Intermediate Education Ontology

Competency Questions
+
SPARQL Queries

Project Code

KSR-348

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Year:

2022-2023

6.1 Functional Requirements (Competency Question Groups)

What are the attributes in the admission form?
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Admission_Form_Entities (STR(?attributes) as ?Attributes)
WHERE {
ksr:FSc_Admission_Form  ?Admission_Form_Entities ?attributes.
FILTER(isLiteral(?attributes))  }
```

Which institutes offer the intended program?
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?ICSProgram ?College
WHERE {
?ICSProgram a ksr:ICS;
ksr:Offerd_by ?College.
}
```

What is the duration of Inter program?
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?InterProgram (STR(?Duration) as ?duration)
WHERE { ?InterProgram a ksr:Intermediate_Degree_Program;
ksr:DurationI ?Duration.
}
```

Which/How many programs are available for Inter students?
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Program (STR(?totalCount) as ?Total)WHERE {
{
SELECT (COUNT(?Program) AS ?totalCount) WHERE {
?Program rdfs:subClassOf ksr:Intermediate_Degree_Program .
}
}
?Program rdfs:subClassOf ksr:Intermediate_Degree_Program .
}
```

Which degree is prerequisite for intermediate?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Program (STR(?Prereq) as ?Prerequisite)
WHERE { ?Program a ksr:Intermediate_Degree_Program;
ksr:Prerequisite ?Prereq.}

How much marks in previous degree, are necessary to get admission?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Program (STR(?Marks) as ?MarksInPercent)
WHERE { ?Program a ksr:Intermediate_Degree_Program;
ksr:Required_Marks ?Marks.}

What is admissions' opening date in each college?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?College (STR(?date) as ?AdmissionCommencementDate)
{
?College a ksr:College ;
ksr:Admission_Commencement_Date ?date.
}
ORDER BY ?date

What is admissions' closing date in each college?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?College (STR(?date) as ?AdmissionClosingDate)
{
?College a ksr:College ;
ksr:Admission_Closing_Date ?date.
}
ORDER BY ?date

Which facilities are given to students in college?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?FacilitiesinCollege
WHERE {
?FacilitiesinCollege a ksr:Campus_Facilities.   }

Which scholarships are available?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>

SELECT ?Scholarships
WHERE {
?Scholarships a ksr:Scholarships.
}

Which sources will be used to acquire scholarships?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Scholarship (STR(?Source) as ?AccuiringSource)
WHERE { ?Scholarship a ksr:Scholarships;
ksr:Accuiring_Source ?Source.
}

On what basis scholarships are awarded to students?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Scholarship (STR(?Eligibility) as ?EligibilityCriteria)
WHERE { ?Scholarship a ksr:Scholarships;
ksr:Eligibility_S ?Eligibility.   }

Which co-curricular functions take place during intermediate?

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX xsd: <http://www.w3.org/2001/XMLSchema#> PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#> SELECT ?Events WHERE { ?Events a ksr:Events_. }	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX xsd: <http://www.w3.org/2001/XMLSchema#> PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#> SELECT ?Events WHERE { ?Events a ksr:Co_Curricular_Events. }	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX xsd: <http://www.w3.org/2001/XMLSchema#> PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#> SELECT ?Events WHERE { ?Events a ksr:Curricular_Events. }	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> PREFIX owl: <http://www.w3.org/2002/07/owl#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX xsd: <http://www.w3.org/2001/XMLSchema#> PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#> SELECT ?Events WHERE { ?Events a ksr:Meetings-Conference. }

What is procedure to migrate from a college to other?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?Migration) as ?MigrationProcess)
WHERE { ?Migration_ a ksr:Campus_Facilities;
ksr:Migration_Data ?Migration.
}
Order by Asc(?Migration)

What is the vacations' duration?

Summer and winter	Other than summer/winter
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>	PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>	PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>	PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?label) as ?Label) (STR(?duration) as ?Duration)	SELECT ?Holidays (STR(?duration) as ?Duration)
WHERE {	WHERE {
{	?Holidays a ksr:Holidays;
ksr:Winter a ksr:Holidays ;	ksr:Duration_H ?duration.
ksr:Duration_H ?duration .	}
OPTIONAL { ksr:Winter rdfs:label ?label }	
}	
UNION	
{	
ksr:Summer a ksr:Holidays ;	
ksr:Duration_H ?duration .	
OPTIONAL { ksr:Summer rdfs:label ?label }	
}	
}	

What is 2 year fee in college?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?CollegeName (STR(?totalFee) as ?TotalFee)
WHERE {
?CollegeName a ksr:Fee_Structure;
ksr:Total_Fee ?totalFee;

}

Which college has highest/lowest fee?

Highest	Lowest

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT (STR(?collegeName) AS ?CollegeName) (STR(?highestFee) AS ?HighestFee)
 WHERE {
 {
 SELECT ?collegeName (MAX(?fee) AS ?highestFee)
 WHERE {
 ?college a ksr:Fee_Structure ;
 ksr:College_Name_Fs ?collegeName ;
 ksr:Total_Fee ?fee .
 FILTER(datatype(?fee) = xsd:int)
 }
 GROUP BY ?collegeName
 ORDER BY DESC(?highestFee)
 LIMIT 1
 }
 }
	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	 PREFIX owl: <http://www.w3.org/2002/07/owl#>
	 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
	 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
	 SELECT (STR(?collegeName) AS ?CollegeName) (STR(?lowestFee) AS ?LowestFee)
	 WHERE {
	 {
	 SELECT ?collegeName (MIN(?fee) AS ?lowestFee)
	 WHERE {
	 ?college a ksr:Fee_Structure ;
	 ksr:College_Name_Fs ?collegeName ;
	 ksr:Total_Fee ?fee .
	 FILTER(datatype(?fee) = xsd:int)
	 }
	 GROUP BY ?collegeName
	 ORDER BY Asc(?lowestFee)
	 LIMIT 2
	 }
	 }

How much marks required to get concession?

For all	For one individual

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?CollegeName (STR(?totalFee) as ?TotalFee) (STR(?feeConcession) as ?FeeConcession)
 WHERE {
 ?CollegeName a ksr:Fee_Structure;
 ksr:Total_Fee ?totalFee;
 ksr:Fee_Concession ?feeConcession.
 }
	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	 PREFIX owl: <http://www.w3.org/2002/07/owl#>
	 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
	 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
	 SELECT (STR(?collegeName) as ?CollegeName) (STR(?totalFee) as ?TotalFee) (STR(?feeConcession) as ?FeeConcession)
	 WHERE {
	 ksr:Punjab_College_Fee a ksr:Fee_Structure;
	 ksr:College_Name_Fs ?collegeName;
	 ksr:Total_Fee ?totalFee;
	 ksr:Fee_Concession ?feeConcession.
	 }
	 OR
	 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

	PREFIX owl: <http://www.w3.org/2002/07/owl#>
	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
	PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
	SELECT (STR(?label) as ?CollegeName) (STR(?totalFee) as ?TotalFee) (STR(?feeConcession) as ?FeeConcession)
	WHERE {
	ksr:Punjab_College_Fee a ksr:Fee_Structure;
	ksr:Total_Fee ?totalFee;
	ksr:Fee_Concession ?feeConcession.
	OPTIONAL { ksr:Punjab_College_Fee rdfs:label ?label.}
	}

How much concession is given?
- Student fill admission form for college admission
- The students' obtained marks = 928 and total marks= 1100 are taken from the Class "College_Admission_Form" , "FSc_Admission_Form" individual
- Percentage is calculated
- Total fee is taken from Fee_Structure class, "Punjab_College_Fee" Individual
- Cocession is granted if percentage match concession packeges
- Here we have done it for Punjab College, if student write 84% marks in admission form

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?studentName) as ?StudentName) (STR(?totalFeeValue) AS ?TotalFee) (STR(?marksPercentage) as
?MarksPercentage) (STR(?formattedFeeConcession) AS ?FeeConcession) (STR(?fee) AS ?YourConcessionedFee)
WHERE {
ksr:FSc_Admission_Form a ksr:College_Admission_Form ;
ksr:Student_Name_A ?studentName ;
ksr:Student_Matric_Total_Marks_A ?totalMarks ;
ksr:Student_Matric_Obtained_Marks_A ?obtainedMarks .

BIND((?obtainedMarks / ?totalMarks) * 100 AS ?marksPercentage)

{
SELECT ?totalFee WHERE {
?totalFeeInstance a ksr:Fee_Structure ;
ksr:Total_Fee ?totalFee .
FILTER (?totalFeeInstance = ksr:Punjab_College_Fee)
}
}

BIND(IF(?marksPercentage >= 80 && ?marksPercentage <= 89, "10,000", "0") AS ?formattedFeeConcession)
BIND(STR(IF(?marksPercentage >= 80 && ?marksPercentage <= 89, ?totalFee - 10000, ?totalFee)) AS ?fee)
```

```
 BIND(STR(?totalFee) AS ?totalFeeValue)
 }
```

Which boards in Punjab are offering the Intermediate Programs?
```
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?BISEBoards
 WHERE {
 ?BISEBoards  a ksr: Board_of_Intermediate_and_Secondary_Education.
}
```

Which attributes are there in the board registration form?
```
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Registeration_Entities (STR(?attributes) as ?Attributes)
 WHERE {
 ksr:Ali_Registration_Form ?Registeration_Entities ?attributes.
 FILTER(isLiteral(?attributes))  }
order by asc(?Registeration_Entities)
```

How many students are registered in each board?
```
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Board (STR(count(?student)) as ?numberOfstudents)
 WHERE {
 ?student  a ksr:Student;
 ksr:Gets_registered_in ?Board.
 }
 group by ?Board
order by desc(?numberOfstudents)
```

When are Intermediate programs' classes starting?
```
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?College (STR(?Classes_commencementDate) as ?ClassescommencementDate)
 WHERE {
 ?College a ksr:College;
 ksr:Class_Commencement_Date_2022 ?Classes_commencementDate.
}
```

When Intermediate programs' classes End?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?College (STR(?Classes_EndingDate) as ?ClassesEndingDate)
 WHERE {
 ?College a ksr:College;
 ksr:Class_End_Date_2024 ?Classes_EndingDate.
 }

What is college class timing?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?College (STR(?College_Time) as ?CollegeTime)
 WHERE {
 ?College a ksr:College;
 ksr:College_Time ?College_Time.
 }

What is colleges' procedure to prepare the students for board exams?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT (STR(?boardExamPrep) as ?boardExamPreparations)
 WHERE {
 ksr:Comprehensive_College rdf:type ksr:College ;
 ksr:Board_Exam_Preparations ?boardExamPrep .
 }
order by asc(?boardExamPrep)

What are the contents of the Syllabus for 1st and 2nd years?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Program (STR(?URL) as ?SyllabusURL)
 WHERE {
 ?Program a ksr:Syllabus;
 ksr:Syllabus_URL ?URL.
 }

Who is responsible for approving the subjects for intermediate?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?subject ?Approved_by

WHERE {
?Approved_by a ksr: Board_of_Intermediate_and_Secondary_Education;
ksr:Approves ?subject.
}

Who is responsible for preparing and approving the syllabus for intermediate?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Syllabus ?Prepared_by_Institute
 WHERE {
 ?Prepared_by_Institute a ksr: Punjab_Curriculum_and_Textbook_Board;
 ksr:Makes ?Syllabus.
}

Which subjects are there in each inter-program?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Program (STR(?subjects) AS ?Subjects)
 WHERE {
 ?Program a ksr:ICS;
 ksr:Subject_NameI ?subjects.
 }

Which subjects are elective?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Program ?SubjectType (STR(?Elective) as ?ElectiveSubjects)
 WHERE {
 ?SubjectType a ksr:Elective_Subjects;
 ksr:Are_Part_of ?Program;
 ksr:Subjects ?Elective.
 }
ORDER BY ASC(?Program)

Which subjects are compulsory?
 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
 PREFIX owl: <http://www.w3.org/2002/07/owl#>
 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
 PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
 PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
 SELECT ?Program ?SubjectType (STR(?Compulsory) as ?CompulsorySubjects)
 WHERE {
 ?SubjectType a ksr:Compulsory_Subjects;
 ksr:Are_Part_of ?Program;
 ksr:Subjects ?Compulsory. }   ORDER BY ASC(?Program)

What are language choices for students?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Program ?LanguageChoice
WHERE { ?Program a ksr:Intermediate_Degree_Program;
ksr:has ?LanguageChoice.
}

Who is responsible to conduct the examinations in Punjab?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Exam ?Institute
WHERE {
?Institute a ksr:Institution;
ksr:Conducts ?Exam.
}

Who is responsible for deciding the subjects for intermediate?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Exam ?Institute
WHERE {
?Institute a ksr:Institution;
ksr:Approves ?Exam.
}

Who issues roll no slip?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Institute ?Exam
WHERE {
?Institute a ksr:Institution;
ksr:Issues ?Exam.
}

What attributes does roll number slip include?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?RollNoSlip_Entities (STR(?value) as ?Values)
WHERE {

ksr:BISE_Annual_Exam_2023_RollNo_Slip_11th_Class ?RollNoSlip_Entities ?value.
FILTER(isLiteral(?value)) }

Which subjects' practical is taken?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Exam (STR(?Subjects) as ?Subject)
WHERE {
?Exam a ksr:Practical_Exams;
ksr:Practical_Subject ?Subjects.
}

What is exams starting date?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Class (STR(?date) as ?ExamCommencementDate)
{
?Class a ksr:Annual_Exams ;
ksr:Exam_Commencement_Date ?date.
}

What is exams ending date?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Class (STR(?date) as ?ExamEndDate)
{
?Class a ksr:Annual_Exams ;
ksr:Exam_End_Date ?date.
}

Who/when announces the result?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Result ?institute
WHERE {
?institute a ksr:Institution;
ksr:Announces?Result.
}

What attributes does the result sheet include?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>

```
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT
?results
(STR(?resultvalue11) as ?1st_Year_Result)
(STR(?resultvalue12) as ?2nd_Year_Result)
(IF(isNumeric(?resultvalue11) && isNumeric(?resultvalue12), STR(?resultvalue11 + ?resultvalue12), "") as
?Total_Result)
WHERE {
ksr:Ali_ResultCard_11th_Class ?results ?resultvalue11 .
ksr:Ali_ResultCard_12th_Class ?results ?resultvalue12 .
FILTER(isLiteral(?resultvalue11) && isLiteral(?resultvalue12))
}
ORDER BY DESC(?resultvalue11)
```

What are the passing criteria for students of intermediate?
For Percentage:
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>

SELECT (STR(?name) as ?StudentName)  (STR(?RollNo) as ?StudentRollNo) (STR(?total) as ?Total) (STR(?obtained)
as ?Obtained) (STR(?percentage) as ?Percentage)
WHERE {
ksr:Ali_ResultCard_12th_Class ksr:Roll_No_Rc ?RollNo .
ksr:Ali_ResultCard_12th_Class ksr:Candidate_Name_Rc ?name .
ksr:Ali_ResultCard_12th_Class ksr:Total_Obtained_Marks_Rc ?obtained .
ksr:Ali_ResultCard_12th_Class ksr:Total_Marks_Rc ?total .

BIND((?obtained / ?total) * 100 AS ?percentage)
}
```
For checking Pass/Fail: 1 individual
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?name) AS ?StudentName) (STR(?RollNo) AS ?StudentRollNo) (STR(?total) as ?Total)
(STR(?obtained) as ?Obtained) (STR(?percentage) AS ?Percentage) (IF(?percentage > 40, "Pass", "Fail") AS ?Result)
WHERE {
ksr:Ali_ResultCard_12th_Class a ksr:Result_Card_12th;
ksr:Roll_No_Rc ?RollNo ;
ksr:Candidate_Name_Rc ?name ;
ksr:Total_Obtained_Marks_Rc ?obtained ;
ksr:Total_Marks_Rc ?total .
BIND((?obtained / ?total) * 100 AS ?percentage)
}
```

For checking Pass/Fail: All Individuals

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?name) AS ?StudentName) (STR(?RollNo) AS ?StudentRollNo) (STR(?total) as ?Total)
(STR(?obtained) as ?Obtained) (STR(?percentage) AS ?Percentage) (IF(?percentage > 40, "Pass", "Fail") AS ?Result)
WHERE {
?individual a ksr:Result_Card_11th;
ksr:Roll_No_Rc ?RollNo ;
ksr:Candidate_Name_Rc ?name ;
ksr:Total_Obtained_Marks_Rc ?obtained ;
ksr:Total_Marks_Rc ?total .
BIND((?obtained / ?total) * 100 AS ?percentage)
}
```

Admission Process
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT  (STR(?process) as ?ProcessofAdmissionInCollege)
WHERE {
 ksr:Admission_Process a ksr:Process ;
                       ?ProcessName ?process .
 FILTER (isLiteral(?process))
}
```

order by asc(?process)

Degree Selection Process
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT  (STR(?process) as ?ProcessofDegreeSelection)
WHERE {
 ksr:Degree_Program_Selection_Process a ksr:Process ;
                       ?ProcessName?process .
 FILTER (isLiteral(?process))
}
```

order by asc(?process)

Examination Process
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
```

```
SELECT  (STR(?process) as ?ProcessofTakingExamination)
WHERE {
  ksr:Exams_Process a ksr:Process ;
                         ?ProcessName?process .
  FILTER (isLiteral(?process))
}

order by asc(?process)
```

Registration Process
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?process) as ?ProcessofRegistration)
WHERE {
  ksr:Registration_Process a ksr:Process ;
                         ?ProcessName?process .
  FILTER (isLiteral(?process))
}

order by asc(?process)
```

Result Checking Process
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?process) as ?ProcessofResultChecking)
WHERE {
  ksr:Result_Checking_Process a ksr:Process ;
                         ?ProcessName?process .
  FILTER (isLiteral(?process))
}

order by asc(?process)
```

Result Announcement Date
All years
```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Result (STR(?Date) as ?ResultAnnouncementDate)
WHERE {
?Result a ksr:Annual_Result ;
ksr:Result_Announcement_Date ?Date.
}
}
```

Result Announcement Date
For 2023 Results
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT (STR(?label) as ?Label) (STR(?Date) as ?ResultAnnouncementDate)
WHERE {
ksr:BISE_Annual_Result2023 a ksr:Annual_Result ;
ksr:Result_Announcement_Date ?Date.
OPTIONAL { ksr:BISE_Annual_Result2023 rdfs:label ?label.}
}

In which Program each student is enrolled?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Name ?Program
WHERE {
?Name a ksr:Student ;
ksr:Enrolls_in ?Program.
}

How many students enrolled in FSC medical?
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?Program (STR(count(?student)) as ?numberOfstudents)
WHERE {
?student a ksr:Student;
ksr:Enrolls_in ?Program.
}
group by ?Program
order by desc(?numberOfstudents)

Colleges Starting Classes After a certain date

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?College (STR(?date) as ?Date)
{
  ?College a ksr:College ;
     ksr:Class_Commencement_Date_2022 ?date
  FILTER (?date >= " 2022-08-07"^^xsd:dateTime)
}
ORDER BY ?date

Obtaining Different Subjects' Marks
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>

SELECT   (STR(?Student) as ?StudentName) (STR(?PhysicsMarks) as ?Physics) (STR(?EnglishMarks) as ?English)
{
   ksr:Bushra_ResultCard_11th_Class ksr:Physics_Marks_Rc ?PhysicsMarks;
   ksr:English_Marks_Rc ?EnglishMarks.
Optional{ ksr:Bushra_ResultCard_11th_Class rdfs:label ?Student.}
}
order by ?Student

Obtaining Result By RollNo

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>

SELECT ?Name (STR(?RollNo) AS ?StudentRollNo) (STR(?name) AS ?StudentName) (STR(?total) as ?Total)
(STR(?obtained) as ?Obtained) (STR(?percentage) AS ?Percentage)
WHERE {
 ?Name a ksr:Result_Card_11th;
        ksr:Roll_No_Rc ?RollNo ;
        ksr:Candidate_Name_Rc ?name ;
        ksr:Total_Obtained_Marks_Rc ?obtained ;
        ksr:Total_Marks_Rc ?total .
 BIND((?obtained / ?total) * 100 AS ?percentage)

 FILTER (?RollNo = "540-230-987")
}

Find Range and Domain of an object property
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX ksr: <http://www.semanticweb.org/sehrish/ontologies/2023/1/interedu#>
SELECT ?domain ?range
WHERE {
 ksr:Admits
       rdfs:domain ?domain ;
       rdfs:range ?range .
}