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Dormitory Administration and Student Union

Domain description

This project explores the conceptual modeling of the Facilities Administration at a university, focusing on its role in managing dormitories. The model captures the organizational structure, roles, and processes that govern these facilities to ensure efficient operations and provide students with essential services.

The Facilities Administration is responsible for overseeing student housing and catering services. This includes managing dormitory assignments, coordinating cleaning shifts, overseeing dormitory leadership roles. Key personnel, such as janitors, cooks, and housekeepers, are modeled to reflect their roles in maintaining dormitory and catering facilities.

The dormitories are represented not just as living spaces but as structured environments with assigned club rooms. These spaces foster student engagement through dormitory-specific clubs and activities. Catering are modeled as essential facilities supporting student well-being, with assigned catering staff and cooks responsible for performing specific tasks in the cafeteria.

The Student Union (SU) at a university is a student-led organization that fosters engagement and representation. A key component of the SU is its clubs, which are categorized into dormitory clubs, interest clubs, and external clubs. These clubs provide students with opportunities for participation in cultural, academic, and recreational activities, forming the foundation of student life.

The SU is governed by the Student Parliament, where club representatives, the SU President, and the Academic Senate Representative serve as delegates. Delegates hold voting rights, and important resolutions are passed if two-thirds (2/3) of the delegates are in favor. The Parliament oversees critical decisions, including resource allocation and club proposals.

The SU is coordinated by the SU President, who leads the organization with the support of the central team. This central body ensures the smooth operation of SU activities, facilitates collaboration among clubs, and maintains alignment with the needs and interests of the student body.

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Constraints

1. High employee morale increases efficiency by 25 percent.
2. The probability of getting a place in a dorm depends on the number of places in the dorm and the priority of the student, if he is on the first year, he has the highest priority, if he is a second year, he has a lower priority, students who already live in the dorm have the highest priority for their room. Others have the lowest priority.
3. The resolution can be adopted if 2/3 of the delegates are in favour and this does not contradict the SU bylaws
4. Only students who live in a dormitory can join the dormitory club.
5. Students cannot simultaneously belong to two clubs that have conflicting goals.

OCL:

1. Constraint

```
context Employee
inv HighMoraleEfficiencyBoost:
   self.morale = 'High' implies self.efficiency = self.baseEfficiency * 1.25
```

2. Constraint

```
context Student
derived priority : Integer =
   if self.isLivingInDormitory
   then 4 -- Highest priority for returning students
   else if self.academicYear = '1'
   then 3 -- High priority for freshmen
   else if self.academicYear = '2'
   then 2 -- Medium priority
   else 1 -- Lowest priority for others
   endif
```

3. Constraint

```
context StudentParlament::adoptResolution(resolution : Resolution)
post:
   self.delegates->select(d | d.votes->includes(resolution) and d.status =
'InFavour')->size() >= self.delegates->size() * 2 / 3 and
   not resolution.conflictsWith(self.suBylaws) implies
   resolution.status = 'Adopted'
```

4. Constraint

```
context DormitoryClub::addMember(member : ClubMember)
pre:
   member.oclIsTypeOf(Student) and
   Dormitory.allInstances()->exists(d | d.assignedStudents->includes(member))
```

5. Constraint

```
context Club Member
inv NoConflictingClubMembership:
   self.memberOf->forAll(club1, club2 |
      club1 <> club2 implies not club1.goal.conflictsWith(club2.goal))
```

Used concepts

Koncept	Počet
Kind	9
SubKind	8
Role	29
Phase	4
Category	1
RoleMixin	4
PhaseMixin	1
Mixin	1

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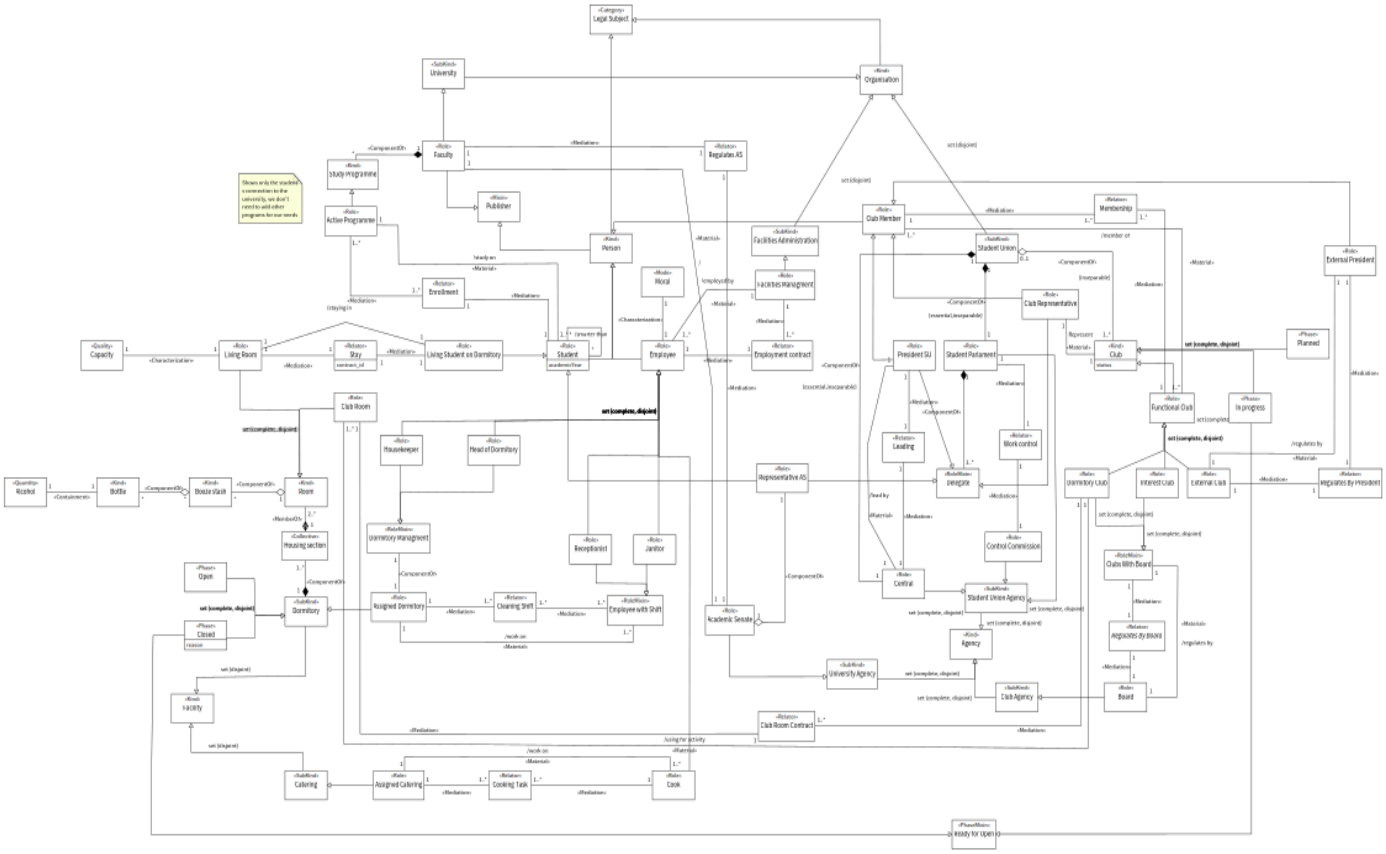
Functional Complex	1
Part	3
Quantity	1
Collective	1
Quality	1
Mode	1
Relator	12
Formal Relation	1

OntoUML Model

The complete OntoUML model can be found in the attachment kom-semestral.opp.



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UML model converted from OntoUML

The complete UML model can be found in the attachment kom-semestral-uml.opp.