



Semantic Web Project

Part III: Queries

1- A query that gets all undergraduate students.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?student
WHERE {
  ?student rdf:type uni:Undergraduate .
}
```

Result:

student
Saeed
AbdulRaouf
AbdulRahman
Tasneem
Sameh

2- A query that gets all postgraduate students or TAs.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?student
WHERE {
  ?student rdf:type uni:Postgrad_TA.
}
```

Result:

student
Eman

3- A query that gets all Core Subjects.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?subject
WHERE {
  ?subject rdf:type uni:Core.
}
```

Result:

subject
Control_systems
Math1
Logic_Design
Math2

4- A query that contains at least 2 Optional Graph Patterns.

```
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?student ?age ?id
WHERE {
  ?student rdf:type uni:Undergraduate.
  OPTIONAL {
    ?student uni:hasAge ?age.
  }
  OPTIONAL {
    ?student uni:studentID ?id.
  }
}
```

Result:

student	age	id
Saeed	"22"^^<http://www.w3.org/2001/XMLSchema#nonN	"19P2342"@
AbdulRaouf	"23"^^<http://www.w3.org/2001/XMLSchema#nonN	"19P4442"@
AbdulRahman	"24"^^<http://www.w3.org/2001/XMLSchema#nonN	"19P1234"@
Tasneem	"23"^^<http://www.w3.org/2001/XMLSchema#nonN	"19P4152"@
Sameh	"23"^^<http://www.w3.org/2001/XMLSchema#nonN	"19P8434"@

5- A query that contains at least 2 alternatives and conjunctions:

```
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?object
WHERE {
  {
    ?object rdf:type uni:Undergraduate .
  }
  UNION
  {
    ?object rdf:type uni:Postgrad_TA .
  }
  UNION
  {
    ?object rdf:type uni:Faculty .
  }
  FILTER(?object != uni:Tasneem && ?object != uni:Eng_Mohsen && ?object != uni:Faculty_of_medicine)
}
```

Result:

object
Saeed
AbdulRaouf
AbdulRahman
Sameh
Eman
Faculty_of_Engineering

6- A query that contains an CONSTRUCT query form:

```
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

CONSTRUCT {
  ?prof uni:isActiveProfessor uni:true.
}
WHERE {
  ?prof rdf:type uni:Professor .
}
```

```
?prof uni:teaches ?course.  
}
```

Result:

Subject	Predicate	Object
Dr_Mahmoud_Khalil	isActiveProfessor	true
Dr_Ensaf	isActiveProfessor	true

7- A query that contains an ASK query form:

```
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>  
  
ASK {  
  ?student rdf:type uni:Undergraduate .  
  ?course rdf:type uni:Core .  
  ?student uni:enrolledIn ?course .  
}
```

Result
False

8- A query that contains a DESCRIBE query form.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>  
  
DESCRIBE ?faculty  
WHERE {  
  ?faculty rdf:type uni:Faculty .  
}
```

Result:

Subject	Predicate	Object
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasProfessor	Dr_Mahmoud_Khalil
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasFacility	Women_Toilet
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasProfessor	Dr_Ensaf
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasFacility	Archive_Room
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasStudent	Saeed
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasFacility	ChemistryLab
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasFacility	Men_Toilet
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasFacility	Computer_Lab
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasStudent	Tasneem
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	hasTA	Eman
Faculty_of_Engineering	type	NamedIndividual
Faculty_of_Engineering	Admits	Saeed
Faculty of Engineering	type	NamedIndividual

9- A query that gets all Elective Subjects.

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?subject
WHERE {
  ?subject rdf:type uni:Elective.
}

```

Result:

subject
Deep_Learning
Data_Mining
Computer_Vision
Big_Data

10- A query that gets all Professors.

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?prof
WHERE {

```

```
?prof rdf:type uni:Professor.  
}
```

Result:

subject
Dr_Ensaf
Dr_Mahmoud_Khalil

11- A query that gets all facilities of the faculty of engineering.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>  
  
SELECT ?facility  
WHERE {  
  ?faculty rdf:type uni:Faculty;  
           uni:hasFacility ?facility.  
  FILTER(?faculty = uni:Faculty_of_Engineering)  
}
```

Result:

facility
Women_Toilet
Archive_Room
ChemistryLab
Men_Toilet
Computer_Lab

12- A query that gets all undergraduate or postgrad students with age greater than 22.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>  
  
SELECT ?person  
  
WHERE {  
  {  
    ?person rdf:type uni:Undergraduate;  
            uni:hasAge ?age.  
    FILTER(?age > 22)  
  }  
  UNION  
  {  
    ?person rdf:type uni:Postgraduate;  
            uni:hasAge ?age.  
    FILTER(?age > 22)  
  }  
}
```

```
{
  ?person rdf:type uni:Postgrad_TA;
    uni:hasAge ?age.
  FILTER(?age > 22)
}
```

Result:

person
AbdulRaouf
AbdulRahman
Tasneem
Sameh
Eman

13- A query that gets all undergraduate students with a registered phone number.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?student

WHERE {
  ?student rdf:type uni:Undergraduate;
    uni:hasPhonenumber ?number.
}
```

Result:

student
Tasneem

14- A query that gets all students taking the deep learning elective course.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?students
WHERE {
  ?course rdf:type uni:Elective;
    uni:registeredBy ?students.
  FILTER(?course = uni:Deep_Learning)
}
```

Result:

student
Saeed
AbdulRaouf
AbdulRahman
Tasneem
Sameh

15- A query that gets all employees at Ain Shams University.

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX uni: <http://www.semanticweb.org/neema/ontologies/2024/4/university/>

SELECT ?employees
WHERE {
    ?university rdf:type uni:University;
               uni:employs ?employees.
    FILTER(?university = uni:Ain_Shams)
}
```

Result:

employees
Eng_Mohsen
3am_Ahmed
Eman