



AMRITA
VISHWA VIDYAPEETHAM



15CSE366 Semantic Web

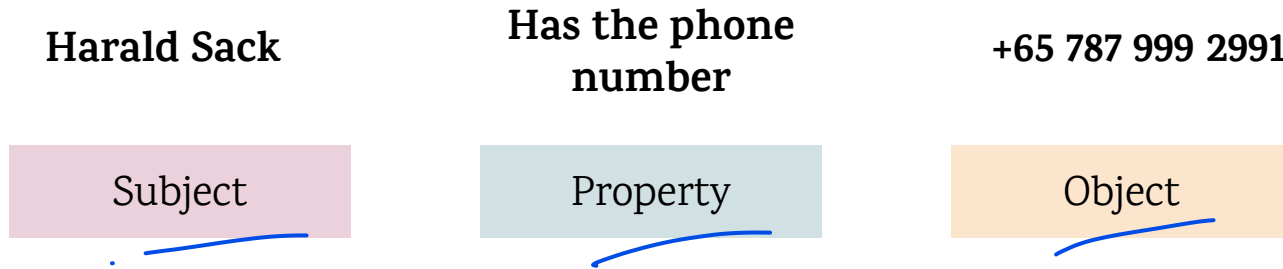
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Dr Rahul Krishnan, Center for Wireless Networks & Applications



Semantic Web Architecture

RDF - representing facts



Resources - identified by URI

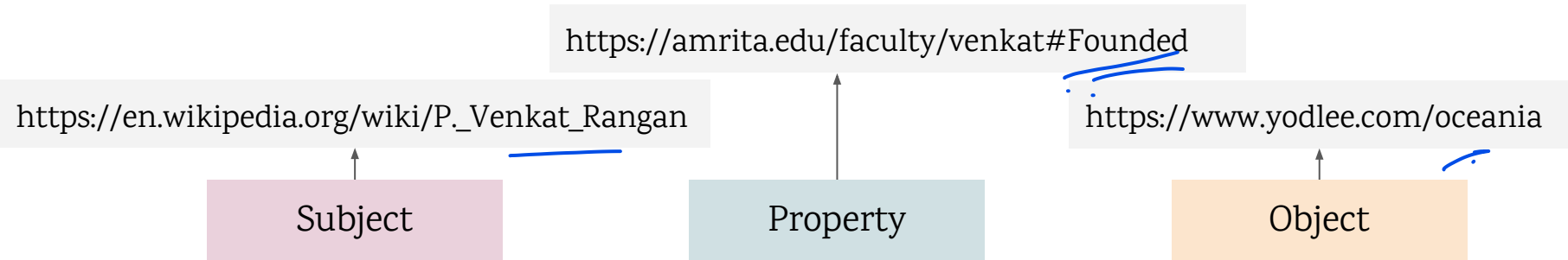
Property - attributes to describe the resource

Statements - RDF-Triples

Resource + Property + Object/Value
(URI) (URI) (URI/Literal)

Semantic Web Architecture

RDF - representing facts



Resources - identified by URI

Property - attributes to describe the resource

Statements - RDF-Triples

Resource + Property + Object/Value
(URI) (URI) (URI/Literal)

Semantic Web Architecture

How to write RDF triples in Turtle.

Triples example - namespaces (to reduce using full length URIs)

@prefix pers: <<http://example.com/personal/>>.

@base <<http://amrita.edu/faculty#>>.

Venkat Rangan's name needs to be connected with his URI

:venkat	pers:firstName	"Venkat" .
(Subject)	(Property)	(Literal)

Semantic Web Architecture

Schema.org - standard structure framework

@prefix fac: <https://www.amrita.edu/faculty/> .

~~@prefix pers: <http://example.com/personal/> .~~

@prefix pers: <https://schema.org/Person/> .

Venkat has a name Venkat Rangan

Venkat Rangan founded the company yodlee inc.

fac:venkat

pers:givenName 'Venkat' ;

pers:owns <https://www.yodlee.com/oceania> .

Semantic Web Architecture

Common Mistakes in writing turtle statements

@prefix fac: <https://www.amrita.edu/faculty/> .

~~@prefix pers: <http://example.com/personal>~~ ,

@prefix pers: <https://schema.org/Person/> .

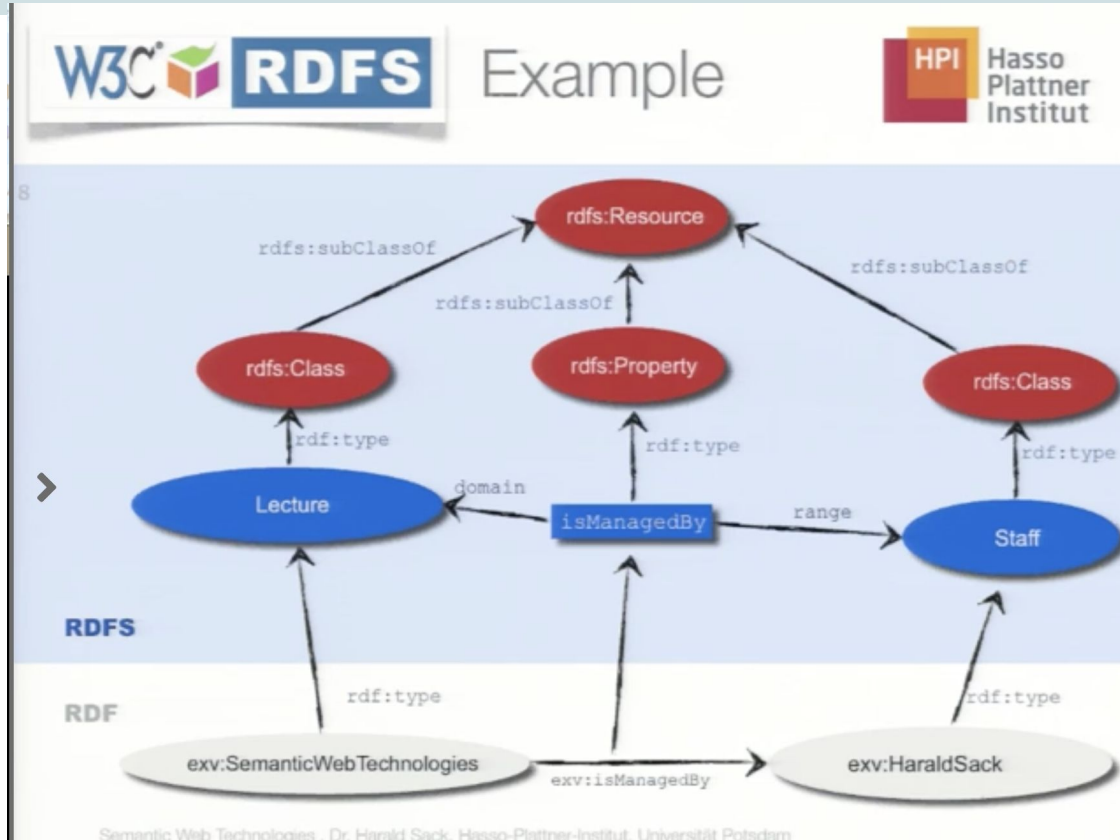
Venkat has a name Venkat Rangan

Venkat Ragnan founded the company yodlee inc.

fac:venkat pers:givenName 'Venkat' ;
 pers:owns <https://www.yodlee.com/oceania> .

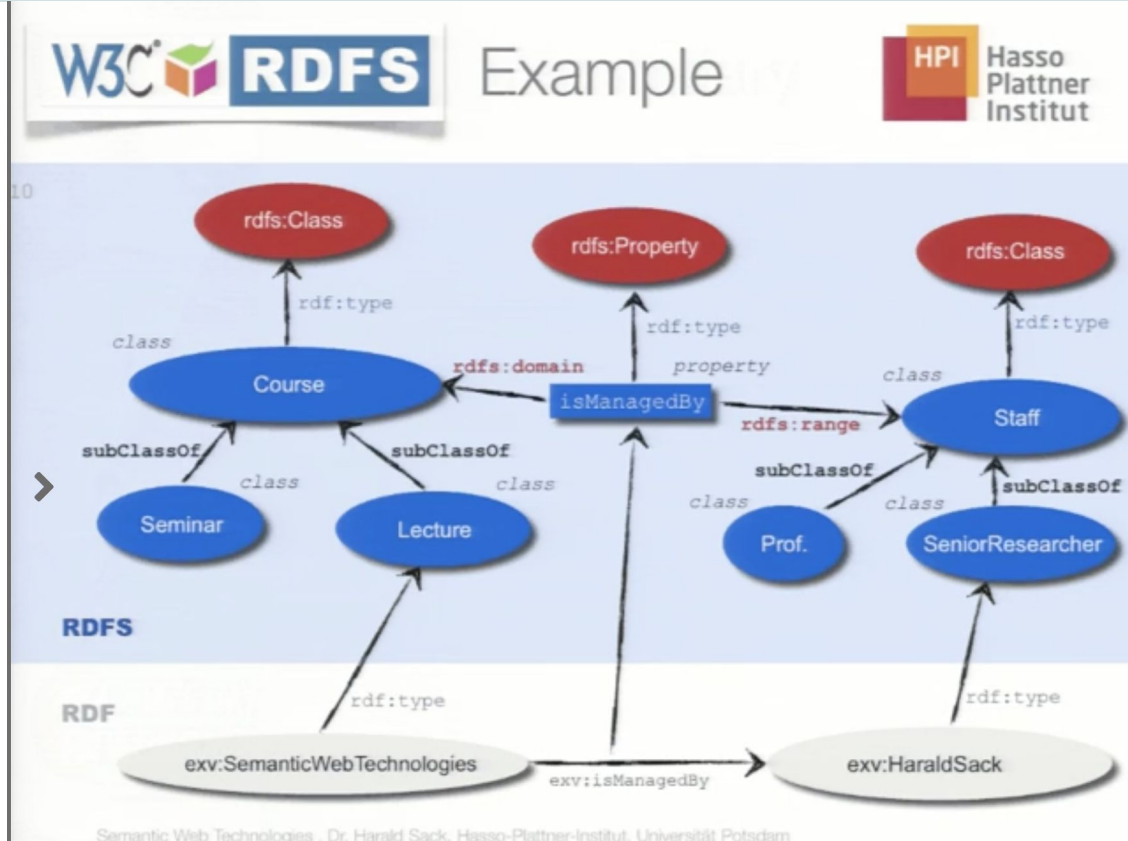
Semantic Web Architecture

RDFS - Schema - Data Model



Semantic Web Architecture

RDFS - Schema - Data Model



Semantic Web Architecture

Bottom Up Approach to write Turtle Statements

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
```

```
:Course a rdfs:Class .
:Lecture a rdfs:Class;
  rdfs:subClassOf :Course.
:Seminar a rdfs:Class ;
  rdfs:subClassOf :Course.
```

```
:Person a rdfs:Class .
:Staff a rdfs:Class ;
  rdfs:subClassOf :Person .
:SeniorResearcher a rdfs:Class ;
  rdfs:subClassOf :Staff .
:Professor a rdfs:Class ;
  rdfs:subClassOf :Staff .
```

```
:isManagedBy a rdf:Property;
  rdfs:domain :Course ;
  rdfs:range :Staff .
```

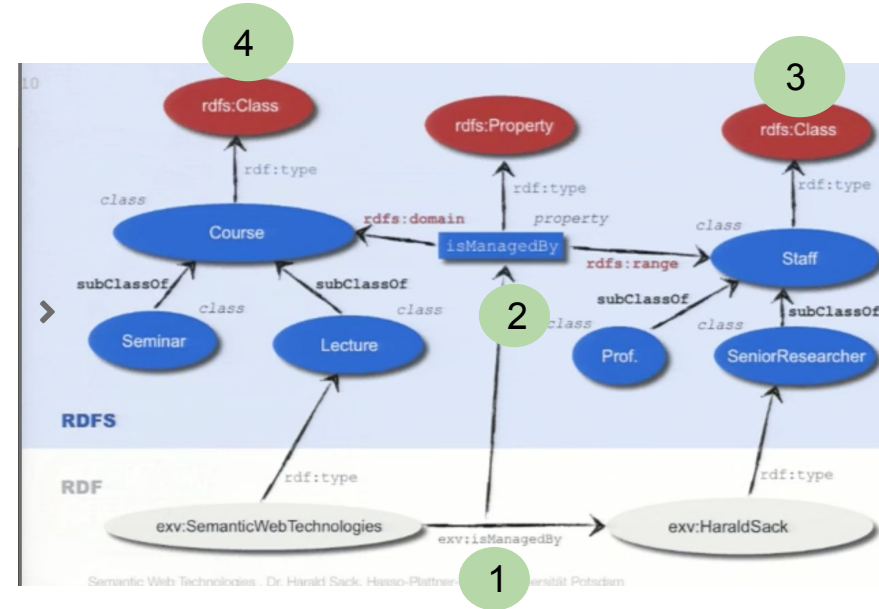
```
:SemanticWebTechnologies a :Lecture .
:HaraldSack a :SeniorResearcher .
:SemanticWebTechnologies :isManagedBy :HaraldSack .
```

4

3

2

1



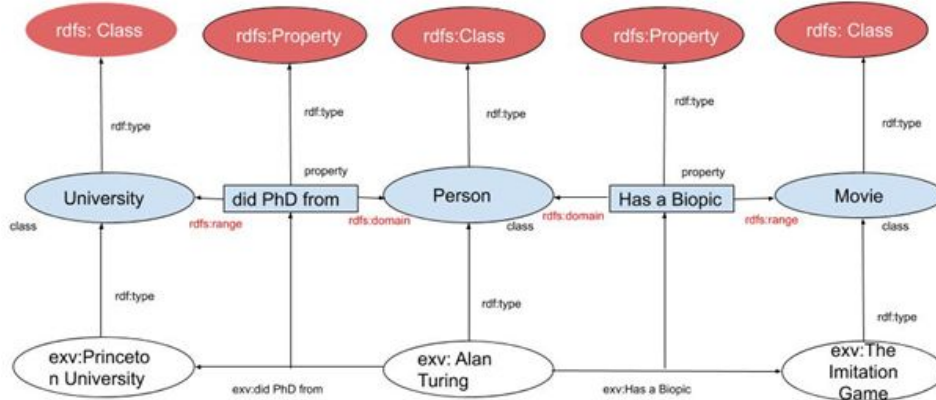
Example 1



exv:Jane exv:hasIncome exv:High.

Semantic Web Architecture

Alan Turing - RDF/RDFS graph



```

@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
@prefix exv: <http://example.com/>
  
```

```

exv:Person a rdfs:Class .
exv:Movie a rdfs:Class .
exv:University a rdfs:Class .
  
```

```

exv:Princeton a exv:University .
exv:AlanTuring a exv:Person .
exv:TheImitationGame a exv:Movie .
  
```

```

exv:didPhDFrom a rdfs:Property ;
rdfs:domain exv:University ;
rdfs:range exv:Person .
  
```

```

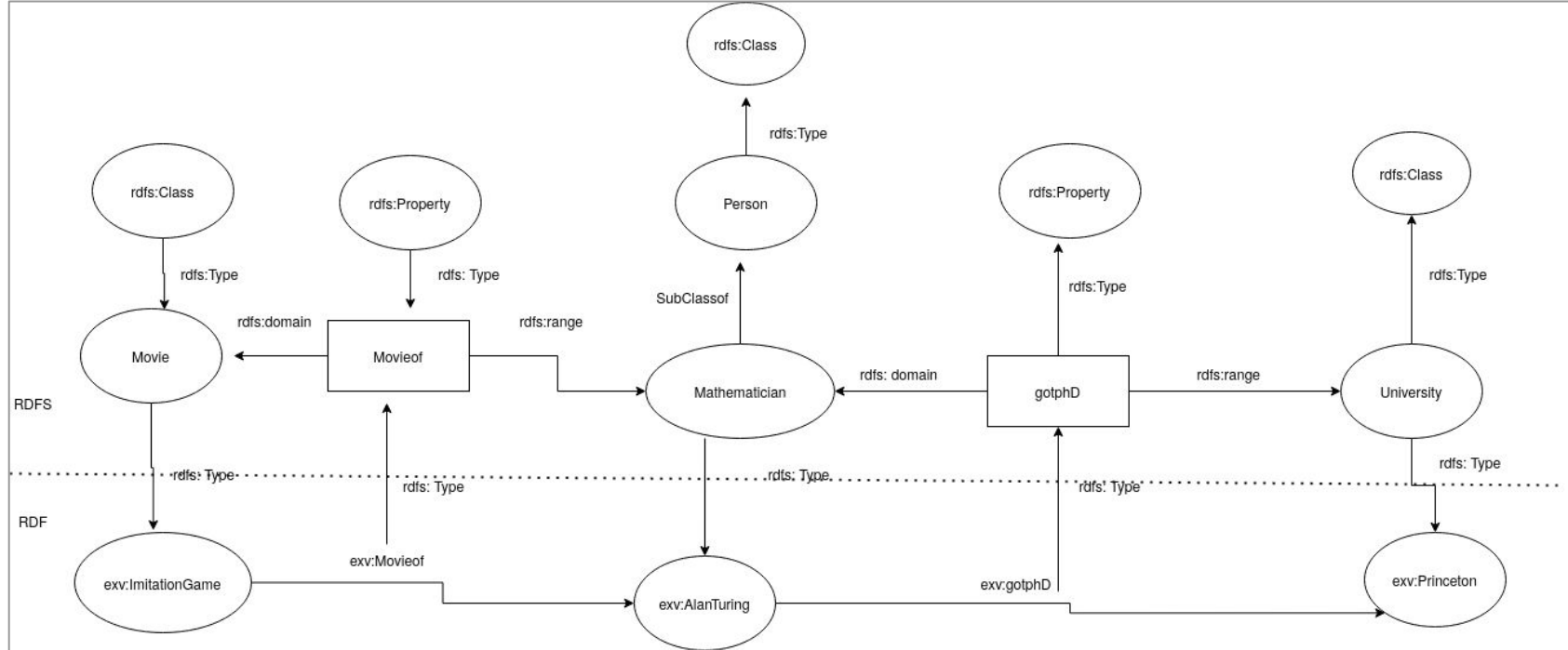
exv:HasABiopic a rdfs:Property ;
rdfs:domain exv:Person ;
rdfs:range exv:Movie .
  
```

```

exv:AlanTuring exv:HasABiopic exv:TheImitationGame;
exv:didPhDFrom exv:Princeton .
  
```

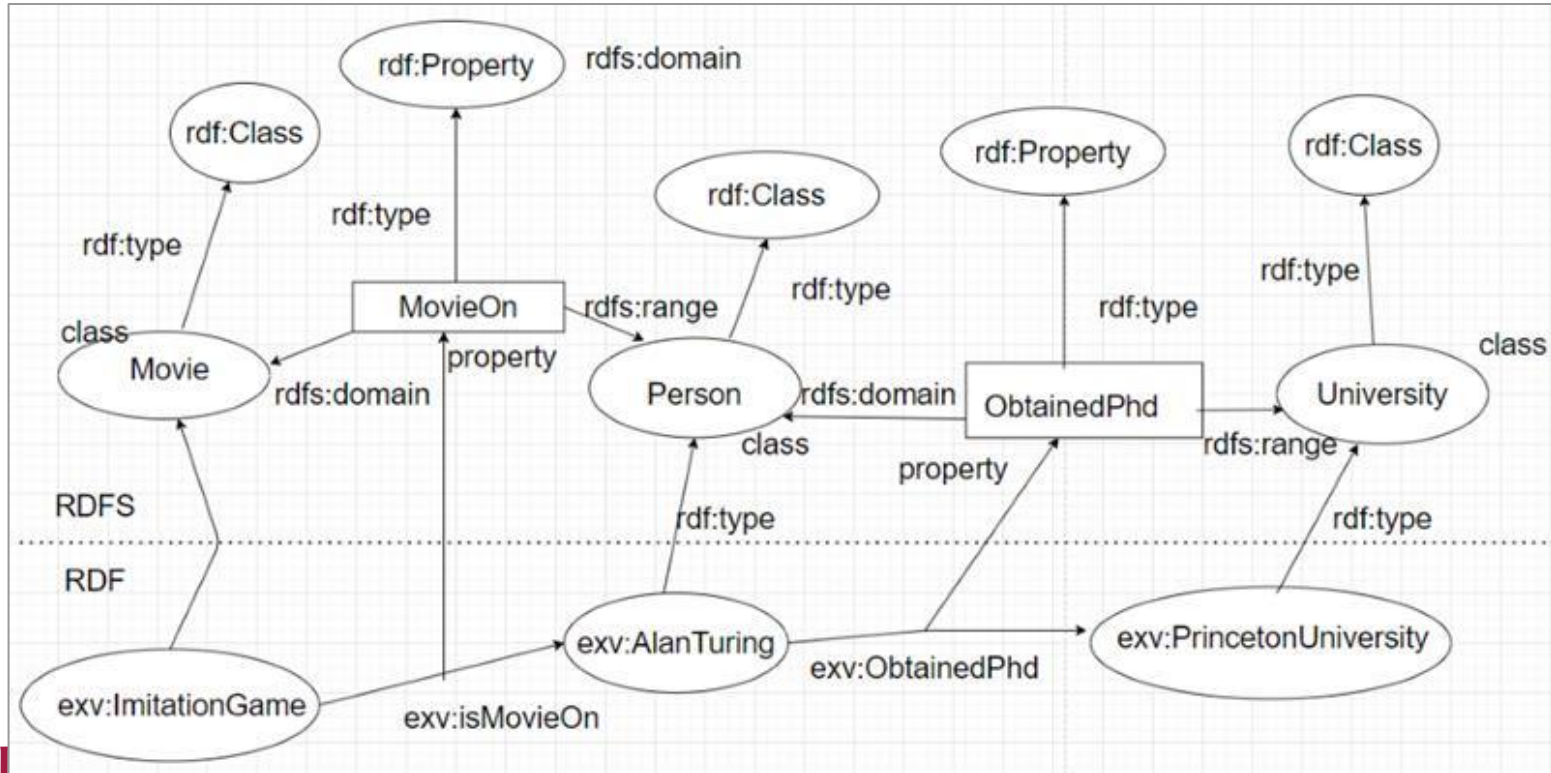
Semantic Web Architecture

Alan Turing - RDF/RDFS graph



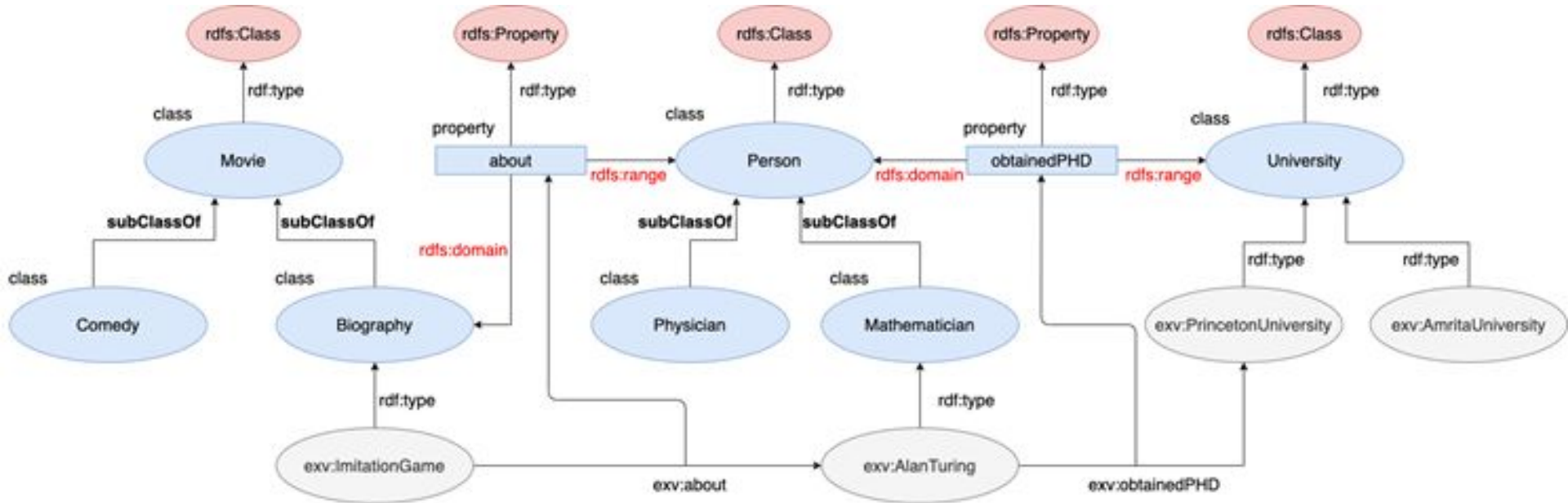
Semantic Web Architecture

Alan Turing - RDF/RDFS graph



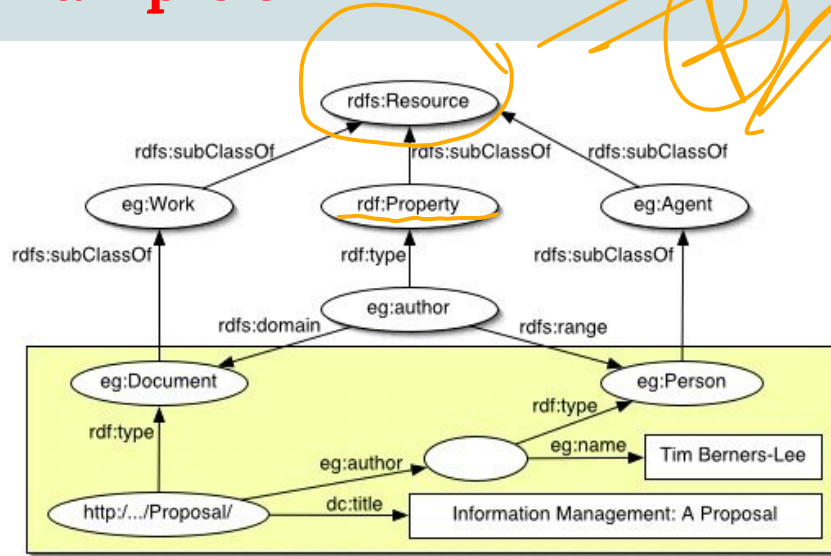
Semantic Web Architecture

Alan Turing - RDF/RDFS graph



Semantic Web Architecture

Example 3



@prefix rdfs: <<http://www.w3.org/2000/01/rdf-schema#>>

@prefix rdf: <<http://www.w3.org/1999/02/22-rdf-syntax-ns#>>

```

:Resource      a      rdfs:Class      .
:Property      a      rdfs:Class      ;
               rdfs:subClassOf :Resource .
    
```

```

eg:Work      a      rdfs:Class      ;
             rdfs:subClassOf :Resource .
    
```

```

eg:Agent      a      rdfs:Class      ;
             rdfs:subClassOf :Resource .
    
```

```

eg:Person      a      rdfs:Class      ;
             rdfs:subClassOf :Agent .
    
```

```

eg:Document      a      rdfs:Class      ;
             rdfs:subClassOf :Work .
    
```

```

eg:author      a      rdfs:Property      ;
             rdfs:domain      eg:Document      ;
             rdfs:range      eg:Person .
    
```

```

<http://.../Proposal>      a      eg:Document      ;
eg:author [      a      eg:Person      ;
               eg:name "Tim Berners Lee"      .] ;
dc:title "Information Management: A Proposal" .
    
```


Semantic Web Architecture

Common Mistakes

:PhD :isObtainedBy :AlanTuring :From :Princeton .
:TheImitationGame :On :AlanTuring .

:hasIncome a rdf : Property;
Rdfs:domain:Person .

**There can only be 3 parts to a turtle statement -
Subject, Property, Object**

Namespace prefix need to be declared or mentioned
@prefix exv: <http://example.com/>

**Space between subject, property, object.
No space between namespace and name.**

rdf:property - not rdf : property

: is used to specify namespace

Semantic Web Architecture

Common Mistakes

:link exv :Title : "Information Management: A Proposal"

:alan turing : obtained his phd from : princeton university.

:imitaion game : film on : alan turing.

Colon (:) before literal not required

:link exv:Title "Information Management.."

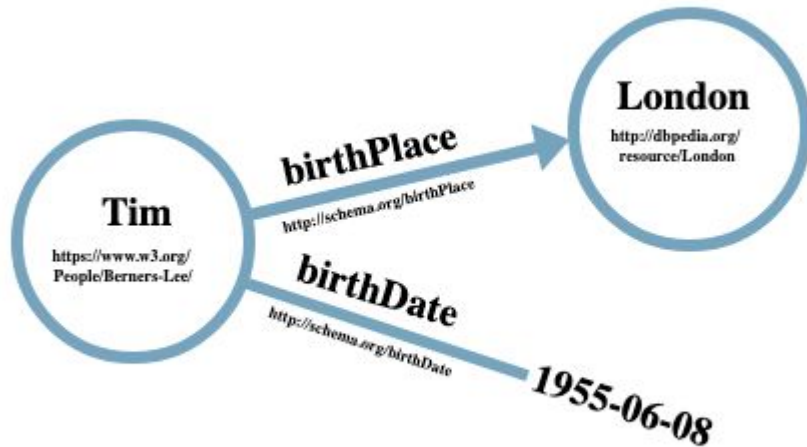
Space between subject, property, object.

No space between namespace and name.

No space within the names too!!

Semantic Web Architecture

Quiz U2Q3



Many of you scored substantially less during Quizzes U2Q1 U2Q2.

So, Quiz U2Q3 will be a bonus assignment.

You have to write the turtle RDF/RDFS triple statements for the given graph.

Use proper prefixes, correct spacing and ensure literal/URI differentiation.