Question 1. [11 MARKS]

Recall this schema, which we have used many times in class. Here we are adding one more relation called *Program*. It records the subject POSts that students are enrolled in. ("POSt" is short for "program of study", by the way.)

Relations

Student(<u>sID</u>, surName, firstName, campus, email, cgpa)

Course(<u>dept, cNum</u>, name, breadth)

Offering(<u>oID</u>, dept, cNum, term, instructor)

Took(<u>sID, oID</u>, grade)

Program(<u>sID, POSt</u>)

Integrity constraints

Offering[dept, cNum] $\subseteq$ Course[dept, cNum]

Took[sID] $\subseteq$ Student[sID]

Took[oID] $\subseteq$ Offering[oID]

Program[sID] $\subseteq$ Student[sID]

Part (a) [7 MARKS]

Write a query to find the sIDs of students on campus 'StG' who have exactly one subject POSt. Use only the basic operators $\Pi, \sigma, \bowtie, \times, \cap, \cup, -, \rho$, and assignment.

Solution: