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"I pledge my honor that I have abided by the Stevens Honor System"

## **CS-443 Homework 5**

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### **Part 1: Humanities Requirement Analysis**

- All students must take CAL 103 AND CAL 105
- AND
  - HSS371
    - AND
      - Must take 1 lower level course which is NOT in HSS
      - AND
      - Any other 4 courses
    - OR
      - Must take 1 upper level course which is NOT in HSS
      - AND
      - Must take 1 lower level course
      - AND
      - Any other 3 acceptable courses
- OR
  - HPL455
  - AND
    - Must take 1 lower level course which is NOT in HPL
    - AND
    - Any other 4 courses
  - OR
    - Must take 1 upper level course which is NOT in HPL
    - AND
    - Must take 1 lower level course
    - AND
    - Any other 3 acceptable courses

## Part 2: Documentation, FKR's, and Instances:

### **set\_of\_courses (name\_of\_set, course\_prefix, course\_number)**

- **set\_of\_courses** is a set of courses that will be involved in the definition of a degree requirement. Each row of an instance of set\_of\_courses represents a specific course
- name\_of\_set is the name of the set of courses.
- course\_prefix is the prefix of the course.
- course\_number is the number of the course

set\_of\_courses.course\_prefix → course.course\_prefix

set\_of\_courses.course\_number → course.course\_number

### **degree\_requirement\_root (degree\_requirement\_root\_node\_id, name\_of\_degree\_requirement)**

- **degree\_requirement\_root** is the root of a tree that defines a degree requirement.
- name\_of\_degree\_requirement is the name of the degree requirement, for example, math\_requirement.
- degree\_requirement\_root\_node\_id is the integer-valued id of the root of the tree that defines the degree requirement.

### **degree\_requirement\_node (degree\_requirement\_node\_id, name\_of\_set\_of\_courses, number\_from\_set\_of\_courses, Boolean\_operator, requirement\_left\_subtree\_id, requirement\_right\_subtree\_id)**

- **degree\_requirements\_node** is a non-root node of a tree that defines a degree requirement
- degree\_requirement\_node\_id is the integer-valued id of the node.
- name\_of\_set\_of\_courses is the name of a set of courses that will be involved in the definition of the degree requirement if the node is a leaf node, and null if it isn't.
- number\_from\_set\_of\_courses is an integer that represents the number of courses from the set of courses must be taken.
- Boolean\_operator is a Boolean operator if the node is not a leaf node of the tree, and null if it is.
- requirement\_left\_subtree\_id is the id of the root node of the left subtree of the tree if there is a left subtree, and null if there isn't.
- requirement\_right\_subtree\_id is the id of the root node of the right subtree of the tree if there is a right subtree, and null if there isn't.

degree\_requirements\_node.name\_of\_set\_of\_courses → set\_of\_courses.name\_of\_set

**set\_of\_courses (name\_of\_set, course\_prefix, course\_number)**

humanity_all_cal	CAL	103
humanity_all_cal	CAL	105
humanity_cs_hss	HSS	371
humanity_cs_hpl	HPL	455
humanity_lower_not_hss	HLI	100-299
humanity_lower_not_hss	HHS	100-299
humanity_lower_not_hss	HPL	100-299
humanity_upper_not_hss	HLI	300-499
humanity_upper_not_hss	HHS	300-499
humanity_upper_not_hss	HPL	300-499
humanity_lower_not_hpl	HLI	100-299
humanity_lower_not_hpl	HHS	100-299
humanity_lower_not_hpl	HSS	100-299
humanity_upper_not_hpl	HLI	300-499
humanity_upper_not_hpl	HHS	300-499
humanity_upper_not_hpl	HSS	300-499
humanity_lower_level	HLI	100-299
humanity_lower_level	HHS	100-299
humanity_lower_level	HPL	100-299
humanity_lower_level	HSS	100-299
humanity_lower_level	HAR	180
humanity_lower_level	HAR	181
humanity_lower_level	HAR	280
humanity_lower_level	HAR	281
humanity_lower_level	HMU	101
humanity_lower_level	HMU	102
humanity_lower_level	HMU	192
humanity_lower_level	HMU	193
humanity_lower_level	HMU	195
humanity_all	HLI	100-499
humanity_all	HHS	100-499

humanity_all	HPL	100-499
humanity_all	HSS	100-499
humanity_all	HAR	180
humanity_all	HAR	181
humanity_all	HAR	280
humanity_all	HAR	281
humanity_all	HMU	101
humanity_all	HMU	102
humanity_all	HMU	192
humanity_all	HMU	193
humanity_all	HMU	195
humanity_all	HAR	380
humanity_all	HAR	389
humanity_all	HAR	485
humanity_all	HMU	350

**degree\_requirement\_root (degree\_requirement\_root\_node\_id, name\_of\_degree\_requirement)**

1	humanities_requirement
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**degree\_requirement\_node (degree\_requirement\_node\_id, name\_of\_set\_of\_courses, number\_from\_set\_of\_courses, Boolean\_operator, requirement\_left\_subtree\_id, requirement\_right\_subtree\_id)**

1	null	null	and	2	3
2	humanity_all_cal	2	null	null	null
3	null	null	or	4	15
4	null	null	and	5	6
5	humanity_cs_hss	1	null	null	null
6	null	null	or	7	8
7	null	null	and	9	10
8	null	null	and	11	12

9	humanity_lower_not_hss	1	null	null	null
10	humanity_all	4	null	null	null
11	humanity_upper_not_hss	1	null	null	null
12	null	null	and	13	14
13	humanity_lower_level	1	null	null	null
14	humanity_all	3	null	null	null
15	null	null	and	16	17
16	humanity_cs_hpl	1	null	null	null
17	null	null	or	18	19
18	null	null	and	20	21
19	null	null	and	22	23
20	humanity_lower_not_hpl	1	null	null	null
21	humanity_all	4	null	null	null
22	humanity_upper_not_hpl	1	null	null	null
23	null	null	and	24	25
24	humanity_lower_level	1	null	null	null
25	humanity_all	3	null	null	null