**Introduction**

This is a Project for the subject of graph theory at GMIT. The requirements for this project was to build a graph database for a timetabling system and implement it using the NEO4J technology.

The database keeps records about rooms, subjects, lecturer, student groups and its afore mentioned interactions.

**DB Schema**

The database schema consists of 5 nodes, said nodes will be used to keep information about \*main source of interactions on the system.

The choice of … as nodes

The lecturer node is used to keep names of the lecturer of the college, it has the label “Lecturer” and a property called name, said property will keep the lecturer’s name.

Cypher syntax: (:Lecturer{name:”Lecturer’s name”})

The subject node is used to keep data of all subjects. it has the label “Subject” and two properties, one called name, which is the name of the subject. The other one is subject code, which is unique for every subject.

Cypher syntax: (:Subject{name:”Subject’s name”, subject\_code:”Subject’s code” })

The room node is used to keep data of all rooms of the college, it has the label “Rooms” and two properties. One called name, which keep the room’s number, and the other one is called name, The name property keeps the room’s name if applied, if the room has no special name, such as Gmit’s Blue Theater, the property must be set to null.

Cypher syntax: (:Room {number: ‘room’s number’, name: room’s name})

The group node is used to keep data of all subjects. it has the label “Group” and two properties One called name, said property will keep the group’s name, and the other which is called year, the year property will YEAR

Cypher syntax: (:Group {name:” Group ‘s name”, year:”Year of the group, groupID:”id da turma” })

Na relationship group to room , referenciar year caso se aplicar a turma toda

**Relationships Description**

The Lecturer node will have a relationship with the Subject node, the relation will have a label of type Teaches.

The Group node will have a relationship with the Subject node, the relation will have a label of type Attends.

The Group node will have a relationship with the Room node, the relation will have a label of type Uses and 3 properties. One is called time, which is time of the day, other called day, which is going to be used and third one which is called groupid, which references the groups id. If more than one group should attend, said property will have and array with the codes of all referenced groups.

**DB Souce code**

CREATE (s:Subject {name: 'nome da materia', subject\_code: 'código da materia'})

CREATE (l:Lecturer {name: 'nome do professor'})

CREATE (r:Room {number: ‘room’s number’, name: 'número da sala'})

CREATE (d:Day {name: 'nome do dia'})

**Sample Queries**