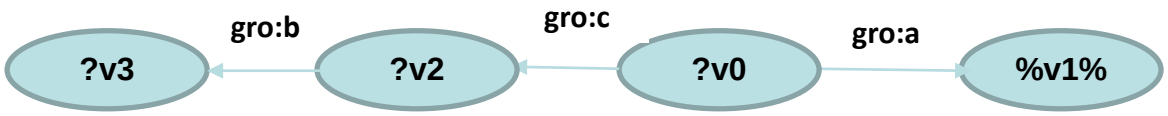
- Find benchmarking method
  - Berlin benchmarking
- Define data set
- Design queries
- Environment

Data Set

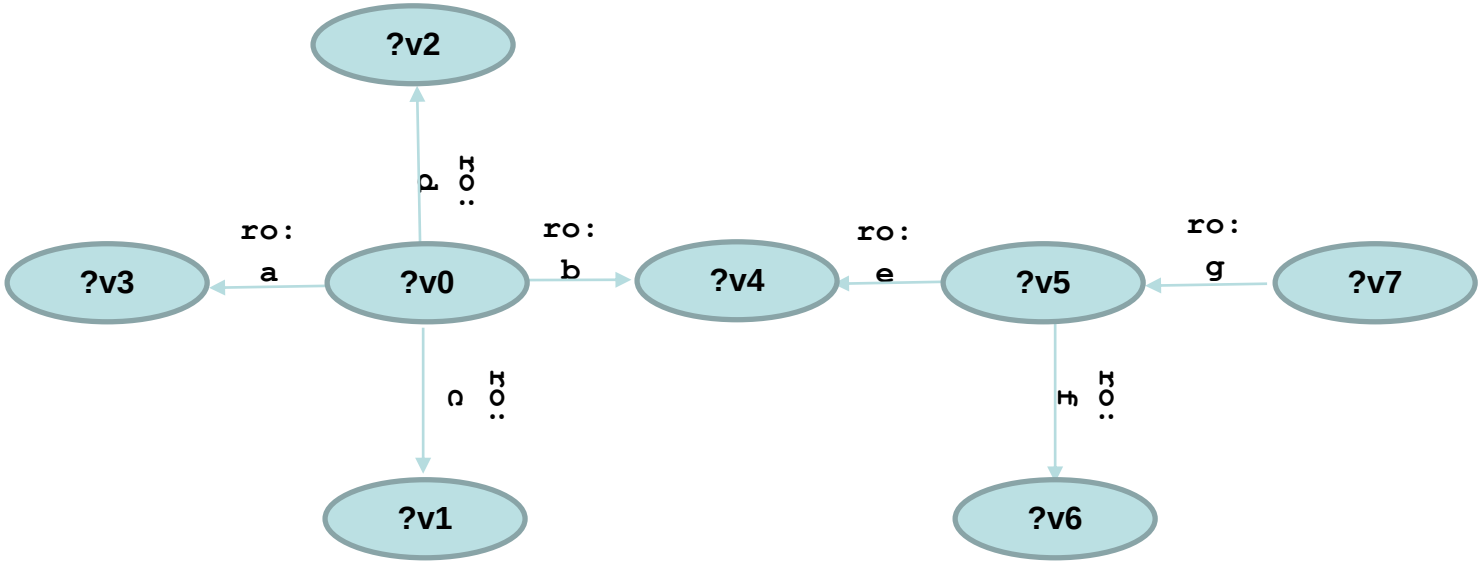
- Reference: Waterloo data set
- Data set size
  - 100000 (100K)
  - 1000000 (1 M)
  - 10000000 (10 M)

Queries

- Linear

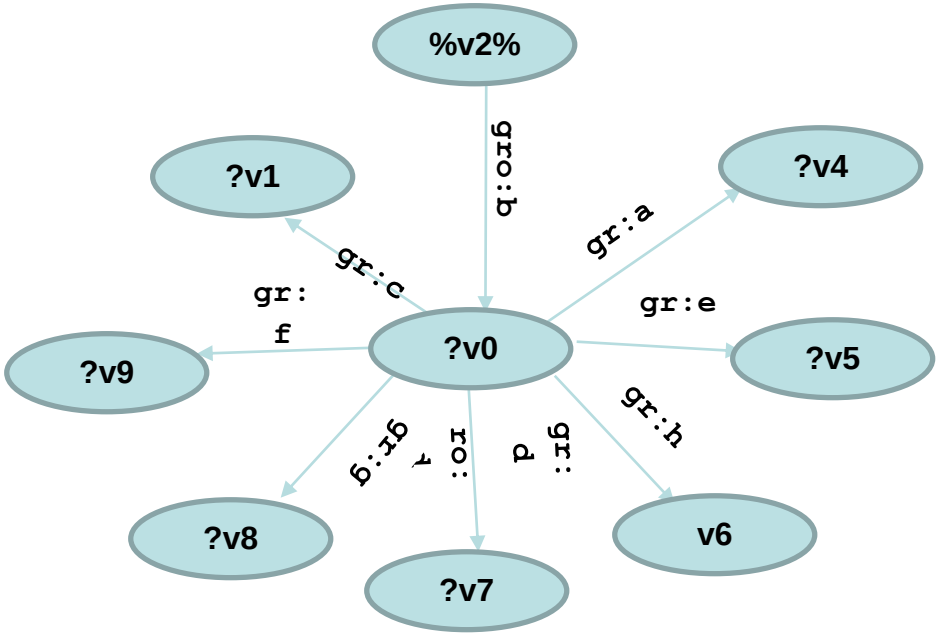


- Complex



Queries (ctd.)

- Snowflake



Environment

System Configuration	
Mc Book Pro	
Late 2013	
CPU	2GHz Intel core i7
RAM	8GB 1600MHz DDR3
Web Server	Apache

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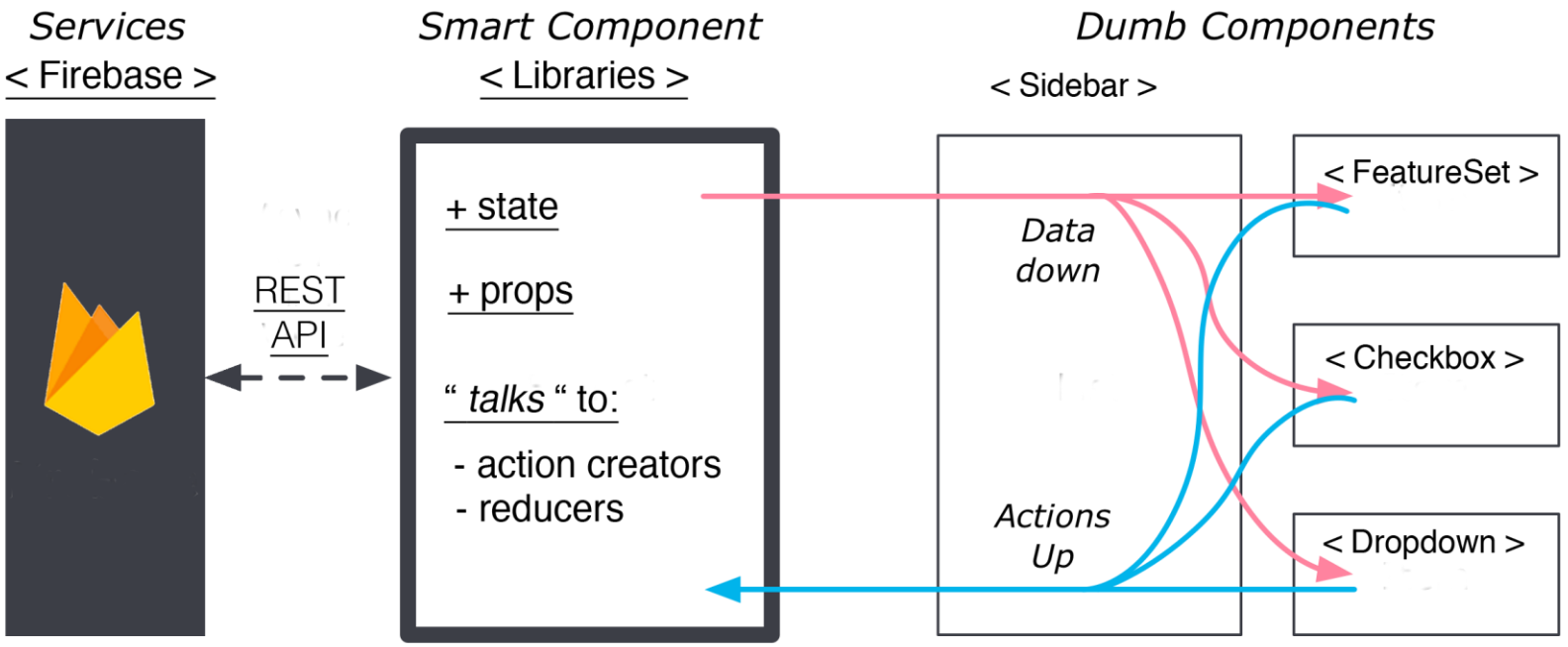
Experiment Results

Library/Query-Data Size	Data Size (100 K)	Linear	Complex	Snowflake
rdflib	1	13.99 s	13.96 s	13.92 s
	10	2.21 min	2.3 min	2.2 min
	100	n/a	n/a	n/a
rdfstore	1	1.36 min	1.75 min	1.74 min
	10	20.07 min	21.46 min	20.69 min
	100	n/a	n/a	n/a

Web App Architecture



jQuery write less, do more. Bootstrap webpack MODULE BUNDLER Firebase BABEL React Redux REQUIRE.JS

Application Components

- Listing
- Filtering
- Experiment and Evaluation

Listing

Provide a list of currently existing RDF JS libraries to browse

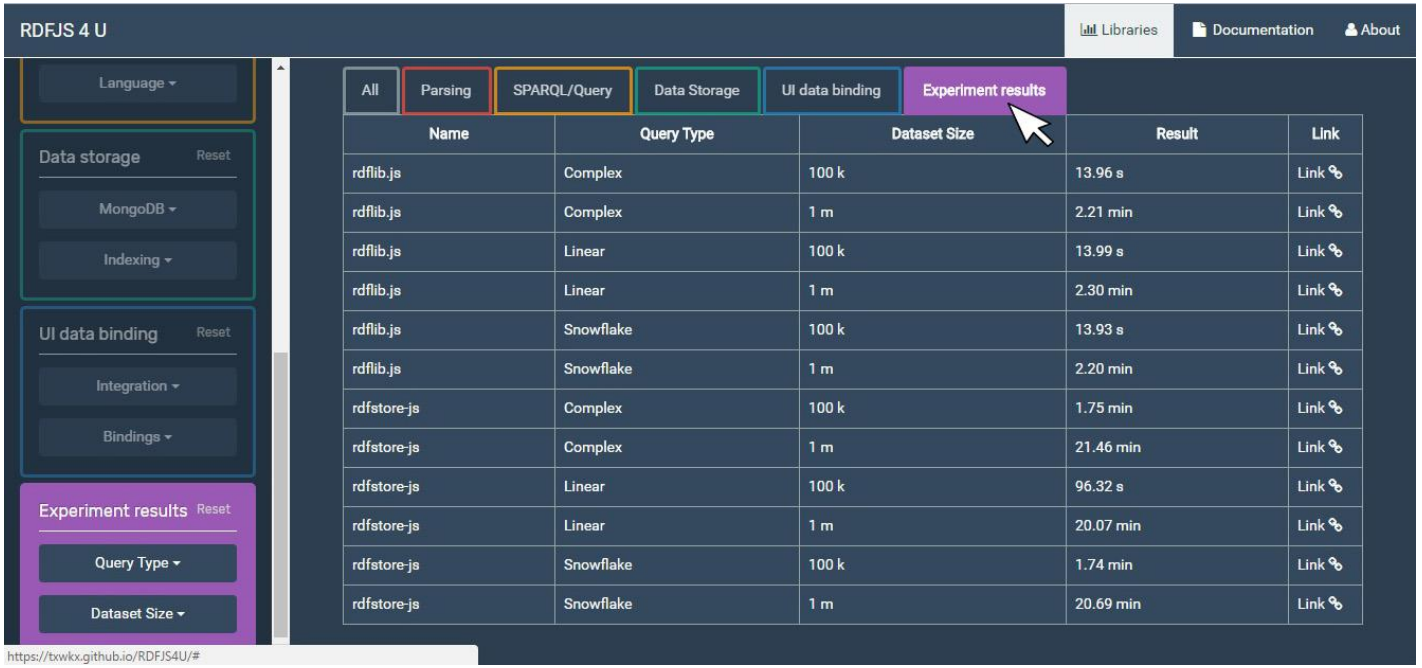
Name	License	Docs	OSS	Github stars	W3C Cerf	Latest Update	Link
node-rdf	Unlicense		✓	54	✓	17-09-2014	Link
sparql-spin-js3	Unlicense		✓	11	✓	14-11-2012	Link
rdfstore-js	MIT	✓	✓	429	✓	27-05-2016	Link
rdfquery	MIT	✓	✓	124	✓	14-07-2009	Link
N3.js	MIT		✓	227	✓	18-09-2015	Link
SPARQL.js	MIT		✓	99	✓	26-01-2016	Link
jsonld.js	BSD		✓	554	✓	25-04-2016	Link
green-turtle	BSD		✓	32	✓	01-11-2014	Link
RDF-Ext	MIT		✓	0	✓	17-03-2015	Link
rdflib.js	MIT	✓	✓	169	✓	11-05-2016	Link
LevelGraph	MIT		✓	704	✓	18-06-2016	Link
Backbone Linked	MIT	✓	✓	7	✓	11-10-2013	Link
SemanticKO	MIT		✓	29	✓	06-02-2012	Link

Filtering

Apply defined filter options and refresh the lib list

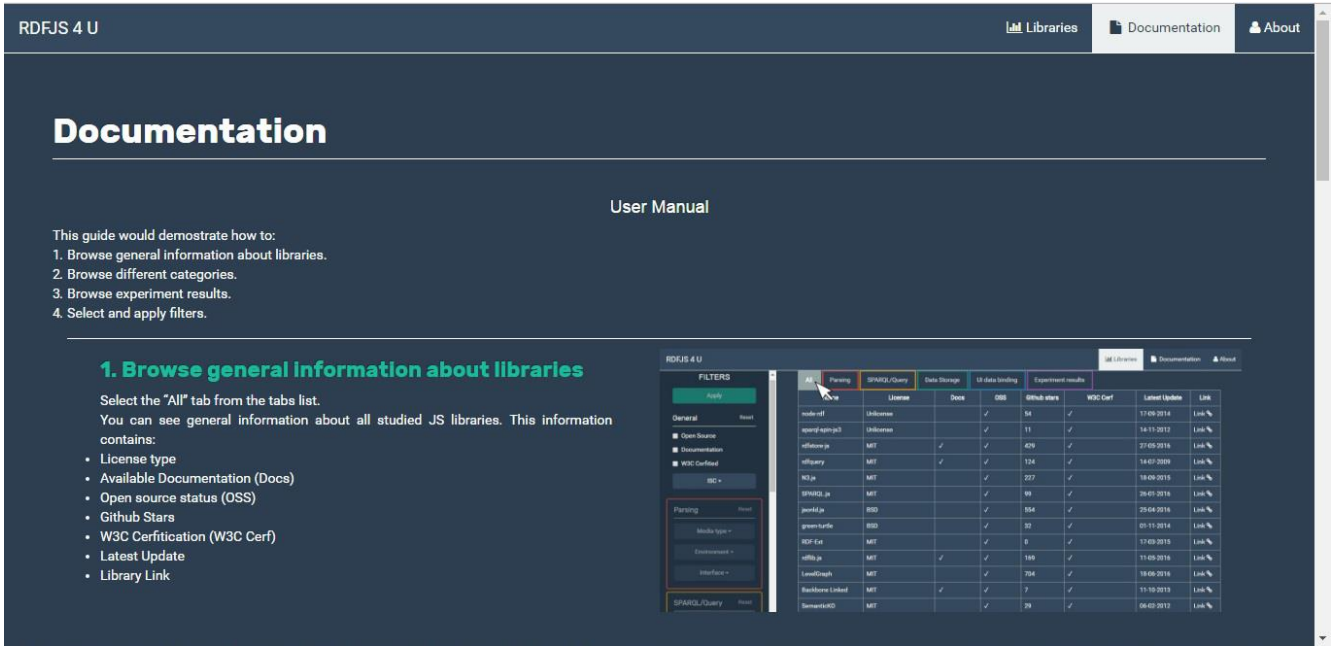
Experiment and Evaluation

Display the results of libraries' evaluation with defined features



Documentation

User manual appended to Web App



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Testing

- Unit testing
  - Covers single component related tasks
- Continuous Integration

Testing (ctd.)

- Method: White box testing
- Tools:
  - Enzyme + Mocha

```
describe("(Component) Checkbox", function() {

  const props = {
      value: false,
      title: 'new title'
  };

  it('renders without exploding', () => {
    const wrapper = shallow(<Checkbox {...props }/>);

    expect(wrapper).to.have.length(1);
  });

  it('renders with a title', () => {
    const wrapper = mount(<Checkbox {...props} />);

    expect(wrapper.props().title).to.equal('new title');
  });

  it('simulates click events', () => {
    const spy = sinon.spy();
    const wrapper = shallow(<Checkbox {...props} onChange={spy} />);

    wrapper.find('input').simulate('change');

    expect(spy.calledOnce).to.be.true;
  });
```

References

- "Comparison Of RDFJS Libraries - RDF Javascript Libraries Community Group". *W3.org*. N.p., 2016. Web. 7 Oct. 2016.
- "Basic Testing Use Case". *Dsg.uwaterloo.ca*. N.p., 2016. Web. 7 Oct. 2016.
- Bizer, Christian, and Andreas Schultz. "The Berlin SPARQL Benchmark." (2009).
- "Lightning-Fast RDF In Javascript". *Ruben.verborgh.org*, 2013. Web. 7 Oct. 2016.
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