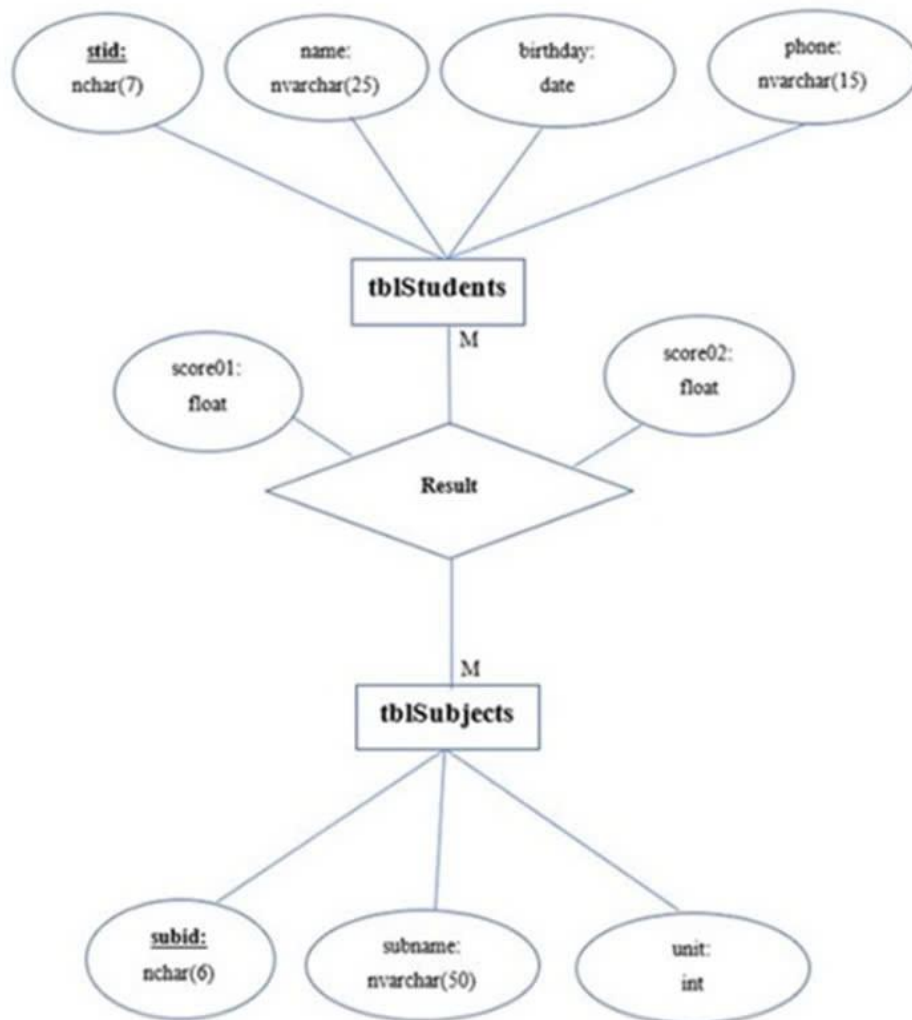


Question 1.



Question 2:

Display all ranking criteria as follows:

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	id	ranking_system_id	criteria_name
1	1	1	Teaching
2	2	1	International
3	3	1	Research
4	4	1	Citations
5	5	1	Income
6	6	1	Total Times
7	7	2	Alumni
8	8	2	Award
9	9	2	HiCi
10	10	2	N and S
11	11	2	Pub
12	12	2	PCP
13	13	2	Total Shanghai
14	14	3	Quality of Education Rank
15	15	3	Alumni Employment Rank
16	16	3	Quality of Faculty Rank
17	17	3	Publications Rank
18	18	3	Influence Rank
19	19	3	Citations Rank
20	20	3	Patents Rank
21	21	3	Total CWUR

Picture 2.1

Question 3:

Write a query to select ranking_system_id, criteria_name of all ranking criteria of the ranking system having ranking_system_id 1 or 2; display the results by ascending order of ranking_system_id, then by ascending order of criteria_name for ranking criteria of the same ranking system as follows:

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	ranking_system_id	criteria_name
1	1	Citations
2	1	Income
3	1	International
4	1	Research
5	1	Teaching
6	1	Total Times
7	2	Alumni
8	2	Award
9	2	HiCi
10	2	N and S
11	2	PCP
12	2	Pub
13	2	Total Shanghai

Picture 3.1

Question 4:

Write a query to display the information about the number of students as well as the percentage of international students in 2016 of the universities having the percentage of international students (pct_international_students) in 2016 greater than 30%; display the results in the form of university_id, university_name, year, num_students, pct_international_students, country_id in ascending order of university_name as follows:

	university_id	university_name	year	num_students	pct_international_students	country_id
1	107	Australian National University	2016	14604	35	2
2	43	Carnegie Mellon University	2016	11885	35	73
3	28	Imperial College London	2016	15060	51	72
4	2	Massachusetts Institute of Technology	2016	11074	33	73
5	104	National University of Singapore	2016	31592	34	58
6	31	University College London	2016	26607	46	72
7	4	University of Cambridge	2016	18812	34	72
8	60	University of Edinburgh	2016	25774	36	72
9	118	University of Melbourne	2016	40128	35	2
10	7	University of Oxford	2016	19919	34	72

Picture 4.1

Question 5:

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Write a query to display system_id, system_name, numberOfCriteria of each ranking system where numberOfCriteria is the number of criteria corresponding to the ranking system; display the results by descending order of numberOfCriteria as follows:

	system_id	system_name	numberOfCriteria
1	3	Center for World University Rankings	8
2	2	Shanghai Ranking	7
3	1	Times Higher Education World University Ranking	6

Picture 5.1

Question 6:

Write a query to display university_id, university_name, year, student_staff_ratio of all universities having the lowest student_staff_ratio in 2015 as follows:

	university_id	university_name	year	student_staff_ratio
1	15	Johns Hopkins University	2015	3.60
2	59	Vanderbilt University	2015	3.60

Picture 6.1

Question 7:

Write a query to display the score in 2016 based on the 'Teaching' ranking criteria of all universities which have the same score with at least one other university; display the results in form of university_id, university_name, ranking_criteria_id, criteria_name, year, score in descending order of score as follows:

Results Messages

	university_id	university_name	ranking_criteria_id	criteria_name	year	score
1	7	University of Oxford	1	Teaching	2016	86
2	11	University of Chicago	1	Teaching	2016	86
3	8	Yale University	1	Teaching	2016	86
4	9	Columbia University	1	Teaching	2016	86
5	19	University of California, Los Angeles	1	Teaching	2016	81
6	14	University of Tokyo	1	Teaching	2016	81
7	31	University College London	1	Teaching	2016	78
8	15	Johns Hopkins University	1	Teaching	2016	78
9	12	Cornell University	1	Teaching	2016	78
10	111	Peking University	1	Teaching	2016	78
11	35	University of Toronto	1	Teaching	2016	76
12	27	Duke University	1	Teaching	2016	76
13	41	McGill University	1	Teaching	2016	66
14	75	Seoul National University	1	Teaching	2016	66
15	70	Karolinska Institute	1	Teaching	2016	61
16	90	Technical University of Munich	1	Teaching	2016	61
17	87	Georgia Institute of Technology	1	Teaching	2016	58
18	36	University of North Carolina at Ch...	1	Teaching	2016	58
19	62	Boston University	1	Teaching	2016	58
20	112	University of Notre Dame	1	Teaching	2016	48
21	98	University of Bristol	1	Teaching	2016	48
22	59	Vanderbilt University	1	Teaching	2016	48
23	99	Utrecht University	1	Teaching	2016	48
24	108	University of Alberta	1	Teaching	2016	46

Query executed successfully.

(localdb)\mssqllocaldb (13... | DESKTOP-O5HEI86\nguye ... | PE5 | 00:00:00 | 31 rows

Question 8:

Create a stored procedure named `proc_university_year` for calculating the total number of universities having the percentage of international students greater than a given number (input parameter `@pct_international_students` int) in a given year (input parameter `@year` int). The `@nbUniversity` int is the output parameter of the procedure.

For example, when we execute the procedure `proc_university_year` by using the following statements, the result should be as in the figure:

```
declare @out int
exec proc_university_year 2011, 30, @out output
select @out as NumberOfUniversities
```

	NumberOfUniversities
1	12

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Picture 8.1

Question 9:

Create a trigger named `tr_insert_university_ranking` for the insert statement on table `university_ranking_year` so that when we insert one or more rows in this table, the system will display `university_id`, `university_name`, `ranking_criteria_id`, `criteria_name`, `year`, `score` corresponding to the rows that have been inserted.

for example, when we execute the following statement, the results should be as follows:

```
insert into university_ranking_year(university_id, ranking_criteria_id, year, score)
values (1,1,2020, 99),
(12,2,2020, 67)
```

	university_id	university_name	ranking_criteria_id	criteria_name	year	score
1	12	Cornell University	2	International	2020	67
2	1	Harvard University	1	Teaching	2020	99

Picture 9.1

Question 10:

Write queries to insert a new ranking system with id=4 and system_name = 'QS World University Rankings' and to insert two new ranking criteria for this ranking system. The id and criteria_name of these two new criteria are (22, 'Academic Reputation') and (23, 'Citations per faculty').