Task (1)

In this task, you create a domain model for developing and evaluating activity and dietary JITAIs in multiple studies.

- Create a new domain model with the URI
  <http://example.org/mlm4jitais>

- Expected outcome

<http://example.org/
mlm4jitais> - - - -> CLASS

Task (2)

- Add local to that domain model a composition hierarchy with class *JITAI* as component of class *Participant* as component of class *Study*
  - Note: Individuals of classes *Study* and *Participant* are domain objects
  - Note: Individuals of class *JITAI* are occurrences
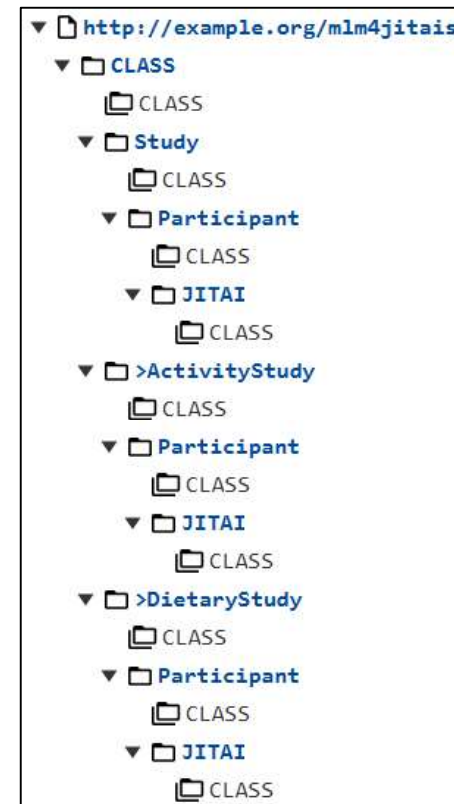 - Note: Leafs of class *JITAI* are abstract classes
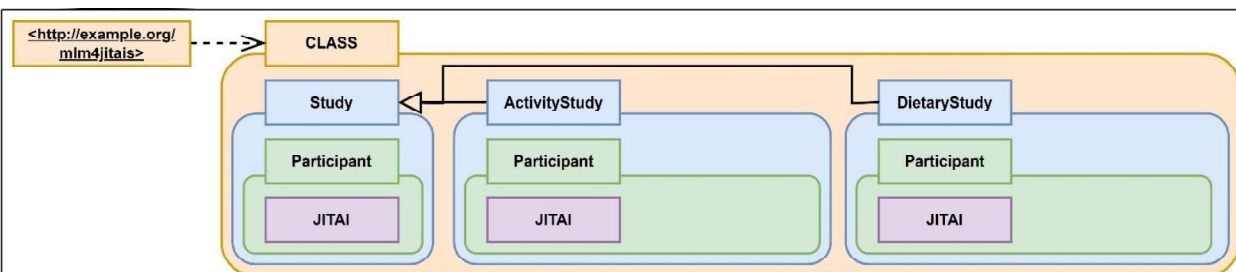
- Expected outcome

<http://example.org/
mlm4jitais> ---> CLASS

Study

Participant
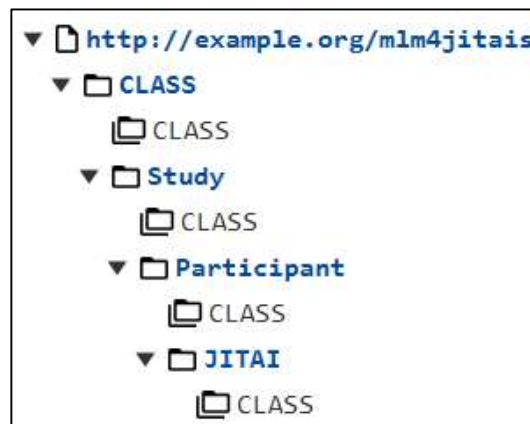
JITAI

Task (3)

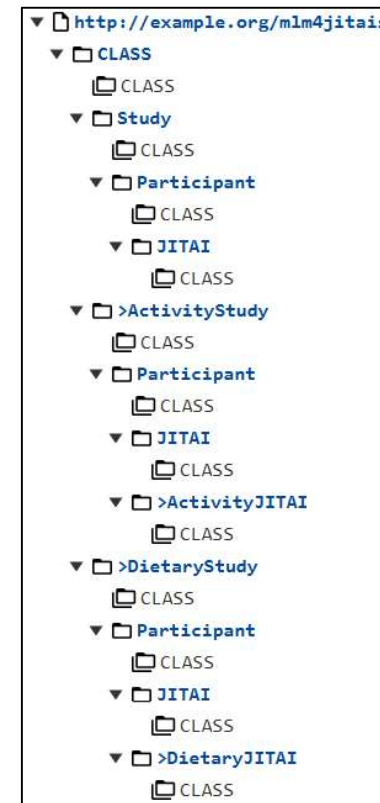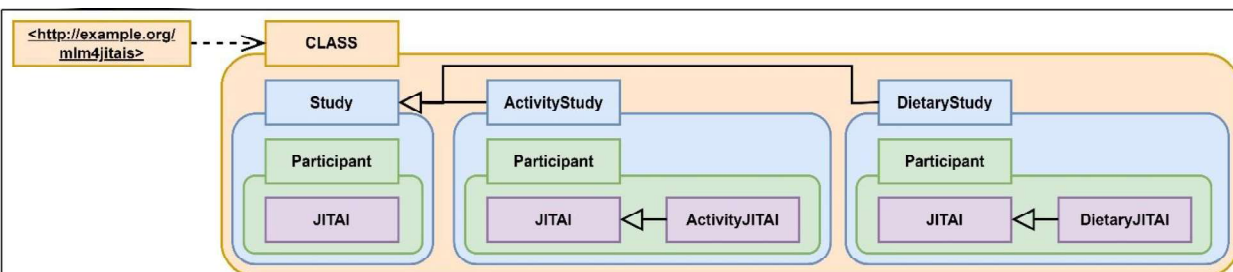- Add classes *ActivityStudy* and *DietaryStudy* as specializations of class *Study*

Task (4)

- Add class *ActivityJITAI* as specialization of class *JITAI* in context of class *ActivityStudy*
  - Note: Leafs of class *ActivityJITAI* are concrete classes
- Add class *DietaryJITAI* as specialization of class *JITAI* in context of class *DietaryStudy*
 - Note: Leafs of class *DietaryJITAI* are concrete classes

Expected outcome

Task (5)

- Add *Study-1* as an instance of class *ActivityStudy*
  - Add class *WeatherObservation* for *Study-1*
    - Note: Individuals of class *WeatherObservation* are occurrences
    - Note: Leafs of class *WeatherObservation* are concrete classes
  - Add class *ExerciseSnackingJITAI* as specialization of class *JITAI* for *Study-1*
    - Note: Leafs of class ExerciseSnackingJITAI are concrete classes
  - Add *Jane* and *Joe* as instances of class *Participant* of *Study-1*
  - For *Jane* add the following occurrences:
    - *Occurrence-1* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 6
    - *Occurrence-2* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 23
  - For *Joe* add the following occurrences:
    - *Occurrence-1* as an instance of class *ExerciseSnackingJITAI* with a *suggestedDuration* of 2
    - *Occurrence-2* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 33
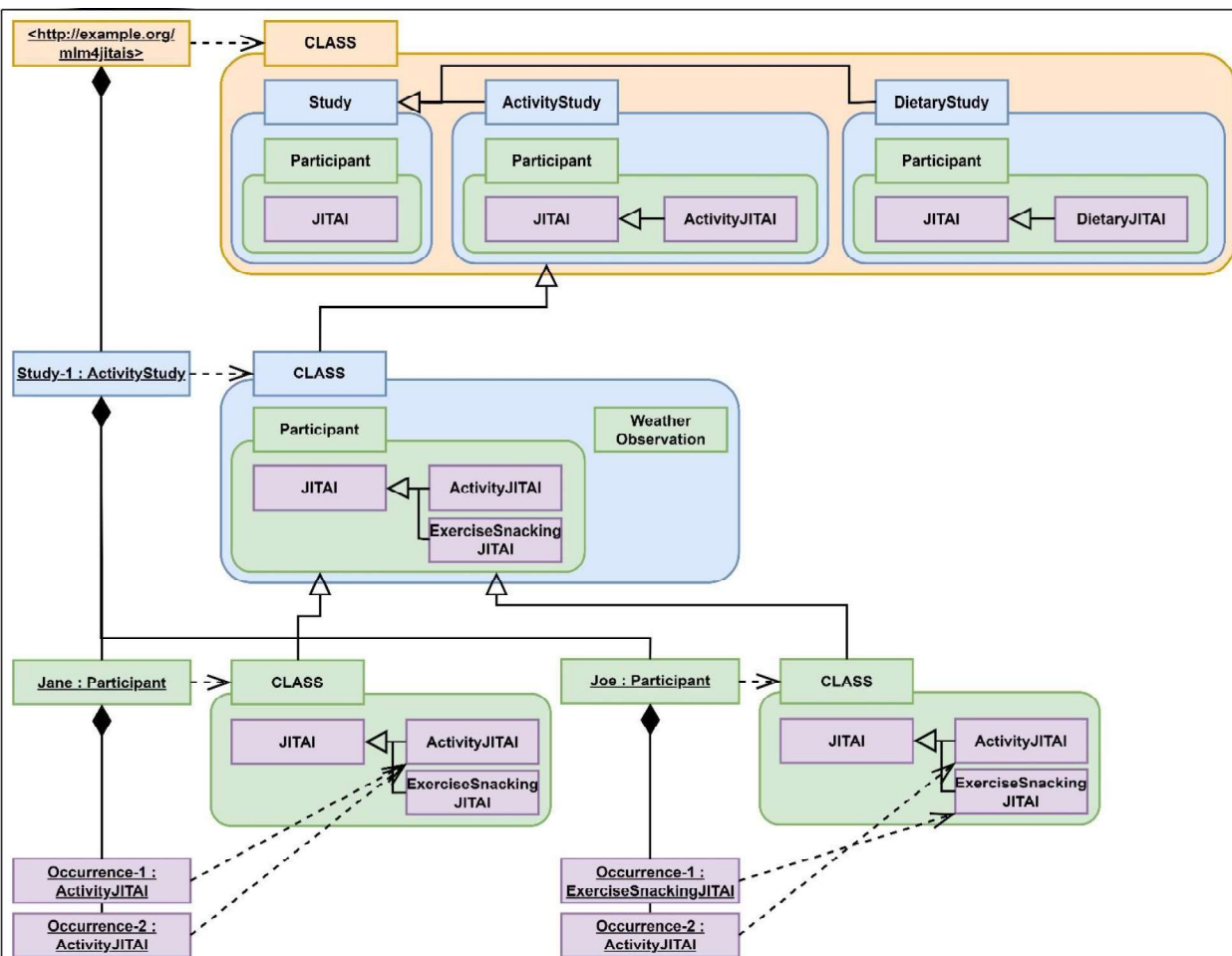
Task (5)
Expected outcome
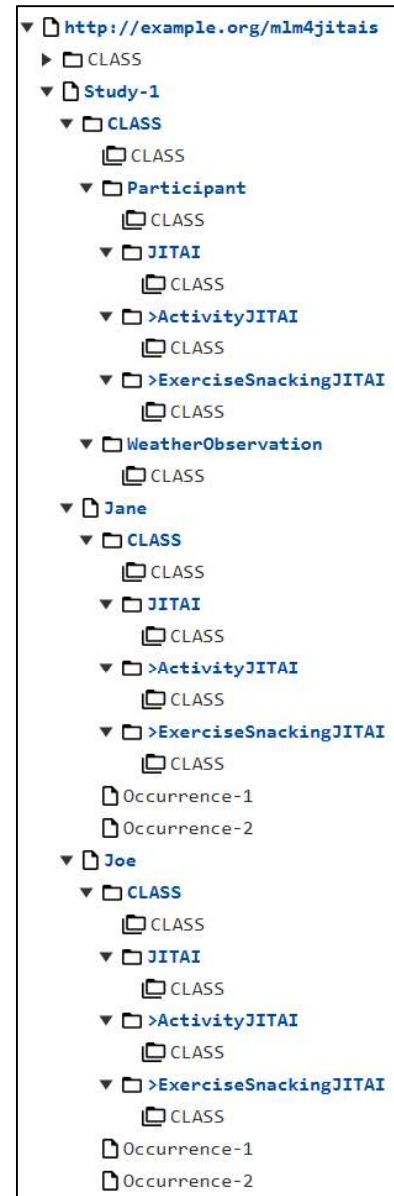
Task (6)

- Add *Study-2* as an instance of classes *ActivityStudy* and *DietaryStudy*
    - Add *Alice* and *Bob* as instances of class *Participant* of *Study-2*
    - For *Alice* add the following occurrences:
        - *Occurrence-1* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 6
        - *Occurrence-2* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 23
        - *Occurrence-3* as an instance of class DietaryJITAI with *message* "You are doing great!"
    - For *Bob* add the following occurrences:
        - *Occurrence-1* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 2
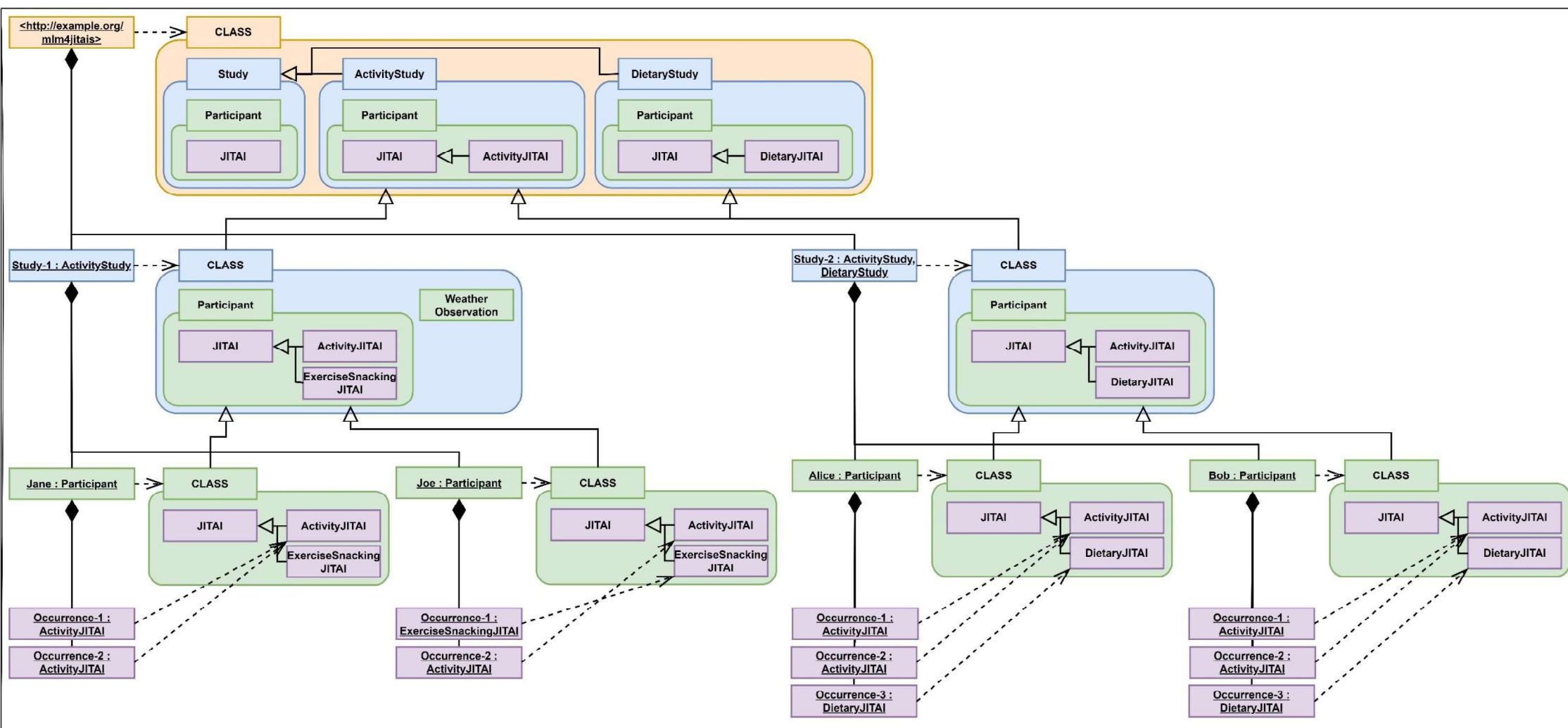   - *Occurrence-2* as an instance of class *ActivityJITAI* with a *suggestedDuration* of 33
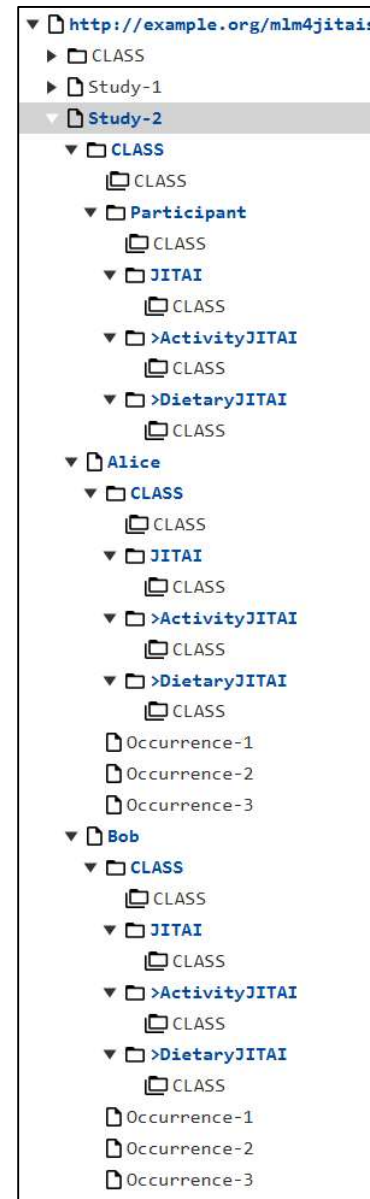   - *Occurrence-3* as an instance of class *DietaryJITAI* with *message* "You are doing bad!"

Task (6)
Expected outcome

Task (7)

- Define a SPARQL Query that counts the numbers of interventions for each instance of meta class <CLASS/ActivityStudy/Participant/ActivityJITAI/CLASS>.

- Expected result

```
-------------------------------------------------------------------------------
| clabject                                           | numberOfInterventions |
===============================================================================
| <Study-2/Alice/CLASS/ActivityJITAI>                | 2                     |
| <Study-2/CLASS/Participant/ActivityJITAI>          | 4                     |
| <Study-1/CLASS/Participant/ActivityJITAI>          | 3                     |
| <Study-1/Jane/CLASS/ActivityJITAI>                 | 2                     |
| <CLASS/ActivityStudy/Participant/ActivityJITAI>    | 7                     |
| <Study-2/Bob/CLASS/ActivityJITAI>                  | 2                     |
| <Study-1/Joe/CLASS/ActivityJITAI>                  | 1                     |
-------------------------------------------------------------------------------
```

Task (8)

- Define a SPARQL Query that provides the average *suggestedDuration* for each instance of meta class <CLASS/Study/Participant/JITAI/CLASS>.

- Expected result

clabject	avgDuration
<Study-1/CLASS/Participant/ExerciseSnackingJITAI>	2.0
<Study-2/Alice/CLASS/DietaryJITAI>	
<Study-1/Jane/CLASS/ActivityJITAI>	14.5
<Study-1/Jane/CLASS/ExerciseSnackingJITAI>	
<CLASS/DietaryStudy/Participant/JITAI>	16.0
<CLASS/ActivityStudy/Participant/ActivityJITAI>	18.0
<Study-2/Bob/CLASS/ActivityJITAI>	17.5
<Study-1/Joe/CLASS/ExerciseSnackingJITAI>	2.0
<Study-1/Jane/CLASS/JITAI>	14.5
<CLASS/DietaryStudy/Participant/DietaryJITAI>	
<Study-2/Alice/CLASS/JITAI>	14.5
<CLASS/ActivityStudy/Participant/JITAI>	16.0
<Study-2/Alice/CLASS/ActivityJITAI>	14.5
<Study-2/CLASS/Participant/JITAI>	16.0
<CLASS/Study/Participant/JITAI>	16.0
<Study-2/CLASS/Participant/ActivityJITAI>	16.0
<Study-2/CLASS/Participant/DietaryJITAI>	
<Study-1/CLASS/Participant/ActivityJITAI>	20.6666666666666666666667
<Study-2/Bob/CLASS/JITAI>	17.5
<Study-1/CLASS/Participant/JITAI>	16.0
<Study-2/Bob/CLASS/DietaryJITAI>	
<Study-1/Joe/CLASS/JITAI>	17.5
<Study-1/Joe/CLASS/ActivityJITAI>	33.0

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Task (9)

- Define a SPARQL Query that selects all *ActivityJITAI* classes of individual participants using the navigation via n: properties only.
- Expected result

```
----------------------------------------
| clabject                             |
========================================
| <Study-1/Jane/CLASS/ActivityJITAI>   |
| <Study-1/Joe/CLASS/ActivityJITAI>    |
| <Study-2/Bob/CLASS/ActivityJITAI>    |
| <Study-2/Alice/CLASS/ActivityJITAI>  |
----------------------------------------
```

Task (10)

- Define a SPARQL Query that selects the total number of JITAI occurrences for each study.
- Expected result

```
---------------------------------------------------------------
| clabject                          | numberOfInterventions |
===============================================================
| <Study-2/CLASS/Participant/JITAI> | 6                     |
| <Study-1/CLASS/Participant/JITAI> | 4                     |
---------------------------------------------------------------
```