

Өгөгдлийн сангийн систем

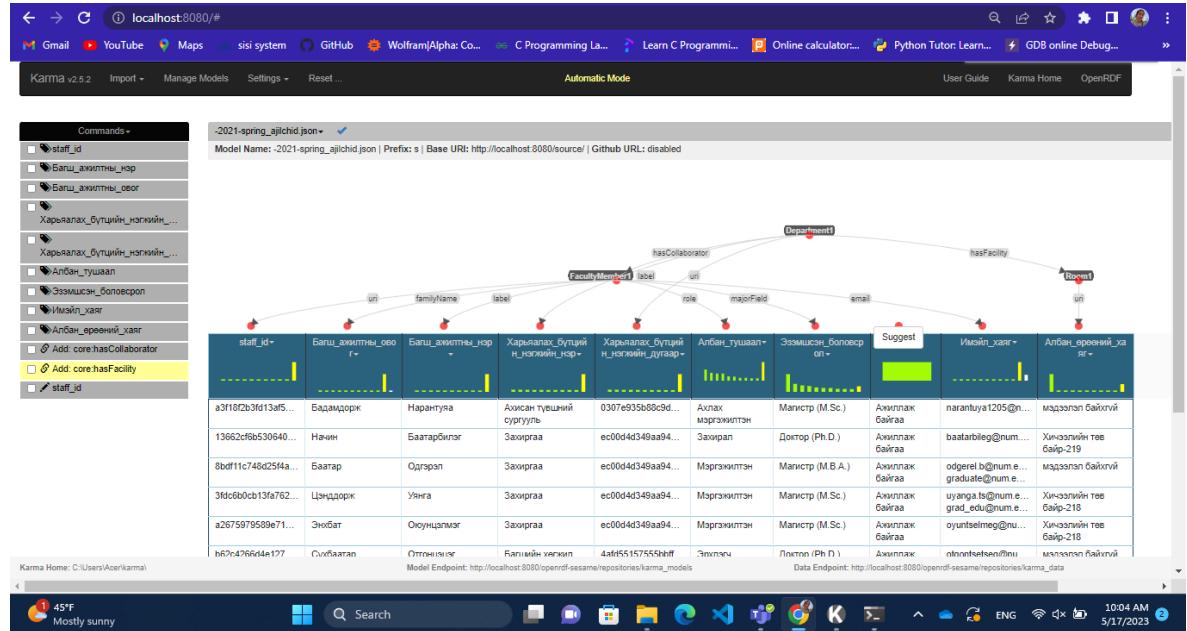
А. Гаусар /21b1num1182/

Э. Оюун-Эрдэнэ /21b1num2018/

Лаборатори – 11 Data integration and SPARQL

ETL process-ын загварчлал хэсэг :

1. Багш, ажилчидын мэдээлэл



CA\Users\Acer\OneDrive - National University of Mongolia\Documents\hieched\DB system\data\ajilchid.ttl (data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Go Tools Project Preferences Help

FOLDERS

- data
- /* -2021-spring
- ajilchid.ttl
- ajilchidiinlo
- butbi.ttl
- butets.ttl
- hieched.ttl
- huwaari.ttl
- lab-11.pof
- Lab-11_zas.o
- lab11.docx
- lab11.zip
- shinejilchi.o
- shinebair.ttl
- shinebutets
- shinehicer
- shinehuwai
- vivo.owlkm
- wa6-N11.d.o

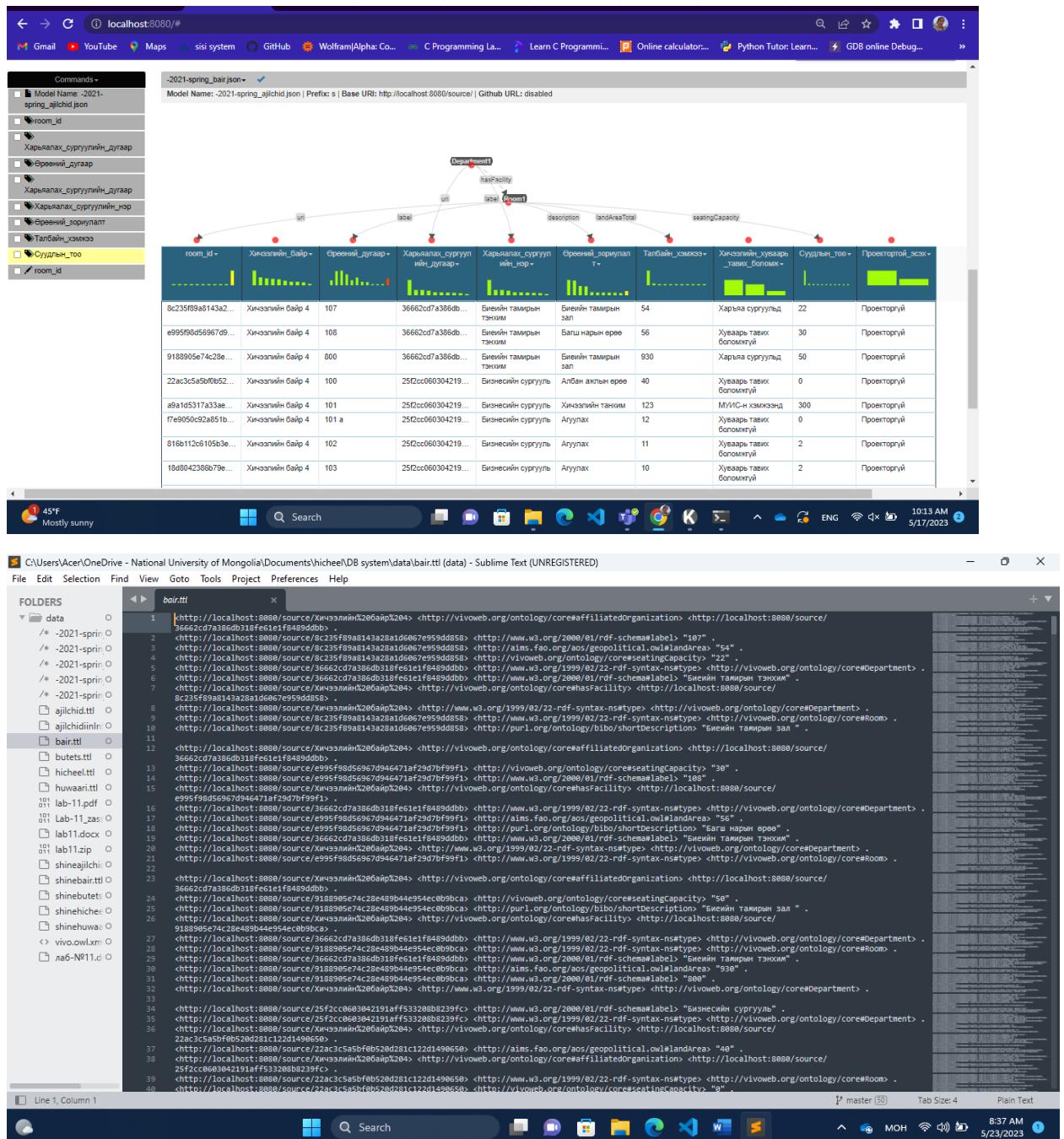
ajilchid.ttl

```
1 <http://localhost:8080/source/мэдээлэл20ea0axrvi> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Room> .
2 <http://localhost:8080/source/0307e935b88c9d28e8bb22ef356cc4aa> <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8080/source/мэдээлэл20ea0axrvi> .
3 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://www.w3.org/2006/vcard#name> "нанрантуя128@num.edu.mn" .
4 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://vivoweb.org/ontology/core#hasCollaborator> <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> .
5 <http://localhost:8080/source/0307e935b88c9d28e8bb22ef356cc4aa> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
6 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://vivoweb.org/ontology/core#termType> "хийлгээний байгаа" .
7 <http://localhost:8080/source/0307e935b88c9d28e8bb22ef356cc4aa> <http://www.w3.org/2006/vcard#label> "Хийлгээний сургуул" .
8 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#FacultyMember> .
9 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://vivoweb.org/ontology/core#majorField> "Маркшт (M.Sc.)" .
10 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://www.w3.org/2006/vcard#label> "Ахлах эрхэмжитэн" .
11 <http://localhost:8080/source/а3f18fbfd3a5f5b7affe4389259741> <http://www.w3.org/2006/vcard#label> "Нарантуяа" .
12 .
13 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://vivoweb.org/ontology/core#termType> "хийлгээний байгаа" .
14 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://vivoweb.org/ontology/core#label> "Зөвлөлийн" .
15 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://www.w3.org/2006/vcard#label> "захчилан" .
16 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://www.w3.org/2006/vcard#email> "baatarbileg.nuud.edu.mn" .
17 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://vivoweb.org/ontology/core#majorField> "Доктор (Ph.D.)" .
18 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://www.w3.org/2006/vcard#label> "Захчилгаа" .
19 <http://localhost:8080/source/хөвччиний20ae02c00ip> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Room> .
20 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
21 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8080/source/хөвччиний20ae02c00ip> .
22 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://vivoweb.org/ontology/core#hasCollaborator> <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> .
23 <http://localhost:8080/source/13662cf6b5360caee2493a5ee705fb> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#FacultyMember> .
24 .
25 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#FacultyMember> .
26 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://www.w3.org/2006/vcard#name> "Маргажийн" .
27 <http://localhost:8080/source/мэдээлэл20ea0axrvi> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Room> .
28 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://vivoweb.org/ontology/core#termType> "хийлгээний байраан" .
29 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://www.w3.org/2006/vcard#label> "Захчилгаа" .
30 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
31 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://www.w3.org/2006/vcard#email> "odgerel.b@nuud.edu.mn, graduate@nuud.edu.mn" .
32 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://vivoweb.org/ontology/core#hasCollaborator> <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> .
33 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://vivoweb.org/ontology/core#majorField> "Маркшт (M.B.A.)" .
34 <http://localhost:8080/source/ec004d349aa942f2dcfc98c8a7c74e> <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8080/source/хөвччиний20ae0axrvi> .
35 <http://localhost:8080/source/8bfdf11c748d2f5a457eed0059157d938> <http://www.w3.org/2006/vcard#label> "Одгэрэн" .
36 
```

Line 1, Column 1 I master [5] Tab Size: 4 Plain Text

8:37 AM MOH Wi-Fi 5/23/2023

2. Хичээлийн байрны мэдээлэл



3. Бүтцийн талаарх мэдээлэл

localhost:8080/#

Model Name: -2021-spring_ajilchid.json | Prefix: s | Base URI: http://localhost:8080/source/ | Github URL: disabled

Commands

- Model Name: -2021-spring_ajilchid.json
- Бүтцийн номийн дугаар
- Бүтцийн номийн нэр
- Бүтцийн харалгандах номын дугаар
- Бүтцийн харалгандах номын нэр
- Add: core affiliatedOrganization

-2021-spring_bullets.json

UTF-8

Model Name: -2021-spring_ajilchid.json | Prefix: s | Base URI: http://localhost:8080/source/ | Github URL: disabled

Department

```

graph TD
    Department[Department] -- affiliation --> Department2[Department2]
    Department -- up --> up[up]
    Department -- label --> label[label]

```

Бүтцийн номийн дугаар	Бүтцийн номийн нэр	Бүтцийн харалгандах номийн дугаар	Бүтцийн харалгандах номийн нэр
ed7bd5bcccea3317...	Монгол Улсын Их Сургууль	8155bc545f84d96...	Бөвлөсөр Собт Шинжилгээний Ухааны Яам
57b9cdffabf42a79...	Захиргааны НЭРЛҮҮД	ed7bd5bcccea3317...	Монгол Улсын Их Сургууль
79303e58370c37...	Бие давсан номийн дугаар	ed7bd5bcccea3317...	Монгол Улсын Их Сургууль
47ed62016b666cc...	Бурандахүүн/Сандбар сургуульд	ed7bd5bcccea3317...	Монгол Улсын Их Сургууль
c256a608435fb6...	Захиргааны НЭРЛҮҮД	57b9cdffabf42a79...	Захиргааны НЭРЛҮҮД
4af55157559bbff...	Багийн хөгжлийн цахим сургалтын	57b9cdffabf42a79...	Захиргааны НЭРЛҮҮД

45°F Mostly sunny

Search

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

- data
- /* -2021-spring
- ajilchid.tt
- ajilchidiin.tt
- bair.tt
- butets.tt
- hiceel.tt
- huuvaritt.tt
- lab-11.pdf
- Lab-11_zas
- Lab11_dock
- Lab11.zip
- shineajlchir
- shineairbt
- shinebutet
- shinehicer
- shinehuwai
- vivo.owlxm
- лаб-NR11.d

butets.tt

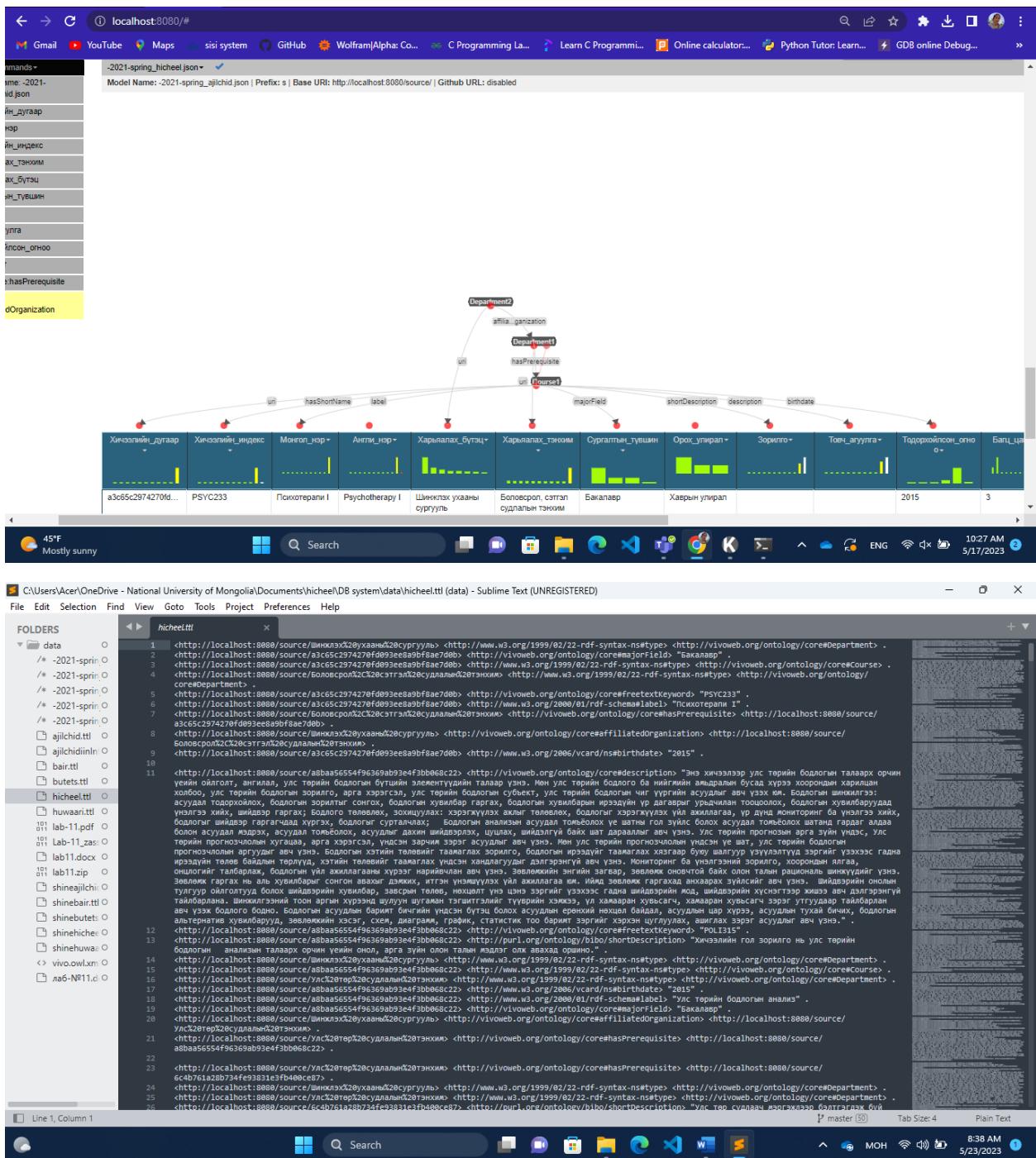
```

1 <http://localhost:8080/source/8155bc545f84d9652f1012ef2bdf6eb> <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
2 <http://localhost:8080/source/8155bc545f84d9652f1012ef2bdf6eb> <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8080/source/ed7bd5bcccea3317...
```

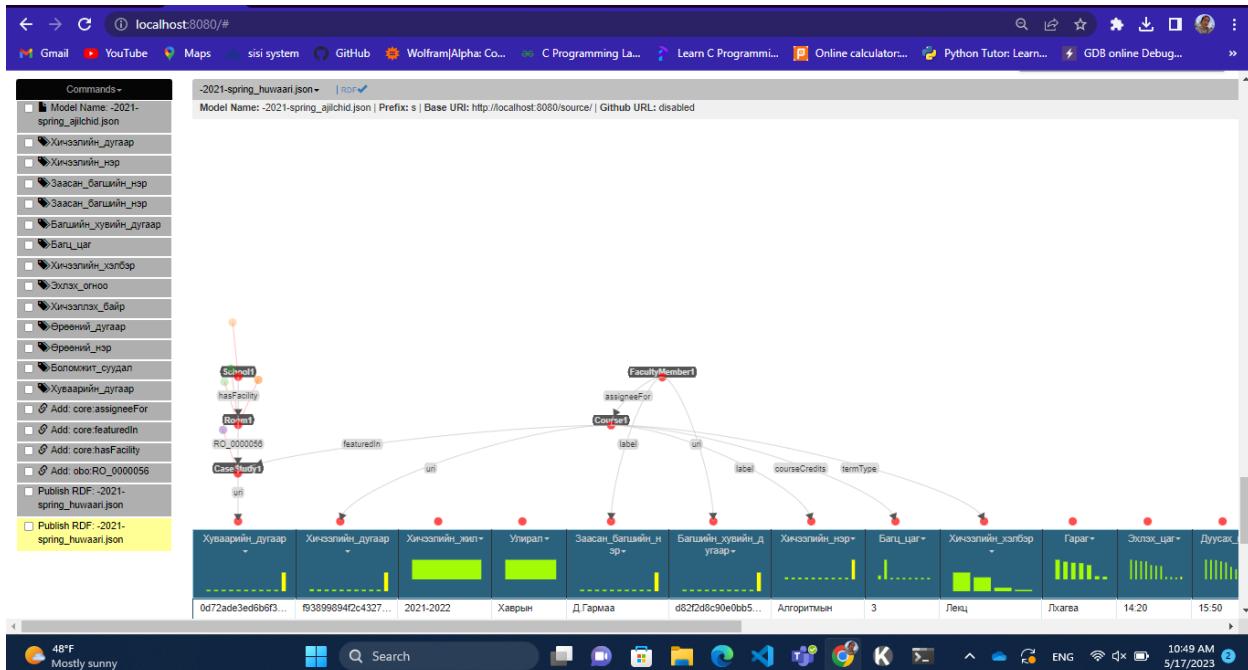
Line 1, Column 1

8:38 AM 5/23/2023

4. Хичээлийн талаарх мэдээлэл



5. Хичээлийн хуваарийн мэдээлэл



C:\Users\Acer\OneDrive - National University of Mongolia\Documents\hieuhi\DB system\data\huwaari.ttl (data) - Sublime Text (UNREGISTERED)

File Edit Selection Find View Goto Tools Project Preferences Help

FOLDERS

- data
 - /* -2021-sprin: 1 https://localhost:8880/source/d82f2d8c90e0bb5aee4a2283caf3d41 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#facultyMember>
 - /* -2021-sprin: 2 https://localhost:8880/source/хувсааныж2а6aa5p203a <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
 - /* -2021-sprin: 3 https://localhost:8880/source/310a <http://www.w3.org/2000/01/rdf-schema#label> "Аар"
 - /* -2021-sprin: 4 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#course> .
 - /* -2021-sprin: 5 https://localhost:8880/source/310a <http://vivoweb.org/ontology/core#hasPrerequisite> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
 - /* -2021-sprin: 6 https://localhost:8880/source/310a <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Room> .
 - /* -2021-sprin: 7 https://localhost:8880/source/310a <http://vivoweb.org/ontology/core#courseCredit> "3"
 - /* -2021-sprin: 8 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://vivoweb.org/ontology/core#textType> "Text"
 - /* -2021-sprin: 9 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://vivoweb.org/ontology/core#dateTime> "2/2/2022 14:28"
 - /* -2021-sprin: 10 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://www.w3.org/2000/01/rdf-schema#label> "Алгоритмы унэрц".
 - /* -2021-sprin: 11 https://localhost:8880/source/d82f2d8c90e0bb5aee4a2283caf3d41 <http://vivoweb.org/ontology/core#assignedFor> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d>
 - /* -2021-sprin: 12 https://localhost:8880/source/310a <http://vivoweb.org/ontology/core#existingCapacity> "52"
 - /* -2021-sprin: 13 https://localhost:8880/source/хувсааныж2а6aa5p203a <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/310a> .
 - /* -2021-sprin: 14 https://localhost:8880/source/ed72ade3debf3b77051191145483s <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
- ajilchid.ttl
 - /* -2021-sprin: 15 https://localhost:8880/source/d82f2d8c90e0bb5aee4a2283caf3d41 <http://www.w3.org/2000/01/rdf-schema#label> "Д.Гармаз".
 - /* -2021-sprin: 16 https://localhost:8880/source/ed72ade3debf3b77051191145483s <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
- ajilchidinii.ttl
 - /* -2021-sprin: 17 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
 - /* -2021-sprin: 18 https://localhost:8880/source/203 <http://vivoweb.org/ontology/core#hasPrerequisite> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
 - /* -2021-sprin: 19 https://localhost:8880/source/E_Хомж2с0аю <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
 - /* -2021-sprin: 20 https://localhost:8880/source/320051b1454a41d1d17588195d0efb03 <http://vivoweb.org/ontology/core#assignedFor> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
 - /* -2021-sprin: 21 https://localhost:8880/source/320051b1454a41d1d17588195d0efb03 <http://vivoweb.org/ontology/core#Department> .
- bair.ttl
 - /* -2021-sprin: 22 https://localhost:8880/source/w3_03 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Room> .
 - /* -2021-sprin: 23 https://localhost:8880/source/203 <http://vivoweb.org/ontology/core#existingCapacity> "75"
 - /* -2021-sprin: 24 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#course> .
 - /* -2021-sprin: 25 https://localhost:8880/source/320051b1454a41d1d17588195d0efb03 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#FacultyMember> .
- butets.ttl
 - /* -2021-sprin: 26 https://localhost:8880/source/baea7b6c90e0bb5aee4a2283caf3d41 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
- hiecel.ttl
 - /* -2021-sprin: 27 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#courseCredit> "3".
 - /* -2021-sprin: 28 https://localhost:8880/source/320051b1454a41d1d17588195d0efb03 <http://www.w3.org/2000/01/rdf-schema#label> "Д.Нийзандагчай".
 - /* -2021-sprin: 29 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://vivoweb.org/ontology/core#textType> "Text".
 - /* -2021-sprin: 30 https://localhost:8880/source/203 <http://www.w3.org/2000/01/rdf-schema#label> "Нийчин зал".
 - /* -2021-sprin: 31 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://www.w3.org/2000/01/rdf-schema#label> "Алгоритмы унэрц".
 - /* -2021-sprin: 32 https://localhost:8880/source/320051b1454a41d1d17588195d0efb03 <http://vivoweb.org/ontology/core#affiliatedOrganization> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
 - /* -2021-sprin: 33 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://vivoweb.org/ontology/core#dateTime> "2/3/2022 11:06".
 - /* -2021-sprin: 34 https://localhost:8880/source/f93899894fc43279dc0013b9ad2849d <http://vivoweb.org/ontology/core#dateTime> "2/2/2022 12:40".
 - /* -2021-sprin: 35 https://localhost:8880/source/E_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
 - /* -2021-sprin: 36 https://localhost:8880/source/203 <http://vivoweb.org/ontology/core#hasPrerequisite> <http://localhost:8880/source/f93899894fc43279dc0013b9ad2849d> .
 - /* -2021-sprin: 37 https://localhost:8880/source/E_Хомж2с0аю <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
 - /* -2021-sprin: 38 https://localhost:8880/source/8e3958083aeb7efb705d8fb1f43ffec <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#Department> .
- huwaari.ttl
 - /* -2021-sprin: 39 https://localhost:8880/source/d82f2d8c90e0bb5aee4a2283caf3d41 <http://www.w3.org/1999/02/22-rdf-syntax-ns#type> <http://vivoweb.org/ontology/core#FacultyMember> .
- lab-11.pdf
 - /* -2021-sprin: 40 https://localhost:8880/source/11_Лабораторий2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- Lab-11_zas.ttl
 - /* -2021-sprin: 41 https://localhost:8880/source/11_Лабораторий2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- lab11.docx
 - /* -2021-sprin: 42 https://localhost:8880/source/11_Лабораторий2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- lab11.zip
 - /* -2021-sprin: 43 https://localhost:8880/source/11_Лабораторий2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- shineajilch: 0
 - /* -2021-sprin: 44 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- shineairbar:ttl
 - /* -2021-sprin: 45 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- shineabutes: 0
 - /* -2021-sprin: 46 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- shineahicher: 0
 - /* -2021-sprin: 47 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- shineihuwa: 0
 - /* -2021-sprin: 48 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- owl.owl: 0
 - /* -2021-sprin: 49 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .
- ялб-NF11.d: 0
 - /* -2021-sprin: 50 https://localhost:8880/source/5_Номж2с0аю <http://vivoweb.org/ontology/core#hasFacility> <http://localhost:8880/source/203> .

Visualization :

5 хүснэгтээ import хийснийг энд харуулж байна.

Screenshot of the GraphDB Import interface (localhost:7200/import#user).

The interface shows a sidebar with navigation links: Import, Explore, SPARQL, Monitor, Setup, and Help.

The main area is titled "Import" and contains three tabs: User data (selected) and Server files.

Three import options are available:

- Upload RDF files (All RDF formats, up to 200 MB)
- Get RDF data from a URL (All RDF formats)
- Import RDF text snippet (Type or paste RDF data)

A list of imported files is shown:

- ajilchidlinInfo.ttl: Imported successfully in 43s
- bairt.ttl: Imported successfully in 10s
- butets.ttl: Imported successfully in 1s
- hicheel.ttl: Imported successfully in 28s
- huwaari.ttl: Imported successfully in 7s

Each file entry includes a trash icon and a red "Import" button.

Screenshot of the GraphDB Class hierarchy interface (localhost:7200/hierarchy#1).

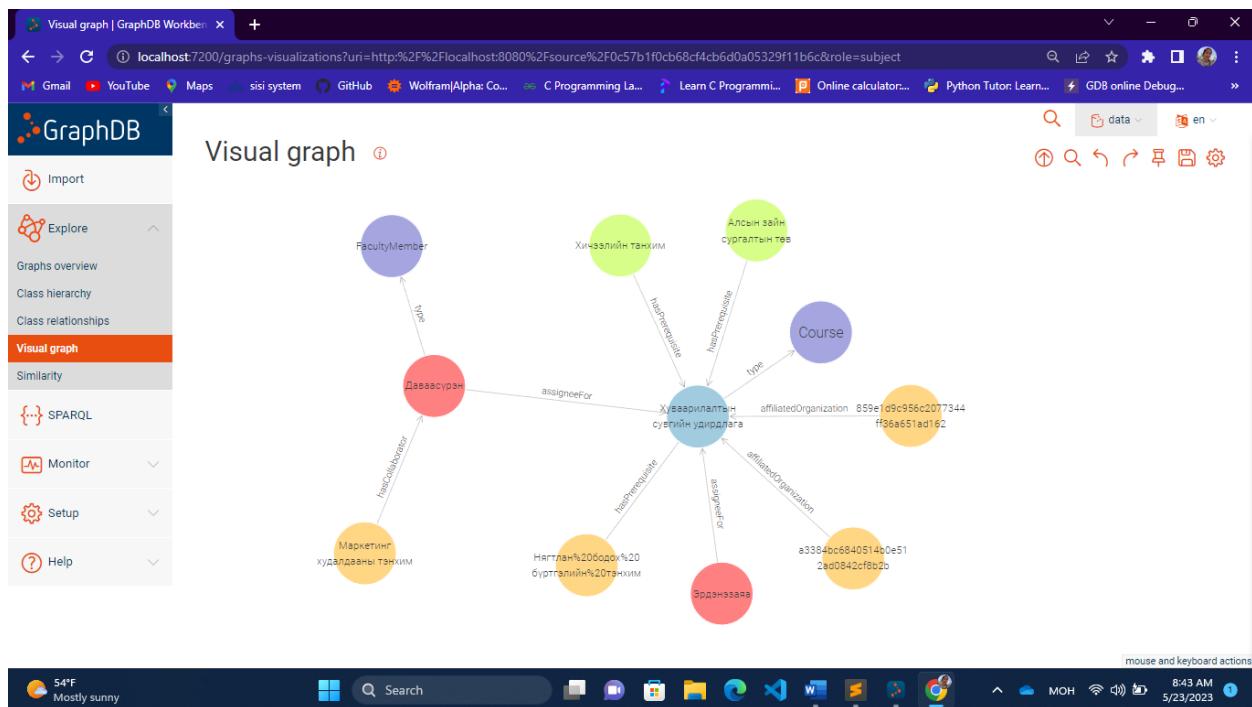
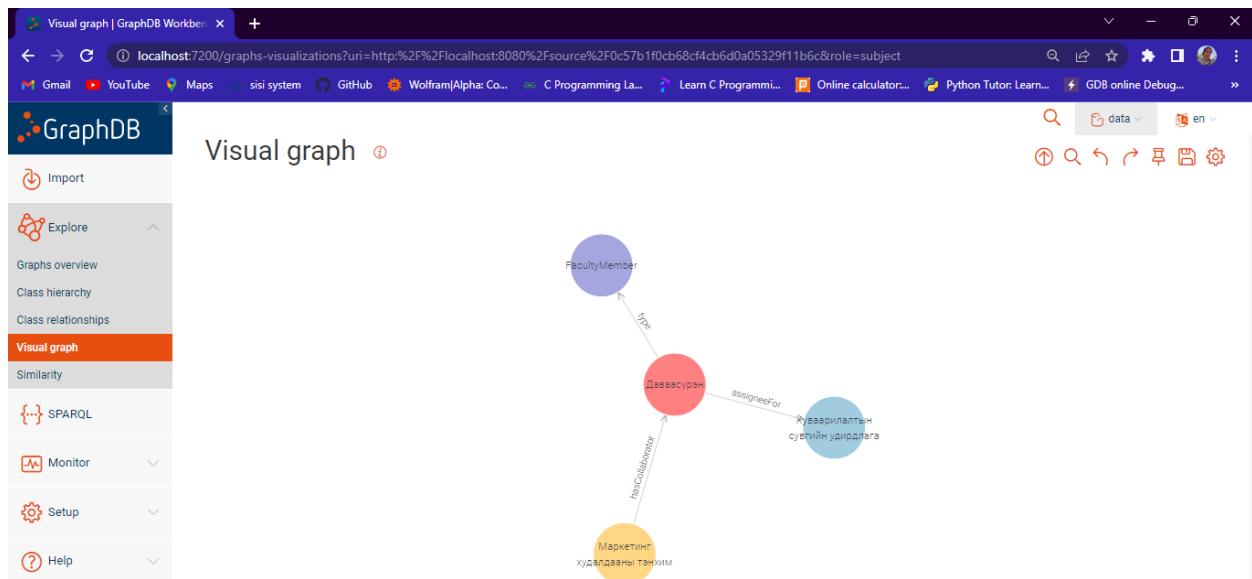
The interface shows a sidebar with navigation links: Import, Explore (Graphs overview selected), Class hierarchy, Class relationships, Visual graph, Similarity, SPARQL, Monitor, Setup, and Help.

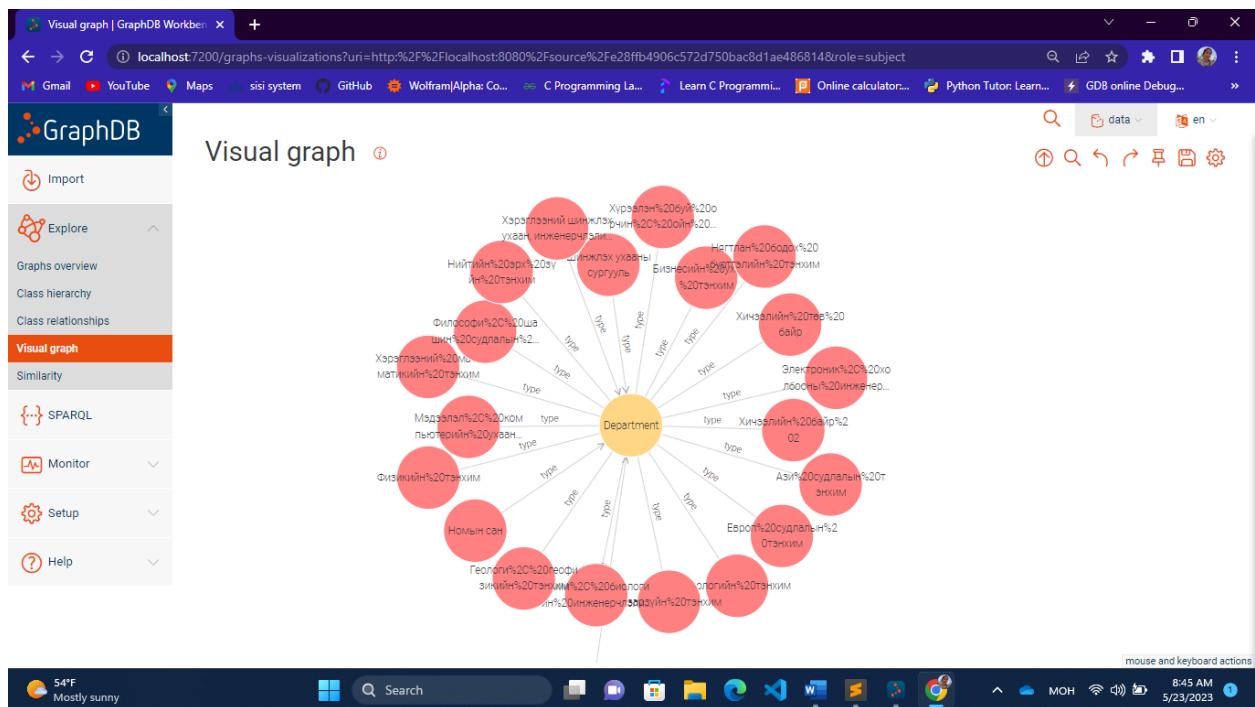
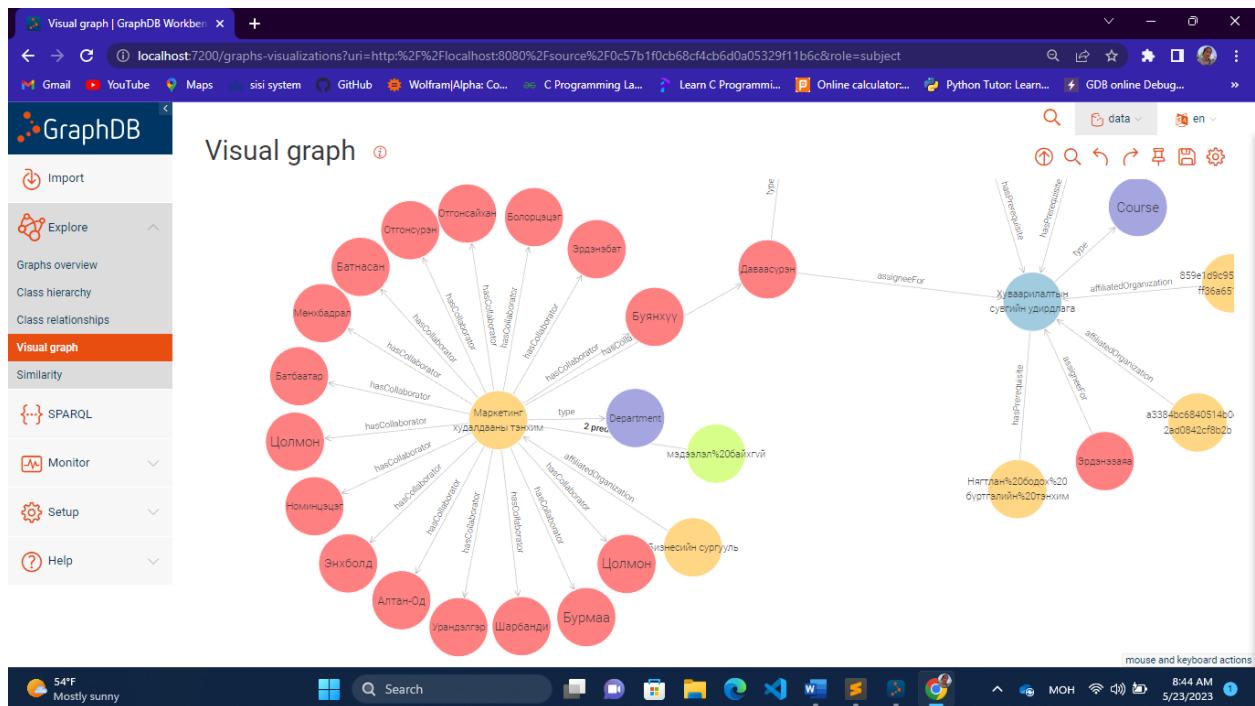
A message box states: "Some functionalities are not available because data. There are no accessible writable repositories. You can create a new repository." It includes a "Create new repository" button.

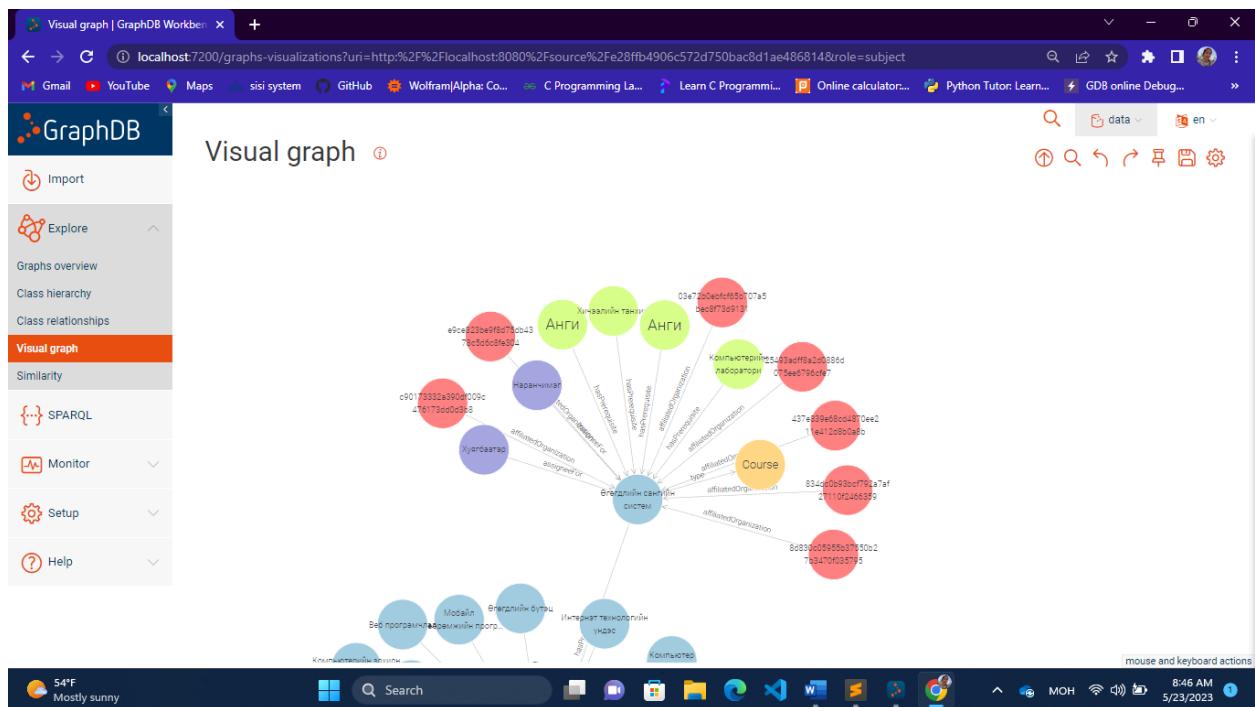
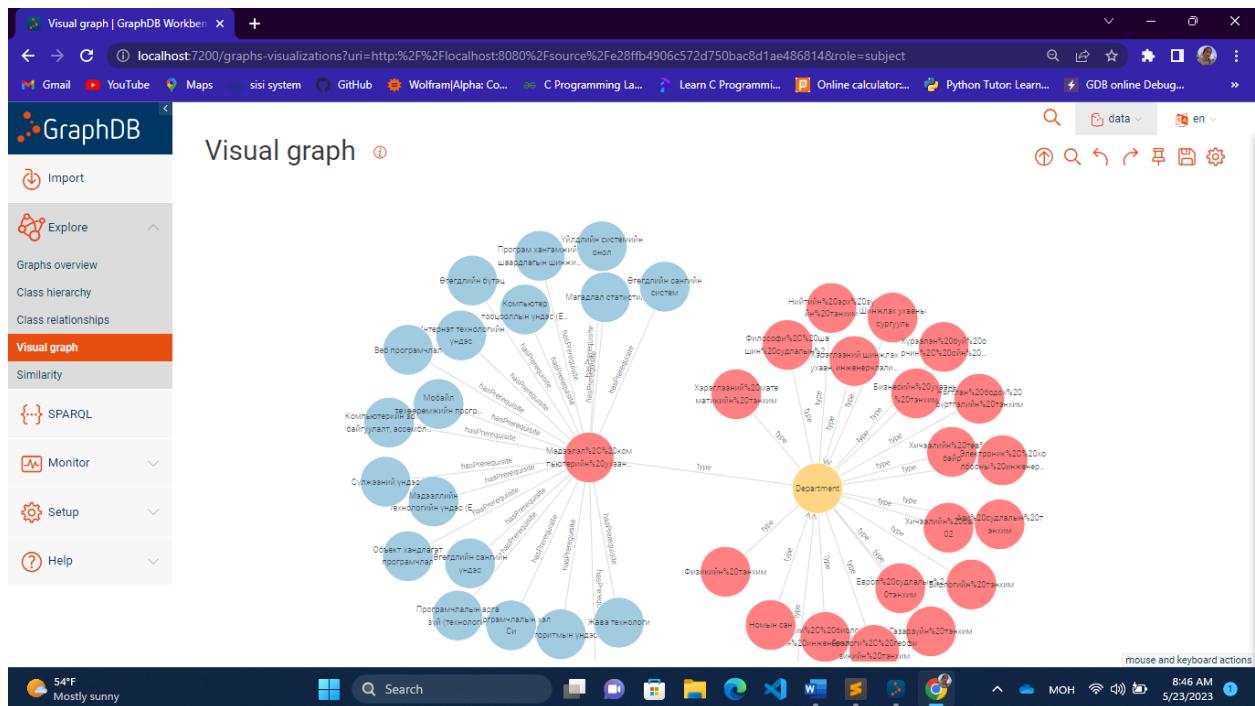
The main area displays a circular diagram representing class relationships:

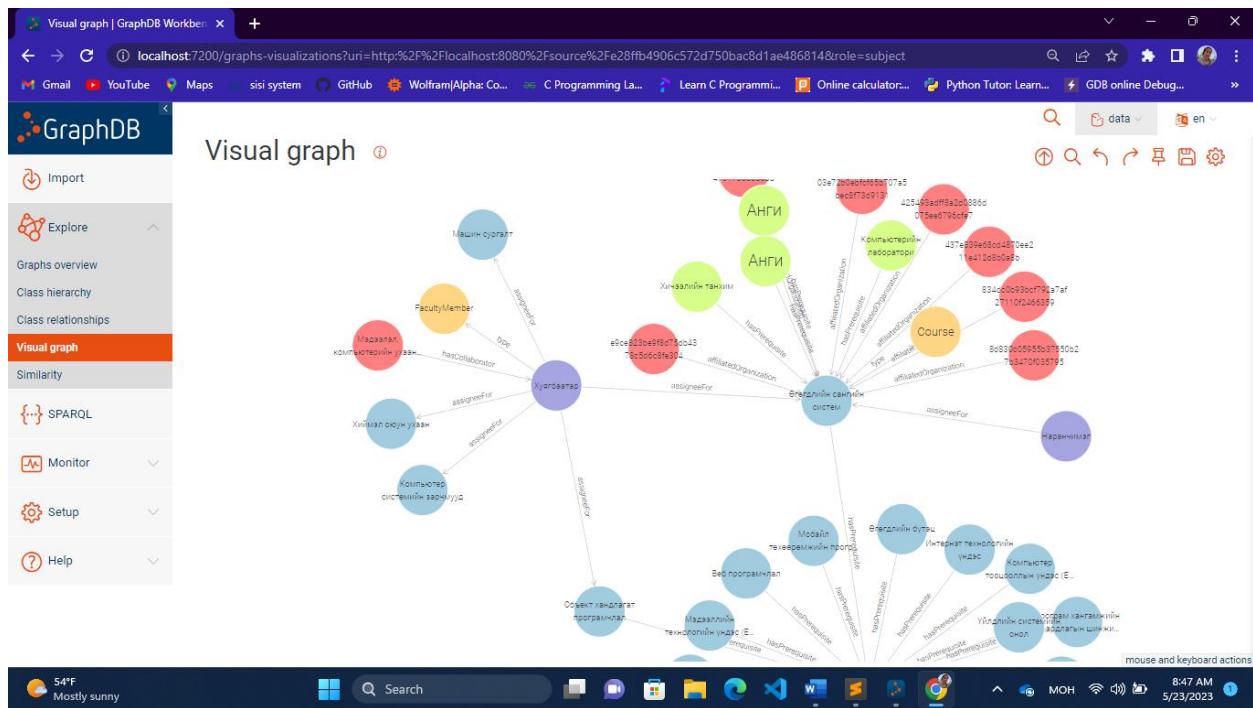
- Class Count: 3
- Central circle: http://vivoweb.org/ontology/core#FacultyMember
- Bottom-left circle: http://vivoweb.org/ontology/core#Department
- Bottom-right circle: http://vivoweb.org/ontology/core#Room

The Windows taskbar at the bottom shows various open applications including Google Chrome, Microsoft Word, and File Explorer.









Select query:

1. Програмчлалын хэл Си хичээлийг ямар багш нар ордог тухай мэдээлэлийг харуулсан Query

The results table shows the following data:

	Department2	course1	FacultyMember	teacher	name	coursetext
1	http://localhost:8080/source/310	http://localhost:8080/source/c39c	http://localhost:8080/source/51cf	"Оюундолгор"	"Хичээлийн танхим"	"Програмчлалын хэл Си"
2	http://localhost:8080/source/310	http://localhost:8080/source/c39c	http://localhost:8080/source/51cf	"Оюундолгор"	"Анги"	"Програмчлалын хэл Си"
3	http://localhost:8080/source/202	http://localhost:8080/source/c39c	http://localhost:8080/source/51cf	"Оюундолгор"	"Анги"	"Програмчлалын хэл Си"

The screenshot shows the GraphDB Workbench interface. In the top-left corner, there are several browser tabs, including "localhost:7200/sparql". The main area displays a SPARQL query and its results.

```

    7 ?FacultyMember rdfs:label ?teacher.
    8 ?course1 rdfs:label ?coursename.
    9 FILTER(CONTAINS(str(?coursename), "Програмчлалын хэл Си"))
    10
    11 }
    12
  
```

The results table has columns: FacultyMember, course1, teacher, and coursename. The data is as follows:

	FacultyMember	course1	teacher	coursename
1	http://localhost:8080/source/51c607c3b346b6f10	http://localhost:8080/source/c396792b21918eff54	"Оюундолгор"	"Програмчлалын хэл Си"
2	http://localhost:8080/source/51c607c3b346b6f10	http://localhost:8080/source/c396792b21918eff54	"Х.Ооундолгор"	"Програмчлалын хэл Си"
3	http://localhost:8080/source/ab43d211007d52125	http://localhost:8080/source/c396792b21918eff54	"Нямхагва"	"Програмчлалын хэл Си"
4	http://localhost:8080/source/ab43d211007d52125	http://localhost:8080/source/c396792b21918eff54	"С.Нямхагва"	"Програмчлалын хэл Си"
5	http://localhost:8080/source/b0c9ad4179452d983t	http://localhost:8080/source/c396792b21918eff54	"Ууланбаатар"	"Програмчлалын хэл Си"
6	http://localhost:8080/source/e825fb87c9b2ef5fb2t	http://localhost:8080/source/c396792b21918eff54	"Ууланбаатар"	"Програмчлалын хэл Си"
7	http://localhost:8080/source/e825fb87c9b2ef5fb2t	http://localhost:8080/source/c396792b21918eff54	"Доржнамжирлаа"	"Програмчлалын хэл Си"
8	http://localhost:8080/source/e825fb87c9b2ef5fb2t	http://localhost:8080/source/c396792b21918eff54	"Б.Доржнамжирлаа"	"Програмчлалын хэл Си"
9	http://localhost:8080/source/320051b454841d7d1t	http://localhost:8080/source/c396792b21918eff54	"Нэнзадрагчай"	"Програмчлалын хэл Си"
10	http://localhost:8080/source/320051b454841d7d1t	http://localhost:8080/source/c396792b21918eff54	"Д.Нэнзадрагчай"	"Програмчлалын хэл Си"

At the bottom of the window, the URL is shown as <http://localhost:7200/resource?url=http%3A%2F%2Flocalhost%3A8080%2Fsource%2Fc396792b21918eff5479ce2440f63d84>.

2. Ууганбаяр багш хэдэн хичээл орсон талаар мэдээллийг харуулж байгаа

The screenshot shows the GraphDB Workbench interface. In the top-left corner, there are several browser tabs, including "localhost:7200/sparql". The main area displays a SPARQL query and its results.

```

  1 prefix core:<http://vivoweb.org/ontology/core#>
  2 prefix rdf:<http://www.w3.org/1999/02/22-rdf-syntax-ns#>
  3 prefix rdfs:<http://www.w3.org/2000/01/rdf-schema#>
  4 select * where {
  5   ?FacultyMember core:assigneeFor ?course1.
  6   ?FacultyMember rdfs:label ?teacher.
  7   FILTER(CONTAINS(str(?teacher), "Ууганбаяр"))
  8   ?course1 rdfs:label ?coursename.
  9
 10 }
 11
 12
 13
  
```

The results table has columns: FacultyMember, course1, teacher, and coursename. The data is as follows:

	FacultyMember	course1	teacher	coursename
1	http://localhost:8080/source/b0c9ad4179452d983t	http://localhost:8080/source/c396792b21918eff54	"Ууганбаяр"	"Програмчлалын хэл Си"
2	http://localhost:8080/source/b0c9ad4179452d983t	http://localhost:8080/source/61cf8eeca00302ed	"Ууганбаяр"	"Өгөгдлийн бүтэц"
3	http://localhost:8080/source/b0c9ad4179452d983t	http://localhost:8080/source/1ce9b89d11a521e03t	"Ууганбаяр"	"Хэв танилтын үндэс"
4	http://localhost:8080/source/b0c9ad4179452d983t	http://localhost:8080/source/0bdfa70fd4894b47e1	"Ууганбаяр"	"Мобайл төхөрөмжийн програм хөгжүүлэлт"

At the bottom of the window, the URL is shown as <http://localhost:7200/resource?url=http%3A%2F%2Flocalhost%3A8080%2Fsource%2Fc396792b21918eff5479ce2440f63d84>.

3. Эдийн засгийн тэнхимд хэдэн багш байгаа тухай харуулна

localhost:7200/sparql

SPARQL Query & Update

```

1 prefix core:<http://vivoweb.org/ontology/core#>
2 prefix rdf:<http://www.w3.org/1999/02/22-rdf-syntax-ns#>
3 prefix rdfs:<http://www.w3.org/2000/01/rdf-schema#>
4 select * where {
5   ?Department core:hasCollaborator ?FacultyMember .
6   ?Department rdfs:label ?name .
7   ?FacultyMember rdfs:label ?teacher .
8   FILTER(CONTAINS(str(?name), "Эдийн засгийн тэнхим"))
9 }
10
11

```

Editor only Editor and results Results only

Table Raw Response Pivot Table Google Chart

Filter query results Showing results from 1 to 51 of 51. Query took 0.1s, moments ago.

	Department	FacultyMember	name	teacher
1	http://localhost:8080/source/dcfa87cb2f2a61269b	http://localhost:8080/source/35add8cc99c51528e	"Эдийн засгийн тэнхим"	"Баттулга"
2	http://localhost:8080/source/dcfa87cb2f2a61269b	http://localhost:8080/source/35add8cc99c51528e	"Эдийн засгийн тэнхим"	"Г.Баттулга"
3	http://localhost:8080/source/dcfa87cb2f2a61269b	http://localhost:8080/source/75525bc4115541530	"Эдийн засгийн тэнхим"	"Нарантуяа"

Download as

Run keyboard shortcuts

4. . “Машин сургалт хичээл аль тэнхимд харгалзаж байна вэ?, хэн багш заадаг вэ?”

localhost:7200/sparql

SPARQL Query & Update

```

1 prefix core:<http://vivoweb.org/ontology/core#>
2 prefix rdf:<http://www.w3.org/1999/02/22-rdf-syntax-ns#>
3 prefix rdfs:<http://www.w3.org/2000/01/rdf-schema#>
4 select * where {
5   ?FacultyMember core:assigneeFor ?course1 .
6   ?FacultyMember rdfs:label ?teacher .
7   ?course1 rdfs:label ?coursename .
8   ?Department core:hasCollaborator ?FacultyMember .
9   ?Department rdfs:label ?depName .
10  FILTER(CONTAINS(str(?coursename), "Машин сургалт"))
11
12
13

```

Editor only Editor and results Results only

Table Raw Response Pivot Table Google Chart

Filter query results Showing results from 1 to 4 of 4. Query took 0.3s, on 2023-05-16 at 15:52.

	FacultyMember	course1	teacher	coursename	Department	depName
1	http://localhost:8080/source/fcd7	http://localhost:8080/source/7f9b	"Сүрэдээ"	"Машин сургалт"	http://localhost:8080/source/71c5	"Мэдээлэл, компьютерийн ухааны тэнхим"
2	http://localhost:8080/source/fcd7	http://localhost:8080/source/7f9b	"Б.Сүрэдээ"	"Машин сургалт"	http://localhost:8080/source/71c5	"Мэдээлэл, компьютерийн ухааны тэнхим"
3	http://localhost:8080/source/265t	http://localhost:8080/source/088e	"Хүягбаатар"	"Машин сургалт"	http://localhost:8080/source/71c5	"Мэдээлэл, компьютерийн ухааны тэнхим"
4	http://localhost:8080/source/265t	http://localhost:8080/source/088e	"Б.Хүягбаатар"	"Машин сургалт"	http://localhost:8080/source/71c5	"Мэдээлэл, компьютерийн ухааны тэнхим"

Download as

Run keyboard shortcuts

5. Query

The screenshot shows the GraphDB interface for performing SPARQL queries. The left sidebar has a red highlight on the 'SPARQL' section. The main area displays a SPARQL query and its results.

SPARQL Query:

```
* 1 prefix core:<http://vivoweb.org/ontology/core#>
2 prefix rdf:<http://www.w3.org/1999/02/22-rdf-syntax-ns#>
3 prefix rdfs:<http://www.w3.org/2000/01/rdf-schema#>
4 select * where {
5   ?FacultyMember core:assigneeFor ?course1.
6   ?FacultyMember rdfs:label ?teacher.
7   ?course1 rdfs:label ?coursename,
8   ?Department core:hasCollaborator ?FacultyMember.
9   ?Department rdfs:label ?depName,
10  ?room core:hasPrerequisite ?course1.
11  ?room rdfs:label ?roomNo.
12  FILTER(CONTAINS(str(?teacher), "Б.Хуягбаатар"))
13  FILTER(CONTAINS(str(?coursename), "Машин сургалт"))
14 }
```

Results:

FacultyMember	course1	teacher	coursename	Department	depName	room	roomNo
1 http://localhost:8080/sou	http://localhost:8080/sou "Б.Хуягбаатар"		"Машин сургалт"	http://localhost:8080/sou	"Мэдээлэл, комп'ютер ийн ухааны Тэнхим"	http://localhost:8080/sou	"Анги"
2 http://localhost:8080/sou	http://localhost:8080/sou "Б.Хуягбаатар"		"Машин сургалт"	http://localhost:8080/sou	"Мэдээлэл, комп'ютер ийн ухааны Тэнхим"	http://localhost:8080/sou	"Компьютерийн лаборатори"