Assignment #2 – Template-Based Transformation of User Requirements Notation (10%)

The second assignment is to be done in teams of TWO students. If there is an odd number of students in class, then exactly one team will consist of THREE students. You are required to sign up to one of the assignment #2 groups in myCourses by ***Thursday, October 18th, 2018, at 23:30***. If you have not signed up by the due date, you will be randomly assigned to a partial group. Keep in mind that two students who are on the same team for the first assignment are not allowed to be on the same team for the second assignment. Students taking ECSE439 and students taking ECSE539 are allowed to be on the same team for the assignment. The second assignment is due on ***Friday, November 2nd, 2018, at 23:30***.

Each team member must make contributions to the assignment. A team member who does not contribute to the assignment receives a mark of 0 for the assignment. A team member may optionally email a confidential statement of work to the instructor before the due date of the assignment. A statement of work first lists in point form the parts of the assignment to which the team member contributed. In addition, the statement of work also describes whether the work load was distributed fairly evenly among the team members. A statement of work may be used to adjust the mark of a team member who is not contributing sufficiently to the assignment. It is not necessary to send a statement of work, if a team distributed the work for the assignment fairly evenly and each team member contributed sufficiently.

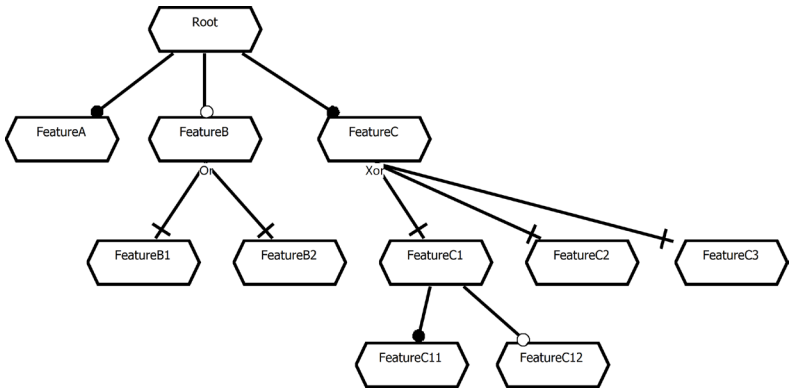
Part 1 – Acceleo

The goal of this assignment is to use Acceleo (https://www.eclipse.org/acceleo/) to implement a template-based transformation from the User Requirements Notation (URN) to its textual representation. URN does not need to be covered in its entirety. Only feature models and goal models are within the scope of this assignment. Furthermore, feature configurations, strategies, and KPIs (key performance indicators) are also out of scope.

You are required to familiarize yourself with Acceleo including how to install it by reading through the documentation provided by Acceleo's website. URN's ecore specification is available in the jUCMNav repository at https://github.com/JUCMNAV/seg.jUCMNav/tree/master/src/seg/jUCMNav/emf.

Three sample URN models are provided to test your transformation. The first model (features.jucm) contains only a feature model. The second model (goals.jucm) contains only a goal model. The third model (both.jucm) contains feature and goal models where features are also used in the goal model. Use the jUCMNav tool version 7.0 to open these models. See the attached document for installation instructions for jUCMNav.

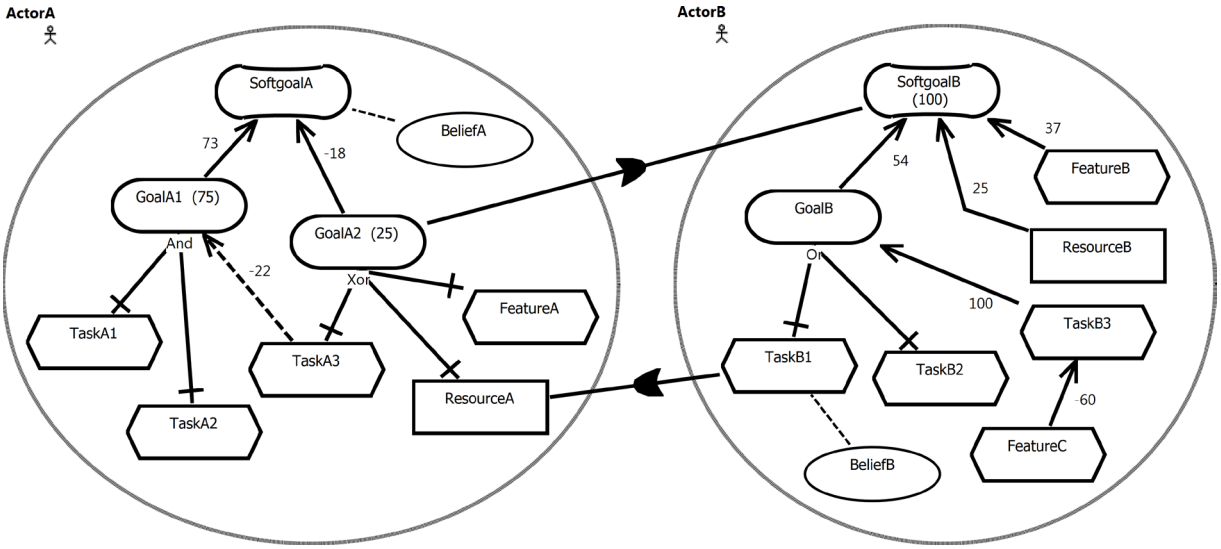
The example below corresponds to the third model and illustrates the desired transformation for a feature model. The example includes all concepts that need to be transformed for feature models for this assignment.




```
features Root {
   mandatory FeatureA
   optional FeatureB OR {
      FeatureB1
      FeatureB2
   }
   mandatory FeatureC XOR {
      FeatureC1 {
         mandatory FeatureC11
         optional FeatureC12
      }
      FeatureC2
      FeatureC3
   }
}
```

Figure 1: Transformation of Feature Model

The example below corresponds to the third model and illustrates the desired transformation for a goal model. The example includes all concepts that need to be transformed for goal models for this assignment. Note that qualitative contributions are not to be considered for this assignment.




```
actor ActorA {
   softgoal SoftgoalA {
      BeliefA
   }
   goal GoalA1 {
      importance 75
      contributesTo SoftgoalA with 73
   }
   goal GoalA2 {
      importance 25
      contributesTo SoftgoalA with -18
      dependsOn ActorB.SoftgoalB
   }
   task TaskA1 {
      and decomposes GoalA1
   }
   task TaskA2 {
      and decomposes GoalA1
   }
   task TaskA3 {
      xor decomposes GoalA2
      contributesTo GoalA1 correlated with -22
   }
   resource ResourceA {
      xor decomposes GoalA2
   }
   feature FeatureA {
      xor decomposes GoalA2
   }
}
```

```
actor ActorB {
    softgoal SoftgoalB {
        importance 100
    }
    goal GoalB {
        contributesTo SoftgoalB with 54
    }
    resource ResourceB {
        contributesTo SoftgoalB with 25
    }
    feature FeatureB {
        contributesTo SoftgoalB with 37
    }
    task TaskB1 {
        BeliefB
        or decomposes GoalB
        dependsOn ActorA.ResourceA
    }
    task TaskB2 {
        or decomposes GoalB
    }
    task TaskB3 {
        contributesTo GoalB with 100
    }
    feature FeatureC {
        contributesTo TaskB3 with -60
    }
}
```

Figure 2: Transformation of Goal Model

Part 2 –Report

Your report must contain the following sections.

- A header with the course name and number, name of assignment, date, group number, and the names and IDs of your team members. The header should also show the page number.
- A brief section that describes how to run your application and where to find output files.
- A section with a four-paragraph discussion on what went well and what did not go well when implementing the transformation with Acceleo, possibly with suggestions on how to improve the implementation experience.

The report should be at the most one to two pages long (line spacing: single, font: Times New Roman 10pt, normal margin: 2.54cm all around).

Submission

Your team is required to hand in a ***single zip file*** with the complete source code of your Acceleo project including the report as detailed above. Your report should be added to the root folder of your zip file. If you are using an application other than MSWord for your report, convert your report first to either a PDF file or a DOC(X) file.

Marking Scheme

Part of Assignment	***Marks***
Correct transformation of features.jucm	12
Correct transformation of goals.jucm	12
Correct transformation of both.jucm	12
Correct transformation of unknown1.jucm	20
Correct transformation of unknown2.jucm	20
Report – How to run your application and where to find output files	4
Report – Description of what went well	10
Report – Description of what did not go well	10
Total Marks:	100
The total mark may be adjusted based on the actual contributions of a team member to the assignment.	