



UNIVERSITY OF SARGODHA

PATHWAY TO PROGRESS

Department of Computer Science & AI

Title: Project Phase 1 (ORSD)

Submitted To:

Dr Fahad Maqbool

Team members:

Mohsin Ali (BSCS51F21S083)

Saim Sikandar (BSCS51F21S101)

Abdul Samad (BSCS51F20S050)

Class:

BSCS 8th SS2

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Ontology Requirements Specification Document

Domain: Final Year Project (FYP) Management

Purpose

The ontology aims to simplify and systematize the FYP lifecycle for CS/IT students by:

- Guiding students through project phases (proposal, design, implementation, evaluation).
- Matching students with advisors based on skills, project domains, and availability.
- Tracking deadlines, deliverables, and dependencies to ensure timely completion.
- Validating deliverables against academic standards (e.g., plagiarism checks, rubric compliance).

Scope

- Entities:
 - Students, Advisors, Projects, Skills (e.g., Python, ML), Milestones (e.g., proposal submission), Tools (e.g., GitHub, TensorFlow), Deliverables (e.g., thesis, code).
- Relationships:
 - hasAdvisor, requiresSkill, hasMilestone, hasDeadline, usesTool, evaluatedBy.
- Granularity: Focused on student workflows (proposal → final submission).
- Exclusions: Financial planning, non-academic student data, external collaborations.

Implementation Language

- **Formal Language:** OWL 2 (Web Ontology Language) for semantic expressiveness.
- **Serialization:** RDF/XML for interoperability with Semantic Web tools.

Intended End-Users

- **Students:** Submit proposals, track progress, receive feedback.
- **Advisors:** Assign projects, monitor milestones, evaluate submissions.
- **Administrators:** Generate reports, allocate resources, ensure compliance.
- **Evaluation Committees:** Review final submissions and grades.

Intended Uses

- **Use 1:** Recommend projects aligned with student skills/interests (e.g., "Show AI projects requiring Python").
- **Use 2:** Automate deadline reminders for milestones (e.g., "Proposal due in 7 days").
- **Use 3:** Validate deliverables against requirements (e.g., "Check if code meets submission guidelines").
- **Use 4:** Generate progress dashboards for advisors/students (e.g., "Milestones completed: 3/5").

Ontology Requirements

a. Non-Functional Requirements

Requirement	Description
NFR1	The ontology must comply with academic integrity policies (e.g., plagiarism checks).
NFR2	The ontology must be extensible to accommodate new project categories (e.g., quantum computing).
NFR3	Data privacy compliance (e.g., anonymize student IDs in reports).
NFR4	Ensure data properties (e.g., deadlines, grades) adhere to valid formats (e.g., xsd:date, xsd:integer).

b. Functional Requirements: Groups of Competency Questions

Group	Competency Questions
CQG1: Project Matching	
CQ1	Which advisors specialize in cybersecurity projects?
CQ2	What projects require Python and machine learning skills?
CQ3	Which students have completed prerequisite courses for blockchain projects?
CQG2: Milestone Tracking	
CQ4	What are the deadlines for the implementation phase?
CQ5	Which deliverables are pending for Student X's mid-term review?
CQ6	Has the student submitted all required documentation for final evaluation?
CQG3: Evaluation	
CQ7	What criteria determine the final grade (e.g., code quality, thesis originality)?
CQ8	Which committee members evaluated Project Y?
CQ9	What is the average grade for AI projects in the last academic year?
CQG4: Resource Guidance	
CQ10	What tools are recommended for software engineering projects?
CQ11	Which datasets are commonly used for NLP projects?
CQG5: Data Attributes	
CQ12	What is the submission deadline for the mid-term review?
CQ13	What tools are required for a cybersecurity project?
CQ14	What is the final grade for Project X?
CQ15	What is the student's email address?

Pre-Glossary of Terms

a. Terms from Competency Questions

Term	Frequency
Student	30
Advisor	20
Deadline	15
Skill	18
Milestone	12
Deadline	15
Grade	10
Tool	8
Email	5

b. Terms from Answers

Term	Frequency
AI	10
Cybersecurity	8
GitHub	6
Plagiarism Check	5

c. Objects

- Project Examples: "AI-Based Fraud Detection," "IoT Smarty Home System".
- Tools: "PyCharm", "TensorFlow," "MySQL".
- Datasets: "MNIST", "COCO", "IMDB Reviews".