Μοντελοποίηση Πληροφοριακού Συστήματος Γυμνασίου/Λυκείου
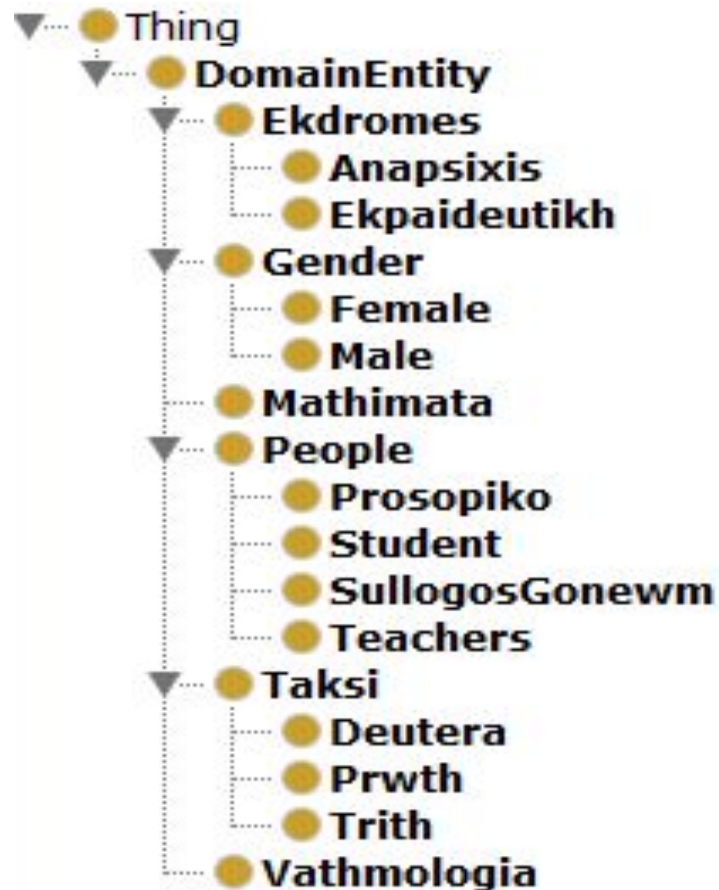
Αχιλλέας Γκέκας(164649),
Ηρακλής Θεοφανίδης(164664),
Ερρίκος Καλτσόπουλος(134099)

Κλάσεις

- Thing
  - DomainEntity
    - Ekdromes
      - Anapsixis
      - Ekpaideutikh
    - Gender
      - Female
      - Male
    - Mathimata
    - People
      - Prosopiko
      - Student
      - SullogosGonewm
      - Teachers
    - Taksi
      - Deutera
      - Prwth
      - Trith
    - Vathmologia

Data Properties

- ▼ topDataProperty
  - hasBirthYear
  - hasCourseName
  - hasDate
  - hasDescription
  - hasGradeSTR
  - hasLocation
  - hasName
  - hasSurname
  - hasTmhma
  - hasWrario
  - isA
  - isAlso
  - isMemberOf

Object Properties

- topObjectProperty
  - **hasChild**
  - **hasClass**
  - **hasCourses**
  - **hasGrade**
  - **hasParent**
  - **hasResponsibleTeacher**
  - **hasStudent**
  - **hasTrips**
  - **isOrganazing**
  - **isOrganized**
  - **isResponsible**
  - **isTeachedBy**
  - **isTeaching**

Individuals

- c_A1
- c_A2
- c_B1
- c_B2
- c_G1
- c_G2
- e_Boudapesti
- e_Falakro
- e_Italia
- e_Mouseio
- g_Kwstas_Vasilokwstas
- g_Mixalis_Skordalias
- g_Petros_Kwstas
- g_Thanasis_Karabetoglou
- m_AOTH
- m_Fysikh
- m_Glwssa
- m_Mathimatika
- m_Pliroforiki
- m_Xhmeia
- p_Giwrgos_Fouskas
- p_Roza_Bouldoza
- p_Vasilis_Karapiperis

- s_Anna_Goula
- s_Danai_Mamai
- s_Ervis_Youri
- S_George_Georgiou
- s_Georgia_Voskoy
- S_hraklhs_Touloumpas
- s_Ioannis_Kampouridis
- S_Makis_Kotsabasis
- s_Maria_Spatoula
- s_Petros_Papanikolaou
- s_Vaios_Skordalias
- s_Vasilia_Vasiliou
- s_Vasilis_Ioannidis
- t_Axileas_Distropidis
- t_Axileas_Toumpas
- t_Eleni_micheleni
- T_Fotini_Lamberi
- t_Panagiotis_koulouridis
- t_Pasxalis_Kardelis
- t_Tamila_Zabanotsikova
- v_Aristos
- v_Kakws
- v_Kalws
- v_Metrios
- v_Polu_kalos

Axioms

Τα αξιώματα (axioms) τα χρησιμοποιούμε για να δώσουμε κάποιους περιορισμούς στις κλάσεις μας:

- Ekdromes
  - isOrganized max 3 Teachers (μια εκδρομή οργανώνεται το πολύ από τρεις καθηγητές)
- Mathimata
  - isTeachedBy min 1 Teachers (Ένα μάθημα διδάσκεται το λιγότερο από έναν δάσκαλο)
- People
  - hasGender exaclty 1 Gender(ενας ανθρωπος εχει ακριβως ενα φυλο)
- Student
  - hasClass exactly 1 Taksi(ενας μαθητης μπορει να ειναι φοιτα σε μια ταξη ανα ετος δεν μπορει πχ να ειναι ταυτοχρονα πρωτη και δευτερα)
  - hasGrade exactly 1 Vathmologia(ενας μαθητης εχει μια βαθμολογια στον ελεγχχο του)

Query (class expression)

Male **and** Teachers

[Execute] [Add to ontology]

Query results

Sub classes (0)

Instances (4)

◆ **t_Axileas_Distropidis**
◆ **t_Pasxalis_Kardelis**
◆ **t_Panagiotis_koulouridis**
◆ **t_Axileas_Toumpas**

Query (class expression)

hasName **value** "Axileas"^^string **and** hasSurname **value** "Toumpas"^^string

Execute | Add to ontology

Query results

Sub classes (0)

Instances (1)

◆ **t_Axileas_Toumpas**

Query (class expression)

hasClass **some** {c_A1}

Execute   Add to ontology

Query results

Sub classes (0)

Instances (3)

◆ **S_hraklhs_Touloumpas**
◆ **S_George_Georgiou**
◆ **s_Danai_Mamai**

Query (class expression)

isAlso **value** "Ypodieufthintis"^^string **and** isOrganazing **min** 1

| Execute | Add to ontology |

Query results

Sub classes (0)

Instances (2)

◆ **t_Pasxalis_Kardelis**

◆ **t_Panagiotis_koulouridis**

SPARQL query:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>

SELECT ?hasName ?hasCourseName
WHERE
{
?x my:hasCourses ?z;
my:hasName ?hasName.
?z my:hasCourseName ?hasCourseName.
```

hasName	hasCourseName
"Anna"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Petros"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Danai"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Vaios"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Vasilia"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Akrivi"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Gourouna"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Aglaia"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Makis"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Vasilis"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Ioannis"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"hraklis"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>
"Ervis"^^<http://www.w3.org/2001/XMLSchema#string>	"Fysikh"^^<http://www.w3.org/2001/XMLSchema#string>

Execute

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>
SELECT ?x
WHERE {
?x my:hasBirthYear ?y .
FILTER (?y > 1970)
FILTER (?y < 2000)
}
```

```
p_Roza_Bouldoza
g_Petros_Kwstas
g_Kwstas_Vasilokwstas
t_Eleni_micheleni
p_Vasilis_Karapiperis
t_Tamila_Zabanotsikova
t_Axileas_Toumpas
p_Giwrgos_Fouskas
g_Mixalis_Skordalias
T_Fotini_Lamberi
S_hraklhs_Touloumpas
```

SPARQL query:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>
SELECT ?x ?Surname
WHERE {
        ?x rdfs:subClassOf my:People.
        ?y rdf:type ?x.
        MINUS {?y rdf:type my:Student}
        ?y my:hasSurname ?Surname.
}
```

x	Surname
Teachers	"Toumpas"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"koulouridis"^^<http://www.w3.org/2001/XMLSchema#string>
SullogosGonewm	"Vasilokwstas"^^<http://www.w3.org/2001/XMLSchema#string>
Prosopiko	"Bouldoza"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"Lamberi"^^<http://www.w3.org/2001/XMLSchema#string>
SullogosGonewm	"Skordalias"^^<http://www.w3.org/2001/XMLSchema#string>
Prosopiko	"Karapiperis"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"Distropidis"^^<http://www.w3.org/2001/XMLSchema#string>
SullogosGonewm	"Karabetoglou"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"Kardelis"^^<http://www.w3.org/2001/XMLSchema#string>
SullogosGonewm	"Kwstas"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"Zabonotsikova"^^<http://www.w3.org/2001/XMLSchema#string>
Teachers	"micheleni"^^<http://www.w3.org/2001/XMLSchema#string>

Execute

Reasoner ac

SPARQL query:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>
SELECT ?eponimo  ?thesi
WHERE {
        OPTIONAL {?y my:isAlso ?thesi  }
        ?y my:hasSurname ?eponimo.
        MINUS {?y rdf:type my:Student}
        MINUS {?y rdf:type my:Prosopiko}
        MINUS {?y rdf:type my:SullogosGonewm}
        }
```

eponimo	thesi
"Toumpas"^^<http://www.w3.org/2001/XMLSchema#string>	
"koulouridis"^^<http://www.w3.org/2001/XMLSchema#string>	"Ypodieufthintis"^^<http://www.w3.org/2001/XMLSchema#string>
"Lamberi"^^<http://www.w3.org/2001/XMLSchema#string>	"Dieufthintis"^^<http://www.w3.org/2001/XMLSchema#string>
"Distropidis"^^<http://www.w3.org/2001/XMLSchema#string>	
"Kardelis"^^<http://www.w3.org/2001/XMLSchema#string>	"Ypodieufthintis"^^<http://www.w3.org/2001/XMLSchema#string>
"Zabonotsikova"^^<http://www.w3.org/2001/XMLSchema#string>	
"micheleni"^^<http://www.w3.org/2001/XMLSchema#string>	

SPARQL query:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>
SELECT ?tmima ?name (COUNT(?aName) AS ?hasStudent)
WHERE
{
        ?tmima rdf:type my:Deutera.
        ?tmima my:hasTmhma ?name.
        ?aName my:hasClass ?tmima
}
GROUP BY ?name ?tmima
ORDER BY ?tmima
```

tmima	name	hasStudent
c_B1	"B1"^^<http://www.w3.org/2001/XMLSchema#string>	"2"^^<http://www.w3.org/2001/XMLSchema#integer>
c_B2	"B2"^^<http://www.w3.org/2001/XMLSchema#string>	"2"^^<http://www.w3.org/2001/XMLSchema#integer>

SPARQL query:

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX my: <http://wwwSchoolEnviroment.gr#>
SELECT ?Vathmoi (COUNT(?u) AS ?count)
WHERE
{   ?x my:hasGrade ?z;
           ?u ?Vathmoi.
           ?Vathmoi rdf:type my:Vathmologia.
           ?z my:hasGradeSTR ?count   }
 GROUP BY ?Vathmoi
ORDER BY   ?count

Vathmoi	count
v_Polu_kalos	"2"^^<http://www.w3.org/2001/XMLSchema#integer>
v_Kakws	"3"^^<http://www.w3.org/2001/XMLSchema#integer>
v_Metrios	"3"^^<http://www.w3.org/2001/XMLSchema#integer>
v_Aristos	"3"^^<http://www.w3.org/2001/XMLSchema#integer>
v_Kalws	"4"^^<http://www.w3.org/2001/XMLSchema#integer>