NGG5189 Fuzzy Queries (5%)
Deadline: 6th Mar., 2016 (23:59:59)

The following is the grammar for a fuzzy query language and a sample database of some art classes:

QUERY	::=	(<relation_name> SYMBOL_LIST NON_FUZZY_CONDITION FUZZY_CONDITION)
SYMBOL_LIST	::=	STAT_EXP | (EXP EXP*)
NON_FUZZY_CONDITION	::=	NON_FUZZY_CON | nil
FUZZY_CONDITION	::=	FIZZY_CON | nil
STAT_EXP	::=	(STAT_OP NON_FUZZY_CONDITION)
NON_FUZZY_CON	::=	(OPERATOR TERM TERM*)
FUZZY_CON	::=	(FUZ_OPERATOR FUZZY_EXP FUZZY_EXP*)
STAT_OP	::=	max<field_name> | min<field_name> | total<field_name> | average<field_name> | count<field_name>
TERM	::=	NON_FUZZY_CON | (COMPARATOR EXP <value>) | (COMPARATOR EXP STAT_EXP)
FUZZY_EXP	::=	FUZZY_CON | FUZZY_TERM
FUZZY_TERM	::=	(<field_name> <membership_distribution_table> <weight>)
OPERATOR	::=	and | or
FUZ_OPERATOR	::=	and | or | comb | poll
COMPARATOR	::=	< | > | = | <> | >= | <=
EXP	::=	<field_name> | <value> | STAT_EXP | (ARITH_OP EXP EXP)
ARITH_OP	::=	+ | - | * | /

Where

<field_name> is the name of a field in the database;

<relation_name> is the name of a relation in the database;

<value> is a value of the type corresponding to a field;

<member_distribution_table> contains two lists. The first list contains domain values for a field in ascending order. The second list contains the corresponding degrees of membership;

<weight> is a weighting factor (between 0 and 1.0) by which the degree of membership of the fuzzy term will be multiplied.

The relation **CATERING_CLASS**

The first row shows the explanations only and the second row shows the attributes.

Catering Service	Price (HKD$)	Maximum Delivery Delay (Minutes)	Types of Dishes	Deliciousness Index (1-10)	Hygiene Index (1-10)	Rating (1-10)
CATER	**PRICE**	**DELAY**	**DISH**	**DELIC**	**HYG**	**RATING**
Frank Center	7,500	25	18	3	3	7.10
Ho Ho Sak	8,150	20	15	5	5	8.35
Coffee Corner	11,000	10	20	8	10	6.20
Greenhouse	8,000	25	14	4	3	7.80
Clubhouse	10,000	30	16	8	6	8.00
Chinese Taste	9,000	18	10	10	7	9.85
Pizza Island	8,550	15	5	7	8	7.63
Qin Spicy	9,100	15	14	9	8	8.48
Olivia Restaurant	9,700	20	11	7	4	8.15
Asian Barbeque	8,000	10	9	3	7	7.03

Design a query and the related fuzzy concepts and representations to select a catering service for Bill, the organizer of a Christmas party. Almost hundred students from the Computer Science and Engineering department will participate in this event and enjoy the dinner together. Bill has a total budget of $10,000. The male-to-female ratio among the participants is about 3:1. All participants want to finish the party on time. Bill has already asked 10 different restaurants for the menu for a hundred people. Please help the organizer to select the restaurant. Make up your own criteria based on the available information. Explain your design and calculation procedures in detail. State all assumptions made and justify your criteria and design.

Submission:

Submit your answer in **PDF** file format through the submission system. Please note that other formats such as word or rtf are **NOT** accepted by the system during upload.

Important Points:

You MUST STRICTLY follow these points:

a. You MUST strictly follow the submission guidelines.
b. Remember to type your FULL NAME, STUDENT ID on the assignment.
c. Plagiarism will be seriously punished.

Late Submission:

According to the course homepage, late submission will lead to marks deduction.

No. of Days Late	**Marks Deduction**
1	10%
2	30%
3	60%
4 or above	100%