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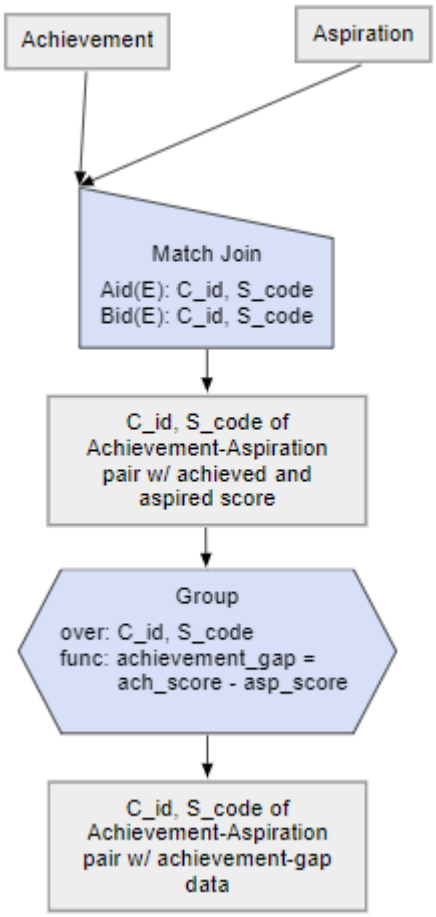
Homework 11

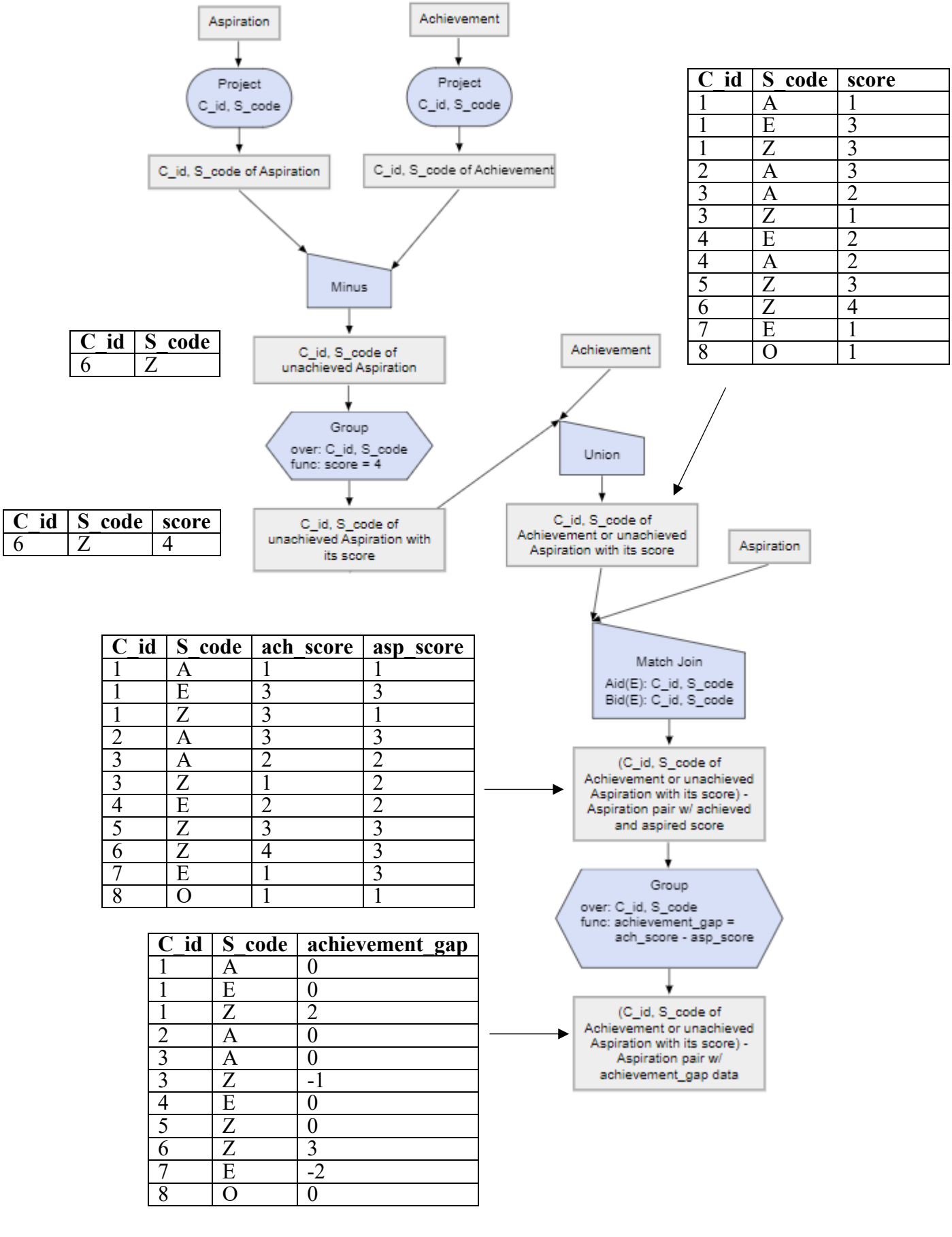
1. Achievement Gap



C_id	S_code	ach_score	asp_score
1	A	1	1
1	E	3	3
1	Z	3	1
2	A	3	3
3	A	2	2
3	Z	1	2
4	E	2	2
5	Z	3	3
7	E	1	3
8	O	1	1

C_id	S_code	achievement_gap
1	A	0
1	E	0
1	Z	2
2	A	0
3	A	0
3	Z	-1
4	E	0
5	Z	0
7	E	-2
8	O	0

2. Achievement Gap w/ unachieved aspiration



C_id	S_code	score
1	A	1
1	E	3
1	Z	3
2	A	3
3	A	2
3	Z	1
4	E	2
4	A	2
5	Z	3
6	Z	4
7	E	1
8	O	1

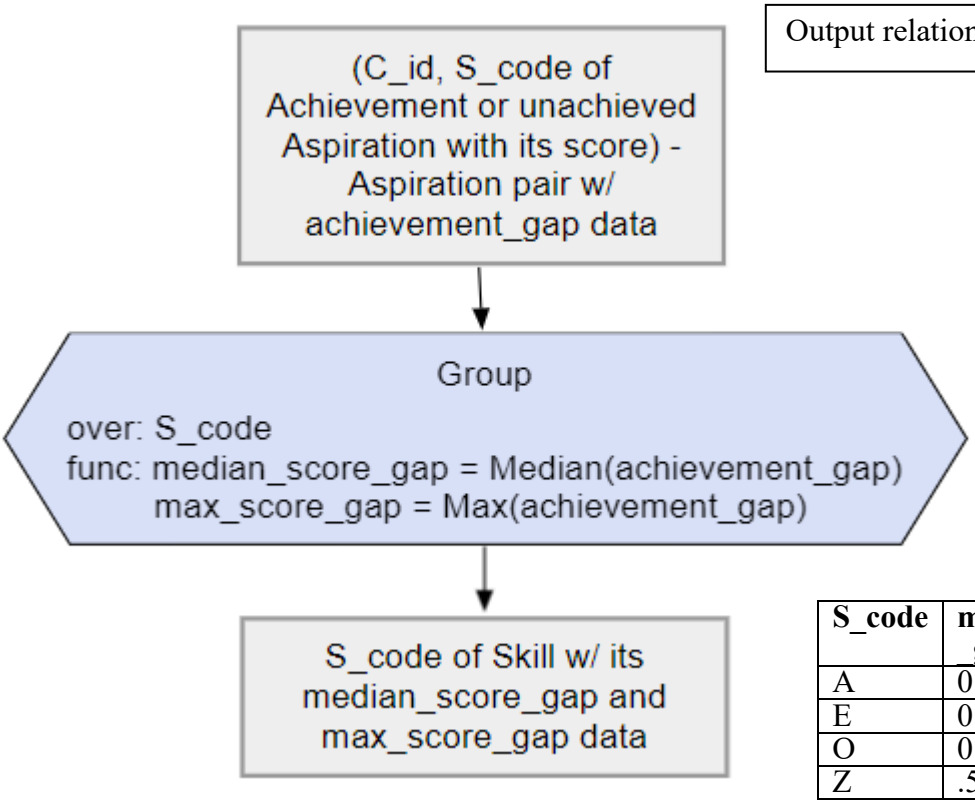
C_id	S_code
6	Z

C_id	S_code	score
6	Z	4

C_id	S_code	ach_score	asp_score
1	A	1	1
1	E	3	3
1	Z	3	1
2	A	3	3
3	A	2	2
3	Z	1	2
4	E	2	2
5	Z	3	3
6	Z	4	3
7	E	1	3
8	O	1	1

C_id	S_code	achievement_gap
1	A	0
1	E	0
1	Z	2
2	A	0
3	A	0
3	Z	-1
4	E	0
5	Z	0
6	Z	3
7	E	-2
8	O	0

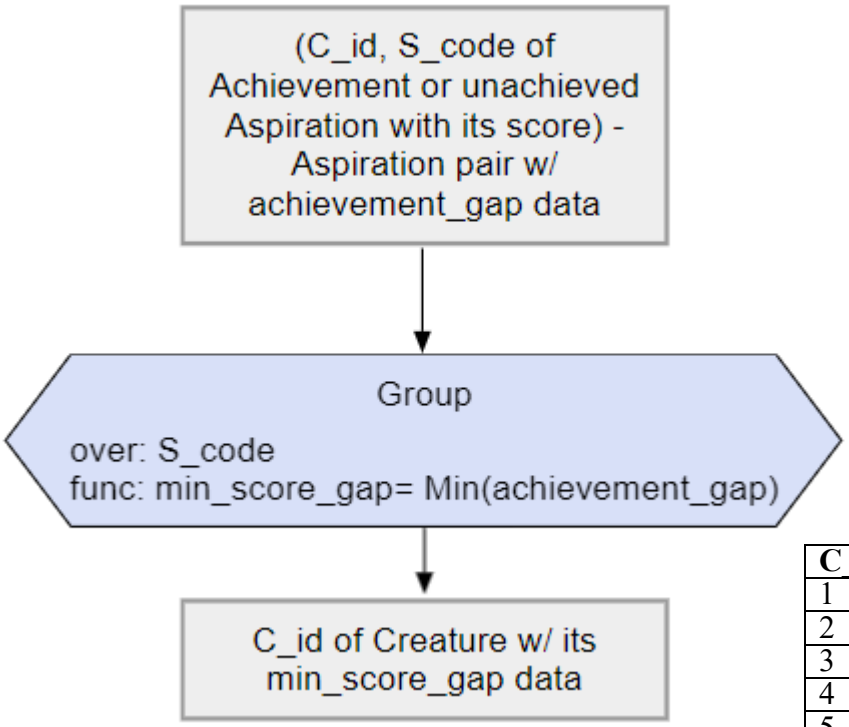
3. Median and maximum achievement score gap



Output relation of #2

S_code	median_score_gap	max_score_gap
A	0	0
E	0	0
O	0	0
Z	.5	2

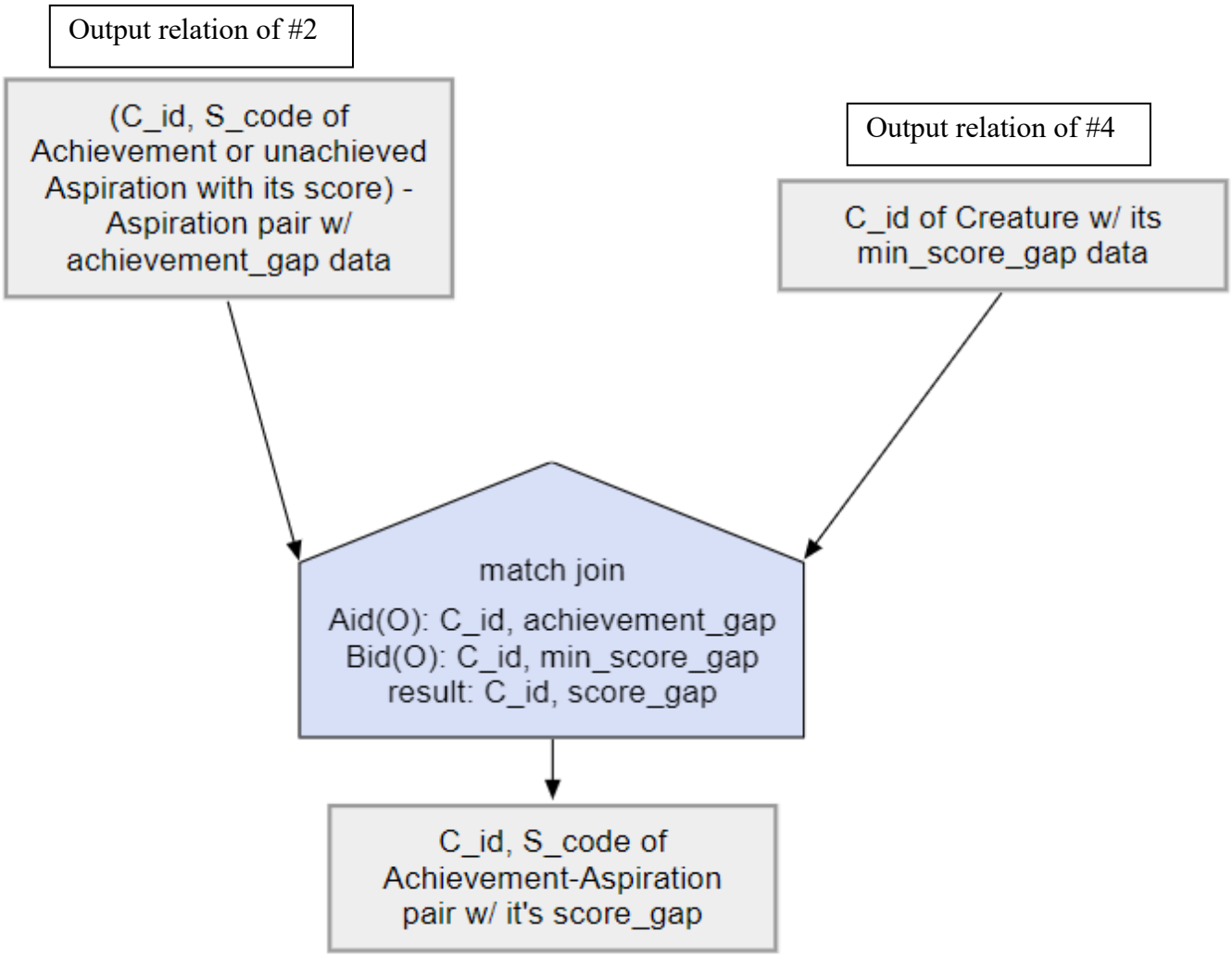
4. Minimum achievement score gap



C_id	minimum_score_gap
1	0
2	0
3	-1
4	0
5	0
6	1
7	-2
8	0

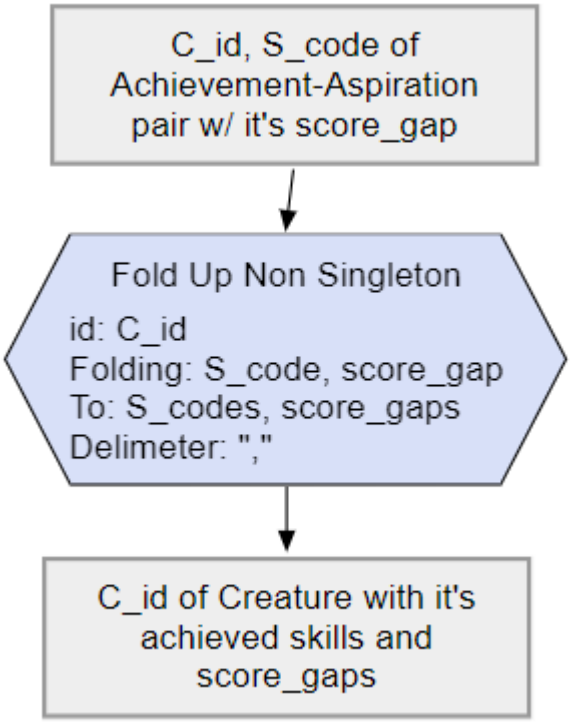
5. D
    a. If we tried to carry S_code in the Group from the previous question, we wouldn't be able to resolve which S_code to use in each row of the output relation for creatures' w/ achievement_gap scores in multiple skills. For example, if we grouped over C_id and carried S_code for the creature with C_id 1, we wouldn't know which of its 2 S_code's w/ the same minimum_score_gap (A or E) to include in the output relations S_code column
    b. If we tried to do a typical Non-Symmetric A match join with the output relations from #4 and #2, we would be including minimum_score_gap data to rows that shouldn't have it. For example, if we were to do a match join, the row 1-Z-2 from #2 would match with 1-0 from #4, creating a new row 1-Z-2-0. Even if we remove the achievement_gap column (resulting in 1-Z-0) from the final output relation, we know that the creature with C_id 1 who achieved the Skill Z (gargle) had achievement_gap score of 2 which is not the minimum (since Skill A and E were the ones with the lowest scores for that creature).

6. Minimum achievement score gap w/ S_code carried



C_id	S_code	score_gap
1	A	0
1	E	0
2	A	0
3	Z	-1
4	E	0
5	Z	0
6	Z	1
7	E	-2
8	O	0

7. Minimum achievement score gap w/ S_codes carried using Fold-Up Non-Singleton



C_id	S_codes	score_gaps
1	A,E	0,0
2	A	0
3	Z	-1
4	E	0
5	Z	0
6	Z	1
7	E	-2
8	O	0