What to turn in: a compressed file called: **HW3_lasname_firstname.tar.gz or HW3_lastname_firstname.zip**, which contains the following uploaded to Blackboard:
   (1) **Part 1:** Handwritten Problems Submitted in Class
   (2) **Part 2:** 1)OntologyAlignment.java -- your java code
            2)AlignedOntology.owl
            3)InferredAlignedOntology.owl

In this two part assignment, you will practice with semantic queries and ontology alignment using the JENA API.

Part 1: Written Assignment

List the results of the following SPARQL queries in tabular format on the following ontology:

http://www.cs.hofstra.edu/~knarig/SemanticWeb/travel2.owl.

1) (5 pts)

```
SELECT ?x ?y WHERE
{ ?x travel:hasAccommodation ?y .
 ?y travel:hasRating ?z  .
 ?z travel:hasNumericValue ?val
  FILTER(?val >=3) .
}
```

2) (5 pts)

```
SELECT ?x  WHERE
{?x travel:hasDemographic travel:Families .
 OPTIONAL {?x travel:hasRating ?y  .}
 OPTIONAL {?x travel:hasActivity ?z  .}
}
```

3) (5 pts)

```
SELECT ?x  WHERE
{?x travel:hasDemographic travel:ActivePeople .
```

```
{?x travel:hasRating ?y . } UNION
{?x travel:hasActivity ?z . }
}
```

4) (10 pts)

```
SELECT ?w WHERE {
{?w travel:hasAccommodation ?x .}
{?w travel:hasDemographic travel:SeniorCitizens .} UNION
{?w travel:hasRating ?y . } OPTIONAL
{?w travel:hasActivity ?z . }
}
```

Part 2: Programming Assignment
Ontology Alignment

Given the two ontologies you created from HW2, perform manual alignment
of these two ontologies

1) Load two ontology files into a schema model (10 pts)
2) Choose 5 properties and 5 classes from each ontology that are related in
either of the following ways: equivalentClass, subClass, equivalentProperty
or subProperty. Assign each pair to one of these relationships (30 pts)
3) Save the newly aligned ontology model to a file named AlignedOntology.owl (5 pts)
4) Run the reasoner over the aligned ontology model to find the inferred relationships (20
pts)
5) Save the inferred ontology model to a file named InferredAlignedOntology.owl. (5 pts)
6) Write a short paragraph justifying your decisions to align these properties/classes with
the specific relationships you chose. Include this as a comment section in the beginning of
the source file (5 pts)

Development Environment:
Download Eclipse IDE and the Jena Framework.
Create a project in Eclipse.
Configure the build path to contain the jar files from the jena/lib directory.
Create a java class named OntologyAlignment within the project.
You can use the HelloSemanticWeb.java file for reference
http://www.cs.columbia.edu/~knarig/coms4995/HelloSemanticWeb.java

Submission:
You will submit three files
1)OntologyAlignment.java -- your java code
2)AlignedOntology.owl
3)InferredAlignedOntology.owl