K3Classes

***Model*** **K3Classes** ***begin***

***Library*** **Standard;**

**// Main notions**

***abstract*** ***Class*** **@°Class**

**"Set of sections constituting a course on a given topic";**

***Class*** **NonClinicalClass** ***extends*** **°Class;**

***Class*** **ClinicalClass** ***extends*** **°Class;**

***abstract*** ***Class*** **@Section**

**"Training session held on a specific day and time for a**

**class";**

***Class*** **Lecture** ***extends*** **Section;**

***Class*** **ClinicalLabSection** ***extends*** **Section;**

***Class*** **@ProgramOfStudy**

**"Set of classes required to obtain a degree";**

***Class*** **@SequenceOfClasses**

**"Specifies a set of classes, each being taught during**

**a specified quarter"**

**"Can also specify sections not belonging to any class";**

***abstract*** ***Class*** **@Person**

**"Information in the system about a person";**

***Class*** **Student** ***extends*** **Person;**

***Class*** **Instructor** ***extends*** **Person;**

***Class*** **StaffMember** ***extends*** **Person;**

***Class*** **ClinicalSiteAdministrator** ***extends*** **Person;**

***Class*** **@Cohort**

**"Set of all students registered to the same Nursing**

**program of study, for the same time period (quarters)";**

***external*** ***Class*** **#User** **"of the system";**

***Class*** **PA** ***extends*** **User** **"Program Administrator";**

***Class*** **NSM** ***extends*** **User** **"Nursing Staff Member";**

***Class*** **@Department** **"or Department Section";**

***Class*** **@ClinicalSite;**

**// Ancillary notions**

***Class*** **@Information** **"provided in a report"** ***is*** **deferred;**

***Type*** **@EReport** ***extends*** ***Event*** **"issued by the system on request";**

***Class*** **@RoomType** ***is*** **deferred;**

***constant*** ***Class*** **@Name** **"of an item managed by the system"** ***is*** **deferred;**

***constant*** ***Class*** **@Id** **"of an item managed by the system"** ***is*** **deferred;**

***Class*** **@Credit** **"of a student"** ***is*** **deferred;**

***Class*** **@GPA** **"of a student"** **/\*** **whatever** **that** ***is*** **\*/** ***is*** **deferred;**

***constant*** ***Class*** **@Need** **"of an item managed by the system"** ***is*** **deferred;**

***Type*** **@Date**

**"From which one can derive year,**

**month, day of month and time of day"** ***is*** **deferred;**

***Type*** **Month** ***extends*** **Date**

**"First day of a month, at 00:00"** ***is*** **deferred;**

***Type*** **Quarter** ***extends*** **Date**

**"First day of a quarter, at 00:00"** ***is*** **deferred;**

***Class*** **@EMail** ***is*** **deferred;**

***Class*** **@PhoneNumber** ***is*** **deferred;**

***Class*** **@Address** ***is*** **deferred;**

***Event*** **@eNotification;**

**// Ancillary functions**

***Duration*** **quarterDuration** **(Quarter** **quarter)** ***is*** **deferred;**

***Boolean*** **overlap** **(Date** **date1,** ***Duration*** **d1,** **Date** **date2,** ***Duration*** **d2)**

**"Whether the two periods of time overlap"** ***is*** **deferred;**

***Boolean*** **inQuarter** **(Date** **date,** **Quarter** **quarter)** ***is***

**overlap** **(date,** **1\*s,** **quarter,** **quarterDuration** **(quarter));**

***main*** ***Object*** **#system** **"an information management system"** ***begin***

**Cohort** **{}** **@cohorts** **"managed by the system";**

**Department** **@nursingDepartment** **"One of the Departments";**

**ProgramOfStudy** **{}** **@programs** **"of study of all Departments";**

**ProgramOfStudy** **{}** **@nursingPrograms** **"of study of the Nursing Department";**

**Cohort** **{}** **@nursingCohorts**

**"following a program of study of the Nursing Department"**

***is*** ***all*** **x** ***of*** **cohorts** ***such that*** **x.programOfStudy** ***in*** **nursingPrograms;**

**ClinicalSite** **{}** **@clinicalSites;**

**°Class** **{}** **@classes;**

**ClinicalClass** **{}** **@clinicalClasses**

**:** ***Guarantee*** **consistency** ***is*** ***ensure*** **me** ***in*** **classes;**

**SequenceOfClasses** **{}** **@sequencesOfClasses;**

**Section** **{}** **@sections;**

**ClinicalLabSection** **{}** **@clinicalLabSections**

**:** ***Guarantee*** **consistency** ***is*** ***ensure*** **me** ***in*** **sections;**

**Student** **{}** **@students;**

**Student** **{}** **@nursingStudents** ***is***

***all*** **x** ***of*** **students** ***such that*** **x.cohort** ***in*** **nursingCohorts;**

***end*** **system;**

***end*** **K3Classes;**

**°Class** ***begin***

**Name** **name;**

**Id** **id;**

**Need** **{}** **lectureRoomNeeds;**

**Section** **{}** **sections** ***is***

***all*** **x** ***of*** **system.sections** ***such that*** **x.class** **=** **me;**

**Section** **{}** **sectionsInQuarter** **(Quarter** **quarter)** ***is***

***all*** **x** ***of*** **sections** ***such that*** **inQuarter** **(x.beginning,** **quarter);**

**Student** **{}** **students** ***is***

***all*** **x** ***of*** **system.students** ***such that*** **me** ***in*** **x.classes;**

***end*** **°Class;**

**NonClinicalClass** ***begin***

**Need** **{}** **instructorNeeds;**

***end*** **NonClinicalClass;**

**ClinicalClass** ***begin***

**Need** **{}** **clinicalSiteNeeds;**

**Need** **{}** **lectureInstructorNeeds;**

**Need** **{}** **clinicalLabInstructorNeeds;**

***end*** **ClinicalClass;**

**Section** ***begin***

**°Class** **class** **"to which the section belongs";**

**Date** **beginning** **"when";**

***Duration*** **@°duration** **"for how long";**

**Student** **{}** **students** **"registered to the section";**

**Information** **contactInformation;**

***end*** **Section;**

**ClinicalLabSection** ***begin***

**Name** **name;**

**Instructor** **instructor;**

**ClinicalSite** **site;**

**Department** **department;**

***end*** **ClinicalLabSection;**

**ProgramOfStudy** ***begin***

**Name** **name;**

**°Class** **{}** **@requiredClasses;**

***end*** **ProgramOfStudy;**

***Class*** **@ClassQuarter** ***begin***

**°Class** **class;**

**Quarter** **quarter;**

***end*** **ClassQuarter;**

**SequenceOfClasses** ***begin***

**ClassQuarter** **{}** **@classesQuarters;**

**°Class** **{}** **@classes** ***is*** **classesQuarters.class;**

**Quarter** **{}** **@quarters** ***is*** **classesQuarters.quarter;**

**Section** **{}** **@addedSections** **"not in any of 'classesQuarters'";**

**Section** **{}** **@sections** ***is***

***unionAll*** **(*for all*** **x** ***of*** **classesQuarters :** **x.class.sectionsInQuarter(x.quarter))**

***union*** **addedSections;**

***end*** **SequenceOfClasses;**

**Cohort** ***begin***

**Name** **name;**

**Id** **id;**

**ProgramOfStudy** **programOfStudy;**

**Month** **startMonth;**

**Student** **{}** **@students** ***is*** ***all*** **x** ***of*** **Student** ***such that*** **x.cohort** **=** **me;**

**SequenceOfClasses** **preferredSequence;**

***Event*** **@eNotification** **"Of a change affecting the cohort"** ***begin***

***default*** ***is*** ***previous*;** **// Only explicitly specified occurrences**

**Person** **{}** **@persons** **"to be notified"** ***is*** **deferred;**

***end*** **eNotification;**

***Guard*** **consistency1** ***is***

***ensure*** **preferredSequence.classes** **=** **programOfStudy.requiredClasses;**

***Guard*** **consistency2** ***is***

***ensure*** ***andAll*** **(preferredSequence.quarters** **>=** **startMonth);**

***end*** **Cohort;**

**Person** ***begin***

**Name** **name;**

**Id** **id;**

**EMail** **eMail;**

**PhoneNumber** **phoneNumber;**

***end*** **Person;**

**Student** ***begin***

**Date** **admissionDate;**

***Boolean*** **@partTime:** ***default*** ***is*** **false;**

**Cohort** **cohort** **"in which the student is registered";**

**SequenceOfClasses** **sequenceOfClasses:** ***default*** ***is*** **cohort.preferredSequence;**

**°Class** **{}** **@classes** **"to which the student is registered"**

***is*** **sequenceOfClasses.sections.class;**

**ClinicalClass** **{}** **@clinicalClasses** **"to which the student is registered"**

***is*** ***all*** **x** ***of*** **classes** ***such that*** **x** ***in*** **ClinicalClass;**

**NonClinicalClass** **{}** **@nonClinicalClasses** **"to which the student is registered"**

***is*** ***all*** **x** ***of*** **classes** ***such that*** **x** ***in*** **NonClinicalClass;**

**Section** **{}** **@sections** **"to which the student is registered"**

***is*** ***all*** **x** ***of*** **classes.sections** ***such that*** **me** ***in*** **x.students;**

**ClinicalLabSection** **{}** **@clinicalLabSections** **"to which the student is registered"**

***is*** ***all*** **x** ***of*** **sections** ***such that*** **x** ***in*** **ClinicalLabSection;**

**Lecture** **{}** **@lectures** **"to which the student is registered"**

***is*** ***all*** **x** ***of*** **sections** ***such that*** **x** ***in*** **Lecture;**

***Event*** **@eNotification** **"Of a change affecting the student"** ***begin***

***default*** ***is*** ***previous*;** **//Only explicitly specified occurrences**

**Person** **{}** **@persons** **"to be notified"** ***is*** **deferred;**

***end*** **eNotification;**

***end*** **Student;**

**Department** ***begin***

**°Class** **{}** **classes** **"Classes offered by this Department";**

***end*** **Department;**

**ClinicalSite** ***begin***

**Name** **name;**

**Person** **contactPerson;**

**Information** **contactInformation;**

**Address** **address;**

***end*** **ClinicalSite;**

**EReport** ***begin***

***occurrence*** ***is*** **deferred;**

**Information** **{}** **contents;**

***end*** **EReport;**