

## RDFS for VEM

```
<?xml version="1.0"?>
```

```
<!DOCTYPE rdf:RDF [
```

```
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY swrl "http://www.w3.org/2003/11/swrl#" >
  <!ENTITY swrlb "http://www.w3.org/2003/11/swrlb#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY assert "http://www.owl-ontologies.com/assert.owl#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY protege "http://protege.stanford.edu/plugins/owl/protege#" >
  <!ENTITY xsp "http://www.owl-ontologies.com/2005/08/07/xsp.owl#" >
  <!ENTITY swrla "http://swrl.stanford.edu/ontologies/3.3/swrla.owl#" >
  <!ENTITY sqwrl "http://sqwrl.stanford.edu/ontologies/built-ins/3.4/sqwrl.owl#" >
```

```
]>
```

```
<rdf:RDF xmlns="http://www.owl-ontologies.com/URIVEM#">
```

```
  xml:base="http://www.owl-ontologies.com/URIVEM"
  xmlns:sqwrl="http://sqwrl.stanford.edu/ontologies/built-ins/3.4/sqwrl.owl#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:swrl="http://www.w3.org/2003/11/swrl#"
  xmlns:protege="http://protege.stanford.edu/plugins/owl/protege#"
  xmlns:xsp="http://www.owl-ontologies.com/2005/08/07/xsp.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:swrlb="http://www.w3.org/2003/11/swrlb#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:assert="http://www.owl-ontologies.com/assert.owl#"
  xmlns:swrla="http://swrl.stanford.edu/ontologies/3.3/swrla.owl#">
```

```
  <owl:Ontology rdf:about="">
```

```
    <owl:imports rdf:resource="http://sqwrl.stanford.edu/ontologies/built-ins/3.4/sqwrl.owl"/>
```

```
    <owl:imports rdf:resource="http://swrl.stanford.edu/ontologies/3.3/swrla.owl"/>
```

```
    <owl:imports rdf:resource="http://www.owl-ontologies.com/assert.owl"/>
```

```
  </owl:Ontology>
```

```
  <owl:ObjectProperty rdf:ID="A11_restricted_by">
```

```
    <rdfs:domain rdf:resource="#Constraint"/>
```

```
    <rdfs:range rdf:resource="#Principles"/>
```

```
    <rdfs:subPropertyOf rdf:resource="#A1_has_interest"/>
```

```
  </owl:ObjectProperty>
```

```
  <owl:ObjectProperty rdf:ID="A1_has_interest">
```

```
    <rdfs:domain rdf:resource="#Stakeholder"/>
```

```
    <rdfs:range rdf:resource="#Principles"/>
```

```

    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A2_analysed_by">
    <rdfs:domain rdf:resource="#Principles"/>
    <rdfs:range rdf:resource="#Assessment"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A3_decomposed_to">
    <rdfs:domain rdf:resource="#Assessment"/>
    <rdfs:range rdf:resource="#Goal"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A4_specified_by">
    <rdfs:domain rdf:resource="#Goal"/>
    <rdfs:range rdf:resource="#Requirement"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A_formalised_into">
    <rdfs:domain rdf:resource="#Requirement"/>
    <rdfs:range rdf:resource="#Composite_Motivation"/>
</owl:ObjectProperty>
<rdfs:Class rdf:ID="Actor">
    <rdfs:subClassOf rdf:resource="#Business_Role"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Assessment">
    <rdfs:subClassOf rdf:resource="#Composite_Motivation"/>
</rdfs:Class>
<owl:ObjectProperty rdf:ID="B11_associated_with">
    <rdfs:domain rdf:resource="#Business_Object"/>
    <rdfs:range rdf:resource="#Meaning"/>
    <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B12_aggregated_with">
    <rdfs:domain rdf:resource="#Product"/>
    <rdfs:range rdf:resource="#Contract"/>
    <rdfs:subPropertyOf rdf:resource="#B21_aggregated_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B12_specified_by">
    <rdfs:domain rdf:resource="#Business_Object"/>
    <rdfs:range rdf:resource="#Contract"/>
    <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B13_assigned_to">

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    <rdfs:domain rdf:resource="#Location"/>
    <rdfs:range rdf:resource="#Representation"/>
    <rdfs:subPropertyOf rdf:resource="#B511_assigned_to"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B13_realised_by">
    <rdfs:domain rdf:resource="#Business_Object"/>
    <rdfs:range rdf:resource="#Representation"/>
    <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B1_available_in">
    <rdfs:domain rdf:resource="#BDD_Validation_Element"/>
    <rdfs:range rdf:resource="#Business_Object"/>
    <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B211_associated_with">
    <rdfs:domain rdf:resource="#Product"/>
    <rdfs:range rdf:resource="#Value"/>
    <rdfs:subPropertyOf rdf:resource="#B21_aggregated_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B21_aggregated_by">
    <rdfs:domain rdf:resource="#Business_Service"/>
    <rdfs:range rdf:resource="#Product"/>
    <rdfs:subPropertyOf rdf:resource="#B2_accessed_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B2_accessed_by">
    <rdfs:domain rdf:resource="#Business_Object"/>
    <rdfs:range rdf:resource="#Business_Service"/>
    <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B2_realized_by">
    <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
    <rdfs:range rdf:resource="#Business_Service"/>
    <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B31_specialized_by">
    <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
    <rdfs:range rdf:resource="#Interaction"/>
    <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B32_specialized_by">
    <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
    <rdfs:range rdf:resource="#Process"/>
    <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>

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</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B33_specialized_by">
  <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:range rdf:resource="#Function"/>
  <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_accessed_by">
  <rdfs:domain rdf:resource="#Business_Object"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_conforms_with">
  <rdfs:domain rdf:resource="#BDD_Validation_Element"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_effectuality">
  <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_integrity">
  <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_triggered_by">
  <rdfs:domain rdf:resource="#Business_Event"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B4_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B3_used_by">
  <rdfs:domain rdf:resource="#Business_Service"/>
  <rdfs:range rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:subPropertyOf rdf:resource="#B2_accessed_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B4_accessed_by">
  <rdfs:domain rdf:resource="#Business_Object"/>
  <rdfs:range rdf:resource="#Business_Event"/>
  <rdfs:subPropertyOf rdf:resource="#B1_available_in"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B4_dependency_of">
  <rdfs:domain rdf:resource="#BDD_Validation_Element"/>

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    <rdfs:range rdf:resource="#Business_Event"/>
    <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B4_realized_by">
    <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
    <rdfs:range rdf:resource="#Business_Event"/>
    <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B511_assigned_to">
    <rdfs:domain rdf:resource="#Actor"/>
    <rdfs:range rdf:resource="#Location"/>
    <rdfs:subPropertyOf rdf:resource="#B51_assigned_to"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B51_aggregated_by">
    <rdfs:domain rdf:resource="#Collaboration"/>
    <rdfs:range rdf:resource="#Actor"/>
    <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B51_assigned_to">
    <rdfs:domain rdf:resource="#Business_Role"/>
    <rdfs:range rdf:resource="#Actor"/>
    <rdfs:subPropertyOf rdf:resource="#B5_authenticated_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B52_associated_with">
    <rdfs:domain rdf:resource="#Busines_Service"/>
    <rdfs:range rdf:resource="#Interface"/>
    <rdfs:subPropertyOf rdf:resource="#B2_accessed_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B52_used_by">
    <rdfs:domain rdf:resource="#Business_Role"/>
    <rdfs:range rdf:resource="#Interface"/>
    <rdfs:subPropertyOf rdf:resource="#B5_authenticated_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B53_specialized_by">
    <rdfs:domain rdf:resource="#Business_Role"/>
    <rdfs:range rdf:resource="#Collaboration"/>
    <rdfs:subPropertyOf rdf:resource="#B5_authenticated_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B5_aggregated_by">
    <rdfs:domain rdf:resource="#Collaboration"/>
    <rdfs:range rdf:resource="#Business_Role"/>
    <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>

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<owl:ObjectProperty rdf:ID="B5_assigned_to">
  <rdfs:domain rdf:resource="#Business_Behaviour_Element"/>
  <rdfs:range rdf:resource="#Business_Role"/>
  <rdfs:subPropertyOf rdf:resource="#B3_conforms_with"/>
</owl:ObjectProperty>

<owl:ObjectProperty rdf:ID="B5_authenticated_by">
  <rdfs:domain rdf:resource="#BDD_Validation_Element"/>
  <rdfs:range rdf:resource="#Business_Role"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>

<owl:ObjectProperty rdf:ID="B5_composed_of">
  <rdfs:domain rdf:resource="#Interface"/>
  <rdfs:range rdf:resource="#Business_Role"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>

<owl:ObjectProperty rdf:ID="B_factored_by">
  <rdfs:domain rdf:resource="#Composite_Motivation"/>
  <rdfs:range rdf:resource="#BDD_Validation_Element"/>
</owl:ObjectProperty>

<rdfs:Class rdf:ID="BDD_Validation_Element"/>
<rdfs:Class rdf:ID="Business_Service">
  <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Business_Behaviour_Element">
  <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Business_Event">
  <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Business_Object">
  <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Business_Role">
  <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Collaboration">
  <rdfs:subClassOf rdf:resource="#Business_Role"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Composite_Motivation"/>
<rdfs:Class rdf:ID="Constraint">
  <rdfs:subClassOf rdf:resource="#Principles"/>
</rdfs:Class>

<rdfs:Class rdf:ID="Contract">

```

```

    <rdfs:subClassOf rdf:resource="#Business_Object"/>
</rdfs:Class>
<owl:DatatypeProperty rdf:ID="False">
    <rdfs:domain>
        <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
                <rdfs:Class rdf:about="#BDD_Validation_Element"/>
                <rdfs:Class rdf:about="#Composite_Motivation"/>
            </owl:unionOf>
        </owl:Class>
    </rdfs:domain>
    <rdfs:range rdf:resource="&xsd:boolean"/>
</owl:DatatypeProperty>
<rdfs:Class rdf:ID="Function">
    <rdfs:subClassOf rdf:resource="#Business_Behaviour_Element"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Goal">
    <rdfs:subClassOf rdf:resource="#Composite_Motivation"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Interaction">
    <rdfs:subClassOf rdf:resource="#Business_Behaviour_Element"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Interface">
    <rdfs:subClassOf rdf:resource="#Business_Role"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Location">
    <rdfs:subClassOf rdf:resource="#Business_Role"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Meaning">
    <rdfs:subClassOf rdf:resource="#BDD_Validation_Element"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Principles">
    <rdfs:subClassOf rdf:resource="#Composite_Motivation"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Process">
    <rdfs:subClassOf rdf:resource="#Business_Behaviour_Element"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Product">
    <rdfs:subClassOf rdf:resource="#Contract"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Representation">
    <rdfs:subClassOf rdf:resource="#Business_Object"/>
</rdfs:Class>

```

```
<rdfs:Class rdf:ID="Requirement">
  <rdfs:subClassOf rdf:resource="#Composite_Motivation"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Stakeholder">
  <rdfs:subClassOf rdf:resource="#Composite_Motivation"/>
</rdfs:Class>
<owl:DatatypeProperty rdf:ID="True">
  <rdfs:domain>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <rdfs:Class rdf:about="#BDD_Validation_Element"/>
        <rdfs:Class rdf:about="#Composite_Motivation"/>
      </owl:unionOf>
    </owl:Class>
  </rdfs:domain>
  <rdfs:range rdf:resource="&xsd:boolean"/>
</owl:DatatypeProperty>
<rdfs:Class rdf:ID="Value">
  <rdfs:subClassOf rdf:resource="#Contract"/>
</rdfs:Class>
</rdf:RDF>
```



## RDFS for UME-LLS Case Study

```
<?xml version="1.0"?>
<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY swrl "http://www.w3.org/2003/11/swrl#" >
  <!ENTITY swrlb "http://www.w3.org/2003/11/swrlb#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY protege "http://protege.stanford.edu/plugins/owl/protege#" >
  <!ENTITY xsp "http://www.owl-ontologies.com/2005/08/07/xsp.owl#" >
]>

<rdf:RDF xmlns="http://www.owl-ontologies.com/Ontology1395059966.owl#"
  xml:base="http://www.owl-ontologies.com/Ontology1395059966.owl"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:swrl="http://www.w3.org/2003/11/swrl#"
  xmlns:protege="http://protege.stanford.edu/plugins/owl/protege#"
  xmlns:xsp="http://www.owl-ontologies.com/2005/08/07/xsp.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:swrlb="http://www.w3.org/2003/11/swrlb#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <owl:Ontology rdf:about=""/>
  <owl:ObjectProperty rdf:ID="A0_has_interest">
    <rdfs:domain rdf:resource="#Student"/>
    <rdfs:range rdf:resource="#Align_Student_and_Resource"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A11_restricted_by">
    <rdfs:domain rdf:resource="#Align_Student_and_Resource"/>
    <rdfs:range rdf:resource="#Module_Registration"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A12_restricted_by">
    <rdfs:domain rdf:resource="#Align_Student_and_Resource"/>
    <rdfs:range rdf:resource="#Study_Enrolment"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A13_restricted_by">
    <rdfs:domain rdf:resource="#Align_Student_and_Resource"/>
    <rdfs:range rdf:resource="#Fee_Payment"/>
```

```

    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A1_analysed_by">
    <rdfs:domain rdf:resource="#Align_Student_and_Resource"/>
    <rdfs:range rdf:resource="#Student_Legibility"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A2_decomposed_to">
    <rdfs:domain rdf:resource="#Student_Legibility"/>
    <rdfs:range rdf:resource="#Obtain_Laptop"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A3_specified_by">
    <rdfs:domain rdf:resource="#Obtain_Laptop"/>
    <rdfs:range rdf:resource="#Composition_Specification"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A_formalised_into">
    <rdfs:domain rdf:resource="#Composition_Specification"/>
    <rdfs:range rdf:resource="#BDD_Validation"/>
</owl:ObjectProperty>
<rdfs:Class rdf:ID="Align_Student_and_Resource">
    <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
</rdfs:Class>
<owl:ObjectProperty rdf:ID="B11_used_by">
    <rdfs:domain rdf:resource="#Laptop_Pool"/>
    <rdfs:range rdf:resource="#Laptop_Request_Process"/>
    <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B13_aggregation_of">
    <rdfs:domain rdf:resource="#Module_Timetable"/>
    <rdfs:range rdf:resource="#Module"/>
    <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B14_used_by">
    <rdfs:domain rdf:resource="#Room_Allocation_Process"/>
    <rdfs:range rdf:resource="#Module_Timetable"/>
    <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B2_accessed_by">
    <rdfs:domain rdf:resource="#Laptop_Pool"/>
    <rdfs:range rdf:resource="#Software_Licence"/>
    <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>

```

```

</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B2_realised_by">
  <rdfs:domain rdf:resource="#Software_Licence"/>
  <rdfs:range rdf:resource="#Laptop_Pool"/>
  <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B31_accessed_by">
  <rdfs:domain rdf:resource="#Room_Allocation_Process"/>
  <rdfs:range rdf:resource="#Learning_Room"/>
  <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B31_used_by">
  <rdfs:domain rdf:resource="#Learning_Room"/>
  <rdfs:range rdf:resource="#Room_Allocation_Process"/>
  <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B32_accessed_by">
  <rdfs:domain rdf:resource="#Laptop_Pool"/>
  <rdfs:range rdf:resource="#Laptop_Request_Process"/>
  <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B41_dependency_of">
  <rdfs:domain rdf:resource="#BDD_Validation"/>
  <rdfs:range rdf:resource="#Request_Learning_Room"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B41_triggers">
  <rdfs:domain rdf:resource="#Request_Learning_Room"/>
  <rdfs:range rdf:resource="#Room_Allocation_Process"/>
  <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B42_dependency_of">
  <rdfs:domain rdf:resource="#BDD_Validation"/>
  <rdfs:range rdf:resource="#Request_Laptop"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B42_triggers">
  <rdfs:domain rdf:resource="#Request_Laptop"/>
  <rdfs:range rdf:resource="#Laptop_Request_Process"/>
  <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B53_realised_by">
  <rdfs:domain rdf:resource="#Software_Licence"/>

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    <rdfs:range rdf:resource="#External_Interraction"/>
    <rdfs:subPropertyOf rdf:resource="#B42_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B_factored_by">
    <rdfs:domain rdf:resource="#BDD_Validation"/>
    <rdfs:range rdf:resource="#Composition_Specification"/>
</owl:ObjectProperty>
<rdfs:Class rdf:ID="BDD_Validation"/>
<rdfs:Class rdf:ID="Composition_Specification"/>
<rdfs:Class rdf:ID="External_Interraction">
    <rdfs:subClassOf rdf:resource="#Software_Licence"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Fee_Payment">
    <rdfs:subClassOf rdf:resource="#Align_Student_and_Resource"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Laptop_Pool">
    <rdfs:subClassOf rdf:resource="#Laptop_Request_Process"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Laptop_Request_Process">
    <rdfs:subClassOf rdf:resource="#Request_Laptop"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Learning_Room">
    <rdfs:subClassOf rdf:resource="#Room_Allocation_Process"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Module">
    <rdfs:subClassOf rdf:resource="#Module_Timetable"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Module_Registration">
    <rdfs:subClassOf rdf:resource="#Align_Student_and_Resource"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Module_Timetable">
    <rdfs:subClassOf rdf:resource="#Room_Allocation_Process"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Obtain_Laptop">
    <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Request_Laptop">
    <rdfs:subClassOf rdf:resource="#BDD_Validation"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Request_Learning_Room">
    <rdfs:subClassOf rdf:resource="#BDD_Validation"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Room_Allocation_Process">

```

```
    <rdfs:subClassOf rdf:resource="#Request_Learning_Room"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Software_Licence">
    <rdfs:subClassOf rdf:resource="#Laptop_Pool"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Student">
    <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Student_Legibility">
    <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
</rdfs:Class>
<rdfs:Class rdf:ID="Study_Enrolment">
    <rdfs:subClassOf rdf:resource="#Allign_Student_and_Resource"/>
</rdfs:Class>
</rdf:RDF>
```

## RDFS for UWL-SIP Case Study

```
<?xml version="1.0"?>

<!DOCTYPE rdf:RDF [
  <!ENTITY owl "http://www.w3.org/2002/07/owl#" >
  <!ENTITY swrl "http://www.w3.org/2003/11/swrl#" >
  <!ENTITY swrlb "http://www.w3.org/2003/11/swrlb#" >
  <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#" >
  <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#" >
  <!ENTITY assert "http://www.owl-ontologies.com/assert.owl#" >
  <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#" >
  <!ENTITY protege "http://protege.stanford.edu/plugins/owl/protege#" >
  <!ENTITY xsp "http://www.owl-ontologies.com/2005/08/07/xsp.owl#" >

<rdf:RDF xmlns="http://www.owl-ontologies.com/Ontology1395071142.owl#"
  xml:base="http://www.owl-ontologies.com/Ontology1395071142.owl"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:swrl="http://www.w3.org/2003/11/swrl#"
  xmlns:protege="http://protege.stanford.edu/plugins/owl/protege#"
  xmlns:xsp="http://www.owl-ontologies.com/2005/08/07/xsp.owl#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
  xmlns:swrlb="http://www.w3.org/2003/11/swrlb#"
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:assert="http://www.owl-ontologies.com/assert.owl#">
  <owl:Ontology rdf:about="">
    <owl:imports rdf:resource="http://www.owl-ontologies.com/assert.owl"/>
  </owl:Ontology>
  <owl:ObjectProperty rdf:ID="A0_has_interest">
    <rdfs:domain rdf:resource="#Student"/>
    <rdfs:range rdf:resource="#Develop_employment_skills"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A11_restricted_by">
    <rdfs:domain rdf:resource="#Develop_employment_skills"/>
    <rdfs:range rdf:resource="#Enroll_for_study"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A12_restricted_by">
    <rdfs:domain rdf:resource="#Develop_employment_skills"/>
    <rdfs:range rdf:resource="#Pass_PIT5"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A13_restricted_by">
    <rdfs:domain rdf:resource="#Develop_employment_skills"/>
    <rdfs:range rdf:resource="#Placement_IT_Related"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
  </owl:ObjectProperty>
  <owl:ObjectProperty rdf:ID="A14_restricted_by">
```

```

    <rdfs:domain rdf:resource="#Develop_employment_skills"/>
    <rdfs:range rdf:resource="#Within_3_Years_of_Study"/>
    <rdfs:subPropertyOf rdf:resource="#A1_analysed_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A1_analysed_by">
    <rdfs:domain rdf:resource="#Develop_employment_skills"/>
    <rdfs:range rdf:resource="#Internship_Legibility"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A2_decomposed_into">
    <rdfs:domain rdf:resource="#Internship_Legibility"/>
    <rdfs:range rdf:resource="#Obtain_placement"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A3_specified_by">
    <rdfs:domain rdf:resource="#Obtain_placement"/>
    <rdfs:range rdf:resource="#Composition_Specification"/>
    <rdfs:subPropertyOf rdf:resource="#A_formalised_into"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="A_formalised_into">
    <rdfs:domain rdf:resource="#Composition_Specification"/>
    <rdfs:range rdf:resource="#BDD_Validation"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B11_aggregated_by">
    <rdfs:domain rdf:resource="#Internship_listing"/>
    <rdfs:range>
        <owl:Class>
            <owl:unionOf rdf:parseType="Collection">
                <owl:Class rdf:about="#Employer_detail"/>
                <owl:Class rdf:about="#Internship_search_and_match"/>
            </owl:unionOf>
        </owl:Class>
    </rdfs:range>
    <rdfs:subPropertyOf rdf:resource="#B23_used_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B12_accessed_by">
    <rdfs:domain rdf:resource="#Internship_search_and_match"/>
    <rdfs:range rdf:resource="#Internship_listing"/>
    <rdfs:subPropertyOf rdf:resource="#B23_used_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B13_accessed_by">
    <rdfs:domain rdf:resource="#Student_assessment_and_exam"/>
    <rdfs:range rdf:resource="#Student_record"/>
    <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B13_associated_with">
    <rdfs:domain rdf:resource="#PIT5_and_exams_record"/>
    <rdfs:range rdf:resource="#Student_record"/>
    <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>

```

```

<owl:ObjectProperty rdf:ID="B14_accessed_by">
  <rdfs:domain rdf:resource="#Student_assessment_and_exam"/>
  <rdfs:range rdf:resource="#PIT5_and_exams_record"/>
  <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B22_accessed_by">
  <rdfs:domain rdf:resource="#Registration_and_enrollment"/>
  <rdfs:range rdf:resource="#Student_record"/>
  <rdfs:subPropertyOf rdf:resource="#B22_used_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B22_used_by">
  <rdfs:domain rdf:resource="#Study_enrollment"/>
  <rdfs:range rdf:resource="#Registration_and_enrollment"/>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B23_accesses">
  <rdfs:domain rdf:resource="#Internship_search_and_match"/>
  <rdfs:range rdf:resource="#Student_record"/>
  <rdfs:subPropertyOf rdf:resource="#B23_used_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B23_used_by">
  <rdfs:domain rdf:resource="#Internship_application"/>
  <rdfs:range rdf:resource="#Internship_search_and_match"/>
  <rdfs:subPropertyOf rdf:resource="#B334_triggered_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B24_used_by">
  <rdfs:domain rdf:resource="#Legibility_determination"/>
  <rdfs:range rdf:resource="#Student_assessment_and_exam"/>
  <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B2_consist_of">
  <rdfs:domain rdf:resource="#Obtain_placement_process"/>
  <rdfs:range>
    <owl:Class>
      <owl:unionOf rdf:parseType="Collection">
        <owl:Class rdf:about="#Internship_application"/>
        <owl:Class rdf:about="#Internship_finding"/>
        <owl:Class rdf:about="#Legibility_determination"/>
      </owl:unionOf>
    </owl:Class>
  </rdfs:range>
  <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B331_flow_from">
  <rdfs:domain rdf:resource="#Internship_finding"/>
  <rdfs:range rdf:resource="#Internship_application"/>
  <rdfs:subPropertyOf rdf:resource="#B334_triggered_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B331_used_by">
  <rdfs:domain rdf:resource="#Internship_finding"/>

```



```

    <rdfs:range rdf:resource="#Internship_search_and_match"/>
    <rdfs:subPropertyOf rdf:resource="#B334_triggered_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B333_flow_from">
    <rdfs:domain rdf:resource="#Legibility_determination"/>
    <rdfs:range rdf:resource="#Internship_finding"/>
    <rdfs:subPropertyOf rdf:resource="#B334_triggered_by"/>
</owl:ObjectProperty>
<owl:ObjectProperty rdf:ID="B334_triggered_by">
    <rdfs:domain rdf:resource="#Request_for_Internship"/>
    <rdfs:range rdf:resource="#Legibility_determination"/>
    <rdfs:subPropertyOf rdf:resource="#B41_dependency_of"/>
</owl:ObjectProperty>
<owl:TransitiveProperty rdf:ID="B41_dependency_of">
    <rdf:type rdf:resource="&owl;ObjectProperty"/>
    <rdfs:domain rdf:resource="#BDD_Validation"/>
    <rdfs:range rdf:resource="#Request_for_Internship"/>
    <rdfs:subPropertyOf rdf:resource="#B_factored_by"/>
</owl:TransitiveProperty>
<owl:ObjectProperty rdf:ID="B_factored_by">
    <rdfs:domain rdf:resource="#BDD_Validation"/>
    <rdfs:range rdf:resource="#Composition_Specification"/>
</owl:ObjectProperty>
<owl:Class rdf:ID="BDD_Validation">
    <assert:notEmpty rdf:datatype="&xsd:string"
        >SELECT ?object ?subject
WHERE { ?subject rdfs:range ?object }
ORDER BY ?subject</assert:notEmpty>
    <owl:disjointWith rdf:resource="#Composition_Specification"/>
</owl:Class>
<owl:Class rdf:ID="Composition_Specification">
    <owl:disjointWith rdf:resource="#BDD_Validation"/>
</owl:Class>
<owl:Class rdf:ID="Develop_employment_skills">
    <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
    <owl:disjointWith rdf:resource="#Internship_Legibility"/>
    <owl:disjointWith rdf:resource="#Obtain_placement"/>
    <owl:disjointWith rdf:resource="#Student"/>
</owl:Class>
<owl:Class rdf:ID="Employer_detail">
    <rdfs:subClassOf rdf:resource="#Internship_listing"/>
</owl:Class>
<owl:Class rdf:ID="Enroll_for_study">
    <rdfs:subClassOf rdf:resource="#Develop_employment_skills"/>
</owl:Class>
<owl:Class rdf:ID="Internship_application">
    <rdfs:subClassOf rdf:resource="#Obtain_placement_process"/>
</owl:Class>
<owl:Class rdf:ID="Internship_finding">
    <rdfs:subClassOf rdf:resource="#Obtain_placement_process"/>

```

```

</owl:Class>
<owl:Class rdf:ID="Internship_Legibility">
  <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
  <owl:disjointWith rdf:resource="#Develop_employment_skills"/>
  <owl:disjointWith rdf:resource="#Obtain_placement"/>
  <owl:disjointWith rdf:resource="#Student"/>
</owl:Class>
<owl:Class rdf:ID="Internship_listing">
  <rdfs:subClassOf rdf:resource="#Internship_search_and_match"/>
</owl:Class>
<owl:Class rdf:ID="Internship_search_and_match">
  <rdfs:subClassOf rdf:resource="#Internship_application"/>
</owl:Class>
<owl:Class rdf:ID="Legibility_determination">
  <rdfs:subClassOf rdf:resource="#Obtain_placement_process"/>
</owl:Class>
<owl:Class rdf:ID="Obtain_placement">
  <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
  <owl:disjointWith rdf:resource="#Develop_employment_skills"/>
  <owl:disjointWith rdf:resource="#Internship_Legibility"/>
</owl:Class>
<owl:Class rdf:ID="Obtain_placement_process">
  <rdfs:subClassOf rdf:resource="#Request_for_Internship"/>
</owl:Class>
<owl:Class rdf:ID="Pass_PIT5">
  <rdfs:subClassOf rdf:resource="#Develop_employment_skills"/>
</owl:Class>
<owl:Class rdf:ID="PIT5_and_exams_record">
  <rdfs:subClassOf rdf:resource="#Student_assessment_and_exam"/>
</owl:Class>
<owl:Class rdf:ID="Placement_IT_Related">
  <rdfs:subClassOf rdf:resource="#Develop_employment_skills"/>
</owl:Class>
<owl:Class rdf:ID="Registration_and_enrollment">
  <rdfs:subClassOf rdf:resource="#Study_enrollment"/>
  <owl:disjointWith rdf:resource="#Request_for_Internship"/>
  <owl:disjointWith rdf:resource="#Study_enrollment"/>
</owl:Class>
<owl:Class rdf:ID="Request_for_Internship">
  <rdfs:subClassOf rdf:resource="#BDD_Validation"/>
  <owl:disjointWith rdf:resource="#Registration_and_enrollment"/>
  <owl:disjointWith rdf:resource="#Study_enrollment"/>
</owl:Class>
<owl:Class rdf:ID="Student">
  <rdfs:subClassOf rdf:resource="#Composition_Specification"/>
  <owl:disjointWith rdf:resource="#Develop_employment_skills"/>
  <owl:disjointWith rdf:resource="#Internship_Legibility"/>
</owl:Class>
<owl:Class rdf:ID="Student_assessment_and_exam">
  <rdfs:subClassOf rdf:resource="#Legibility_determination"/>

```

```
</owl:Class>
<owl:Class rdf:ID="Student_record">
  <rdfs:subClassOf rdf:resource="#Registration_and_enrollment"/>
</owl:Class>
<owl:Class rdf:ID="Study_enrollment">
  <rdfs:subClassOf rdf:resource="#BDD_Validation"/>
  <owl:disjointWith rdf:resource="#Registration_and_enrollment"/>
  <owl:disjointWith rdf:resource="#Request_for_Internship"/>
</owl:Class>
<owl:Class rdf:ID="Within_3_Years_of_Study">
  <rdfs:subClassOf rdf:resource="#Develop_employment_skills"/>
</owl:Class>
</rdf:RDF>
```