// Create students

CREATE (:Student {name: "John", age: 20})

CREATE (:Student {name: "Alice", age: 22})

CREATE (:Student {name: "Bob", age: 21})

// Create courses

CREATE (:Course {name: "Mathematics", credits: 4})

CREATE (:Course {name: "Computer Science", credits: 3})

CREATE (:Course {name: "History", credits: 3})

// Enroll students in courses

MATCH (s:Student {name: "John"}), (c:Course {name: "Mathematics"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "John"}), (c:Course {name: "Computer Science"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "Alice"}), (c:Course {name: "Computer Science"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "Bob"}), (c:Course {name: "History"})

CREATE (s)-[:ENROLLED\_IN]->(c)

// Add some more relationships

MATCH (s:Student {name: "John"}), (c:Course {name: "Mathematics"})

CREATE (s)-[:TAUGHT\_BY]->(:Professor {name: "Dr. Smith"})

MATCH (s:Student {name: "Alice"}), (c:Course {name: "Computer Science"})

CREATE (s)-[:TAUGHT\_BY]->(:Professor {name: "Prof. Johnson"})

MATCH (s:Student {name: "Bob"}), (c:Course {name: "History"})

CREATE (s)-[:TAUGHT\_BY]->(:Professor {name: "Dr. Brown"})

// Create departments

CREATE (:Department {name: "Computer Science"})

CREATE (:Department {name: "Mathematics"})

CREATE (:Department {name: "History"})

// Create professors

CREATE (:Professor {name: "Dr. Smith", department: "Computer Science"})

CREATE (:Professor {name: "Prof. Johnson", department: "Computer Science"})

CREATE (:Professor {name: "Dr. Brown", department: "History"})

CREATE (:Professor {name: "Dr. White", department: "Mathematics"})

// Assign professors to departments

MATCH (p:Professor {name: "Dr. Smith"}), (d:Department {name: "Computer Science"})

CREATE (p)-[:WORKS\_IN]->(d)

MATCH (p:Professor {name: "Prof. Johnson"}), (d:Department {name: "Computer Science"})

CREATE (p)-[:WORKS\_IN]->(d)

MATCH (p:Professor {name: "Dr. Brown"}), (d:Department {name: "History"})

CREATE (p)-[:WORKS\_IN]->(d)

MATCH (p:Professor {name: "Dr. White"}), (d:Department {name: "Mathematics"})

CREATE (p)-[:WORKS\_IN]->(d)

// Create courses within departments

MATCH (d:Department {name: "Computer Science"})

CREATE (:Course {name: "Introduction to Programming", department: "Computer Science"})

CREATE (:Course {name: "Data Structures", department: "Computer Science"})

MATCH (d:Department {name: "Mathematics"})

CREATE (:Course {name: "Calculus", department: "Mathematics"})

MATCH (d:Department {name: "History"})

CREATE (:Course {name: "World History", department: "History"})

CREATE (:Course {name: "European History", department: "History"})

// Enroll students in courses

MATCH (s:Student {name: "John"}), (c:Course {name: "Introduction to Programming"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "John"}), (c:Course {name: "Data Structures"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "Alice"}), (c:Course {name: "Introduction to Programming"})

CREATE (s)-[:ENROLLED\_IN]->(c)

MATCH (s:Student {name: "Bob"}), (c:Course {name: "Calculus"})

CREATE (s)-[:ENROLLED\_IN]->(c)

// Assign professors to courses

MATCH (p:Professor {name: "Dr. Smith"}), (c:Course {name: "Introduction to Programming"})

CREATE (p)-[:TEACHES]->(c)

MATCH (p:Professor {name: "Prof. Johnson"}), (c:Course {name: "Data Structures"})

CREATE (p)-[:TEACHES]->(c)

MATCH (p:Professor {name: "Dr. White"}), (c:Course {name: "Calculus"})

CREATE (p)-[:TEACHES]->(c)

// Create assignments for courses

CREATE (:Assignment {name: "Programming Project 1", due\_date: "2024-05-20"})

CREATE (:Assignment {name: "Data Structures Assignment 1", due\_date: "2024-05-25"})

CREATE (:Assignment {name: "Calculus Quiz 1", due\_date: "2024-05-30"})

CREATE (:Assignment {name: "World History Essay", due\_date: "2024-06-01"})

// Connect assignments to courses

MATCH (a:Assignment {name: "Programming Project 1"}), (c:Course {name: "Introduction to Programming"})

CREATE (a)-[:FOR]->(c)

MATCH (a:Assignment {name: "Data Structures Assignment 1"}), (c:Course {name: "Data Structures"})

CREATE (a)-[:FOR]->(c)

MATCH (a:Assignment {name: "Calculus Quiz 1"}), (c:Course {name: "Calculus"})

CREATE (a)-[:FOR]->(c)

MATCH (a:Assignment {name: "World History Essay"}), (c:Course {name: "World History"})

CREATE (a)-[:FOR]->(c)

// Grade assignments

MATCH (s:Student {name: "John"}), (a:Assignment {name: "Programming Project 1"})

CREATE (s)-[:SUBMITTED]->(a)

SET a.grade = 85

MATCH (s:Student {name: "Alice"}), (a:Assignment {name: "Programming Project 1"})

CREATE (s)-[:SUBMITTED]->(a)

SET a.grade = 92

MATCH (s:Student {name: "Bob"}), (a:Assignment {name: "Calculus Quiz 1"})

CREATE (s)-[:SUBMITTED]->(a)

SET a.grade = 78

MATCH (s:Student {name: "Bob"}), (a:Assignment {name: "World History Essay"})

CREATE (s)-[:SUBMITTED]->(a)

SET a.grade = 88

// Use SUM, COUNT, and CASE

MATCH (s:Student)-[:SUBMITTED]->(a:Assignment)

WITH s, COUNT(a) AS total\_assignments, SUM(CASE WHEN a.grade IS NOT NULL THEN a.grade ELSE 0 END) AS total\_score

RETURN s.name, total\_assignments, total\_score