Moti Begna

Seng 5707

12/06/2022

Homework 11

1. Achievement Gap

Diagram

Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

1. Achievement Gap w/ unachieved aspiration

Diagram

Description automatically generated

|  |  |  |
| --- | --- | --- |
| **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 |

1. Median and maximum achievement score gap

Diagram, timeline

Description automatically generated

Output relation of #2

|  |  |  |
| --- | --- | --- |
| **S\_code** | **median\_score**  **\_gap** | **max\_score**  **\_gap** |
| A | 0 | 0 |
| E | 0 | 0 |
| O | 0 | 0 |
| Z | .5 | 2 |

1. Minimum achievement score gap

Diagram

Description automatically generated

|  |  |
| --- | --- |
| **C\_id** | **minimum\_score\_gap** |
| 1 | 0 |
| 2 | 0 |
| 3 | -1 |
| 4 | 0 |
| 5 | 0 |
| 6 | 1 |
| 7 | -2 |
| 8 | 0 |

1. D
   1. 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
   2. 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).
2. Minimum achievement score gap w/ S\_code carried

Output relation of #2

Diagram

Description automatically generated

Output relation of #4

|  |  |  |
| --- | --- | --- |
| **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 |

1. Minimum achievement score gap w/ S\_codes carried using Fold-Up Non-Singleton

Diagram

Description automatically generated

|  |  |  |
| --- | --- | --- |
| **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 |

{"id":"3bbca089-41ce-4fb4-a6c6-3a27982e4f1f","name":"Untitled","editor":{"action":"select","panX":-3205.05,"panY":81.67,"scale":1.09},"nodes":[{"id":1,"resultRelationId":6,"operator":{},"x":277,"y":33,"height":75,"selected":false},{"id":2,"resultRelationId":7,"operator":{},"x":470,"y":28,"height":75,"selected":false},{"id":3,"resultRelationId":19,"operator":{"type":"Match Join","shape":"HalfHouseLeftSymmetric","params":"<div style=\"text-align: center; white-space: normal;\">Aid(E): C\_id, S\_code</div><div style=\"text-align: center; white-space: normal;\">Bid(E): C\_id, S\_code</div>","width":179,"height":114,"style":{}},"x":360.79831932773106,"y":188.1988795518207,"selected":false,"height":239},{"id":4,"resultRelationId":20,"operator":{"type":"Group","shape":"Hexagon","params":"over: C\_id, S\_code\nfunc: achievement\_gap = \n ach\_score - asp\_score \n\n","width":266,"height":117,"style":{}},"x":361,"y":455,"selected":false,"height":242},{"id":5,"resultRelationId":21,"operator":{},"x":1066,"y":28,"height":75,"selected":false},{"id":6,"resultRelationId":22,"operator":{},"x":810,"y":32,"height":75,"selected":false},{"id":7,"resultRelationId":24,"operator":{"type":"Project","shape":"Pill","params":"C\_id, S\_code","width":126,"height":70,"style":{}},"x":810,"y":137,"selected":false,"height":143},{"id":8,"resultRelationId":25,"operator":{"type":"Project","shape":"Pill","params":"C\_id, S\_code","width":126,"height":70,"style":{}},"x":1066,"y":136,"selected":false,"height":143},{"id":9,"resultRelationId":26,"operator":{"type":"Minus","shape":"HalfHouseLeft","width":100,"height":65},"x":938,"y":353,"selected":false,"height":154},{"id":10,"resultRelationId":27,"operator":{"type":"Group","shape":"Hexagon","params":"over: C\_id, S\_code\nfunc: score = 4","width":196,"height":81,"style":{}},"x":938,"y":537,"selected":false,"height":188},{"id":11,"resultRelationId":28,"operator":{},"x":1242.1876955161617,"y":413.241093152587,"height":75,"selected":false},{"id":12,"resultRelationId":29,"operator":{"type":"Union","shape":"HalfHouseLeftSymmetric","width":100,"height":65},"x":1232.0563086548516,"y":547.4921793534961,"selected":false,"height":172},{"id":13,"resultRelationId":30,"operator":{},"x":1427.0594369134556,"y":640.9019812304485,"height":75,"selected":false},{"id":14,"resultRelationId":31,"operator":{"type":"Match Join","shape":"HalfHouseLeftSymmetric","params":"<div style=\"text-align: center; white-space: normal;\">Aid(E): C\_id, S\_code</div><div style=\"text-align: center; white-space: normal;\">Bid(E): C\_id, S\_code</div>","width":179,"height":114,"style":{}},"x":1310.2627737226287,"y":781.8175182481739,"selected":false,"height":257},{"id":15,"resultRelationId":32,"operator":{},"x":1950.4411764705903,"y":35.42950513538748,"height":145,"selected":false},{"id":16,"resultRelationId":33,"operator":{"type":"Group","shape":"Hexagon","params":"over: S\_code \nfunc: median\_score\_gap = Median(achievement\_gap)\n max\_score\_gap = Max(achievement\_gap)\n","width":443,"height":99,"style":{}},"x":1951.8417366946799,"y":209.02894491129783,"selected":false,"height":206},{"id":17,"resultRelationId":34,"operator":{"type":"Group","shape":"Hexagon","params":"over: C\_id, S\_code\nfunc: achievement\_gap = \n ach\_score - asp\_score \n\n","width":266,"height":117,"style":{}},"x":1310.2627737226287,"y":1068.8175182481739,"selected":false,"height":260},{"id":18,"resultRelationId":35,"operator":{},"x":2472.0028011204386,"y":30.73522987176523,"height":145,"selected":false},{"id":19,"resultRelationId":36,"operator":{"type":"Group","shape":"Hexagon","params":"over: S\_code \nfunc: min\_score\_gap= Min(achievement\_gap)<br>","width":385,"height":81,"style":{}},"x":2472.0028011204363,"y":223.45938375350144,"selected":false,"height":170},{"id":20,"resultRelationId":37,"operator":{},"x":3065.840336134455,"y":16.246498599439796,"height":145,"selected":false},{"id":21,"resultRelationId":38,"operator":{},"x":3450.994397759108,"y":66.66666666666667,"height":91,"selected":false},{"id":22,"resultRelationId":44,"operator":{"type":"match join","shape":"FullHouseLeft","params":"<div style=\"text-align: center; white-space: normal;\">Aid(O): C\_id, achievement\_gap</div><div style=\"text-align: center; white-space: normal;\">Bid(O): C\_id, min\_score\_gap</div><div style=\"text-align: center; white-space: normal;\">result: C\_id, score\_gap</div>","width":253,"height":139,"style":{}},"x":3226.9047619047633,"y":240.26610644257735,"selected":false,"height":246},{"id":23,"resultRelationId":45,"operator":{},"x":3918.3944954128438,"y":63.65137614678896,"height":109,"selected":false},{"id":24,"resultRelationId":46,"operator":{"type":"Fold Up Non Singleton","shape":"Hexagon","params":"id: C\_id\nFolding: S\_code, score\_gap\nTo: S\_codes, score\_gaps\nDelimeter: \",\"\n","width":259,"height":117,"style":{}},"x":3914.724770642202,"y":201.7339449541284,"selected":false,"height":224}],"arrows":[{"from":1,"to":3,"connection":1,"x1":277,"y1":108,"x2":272.29831932773106,"y2":188.1988795518207,"selected":false},{"from":2,"to":3,"connection":0,"x1":470,"y1":103,"x2":272.29831932773106,"y2":188.1988795518207,"selected":false},{"from":3,"to":4,"connection":0,"x1":360.79831932773106,"y1":427.1988795518207,"x2":361,"y2":455,"selected":false},{"from":6,"to":7,"connection":0,"x1":810,"y1":107,"x2":810,"y2":137,"selected":false},{"from":5,"to":8,"connection":0,"x1":1066,"y1":103,"x2":1066,"y2":136,"selected":false},{"from":7,"to":9,"connection":0,"x1":810,"y1":280,"x2":889,"y2":353,"selected":false},{"from":8,"to":9,"connection":1,"x1":1066,"y1":279,"x2":987,"y2":372.6,"selected":false},{"from":9,"to":10,"connection":0,"x1":938,"y1":507,"x2":938,"y2":537,"selected":false},{"from":10,"to":12,"connection":0,"x1":938,"y1":725,"x2":1183.0563086548516,"y2":547.4921793534961,"selected":false},{"from":11,"to":12,"connection":1,"x1":1242.1876955161617,"y1":488.241093152587,"x2":1183.0563086548516,"y2":547.4921793534961,"selected":false},{"from":12,"to":14,"connection":0,"x1":1232.0563086548516,"y1":719.4921793534961,"x2":1221.7627737226287,"y2":781.8175182481739,"selected":false},{"from":13,"to":14,"connection":1,"x1":1427.0594369134556,"y1":715.9019812304485,"x2":1221.7627737226287,"y2":781.8175182481739,"selected":false},{"from":15,"to":16,"connection":0,"x1":1950.4411764705903,"y1":180.42950513538747,"x2":1951.8417366946799,"y2":209.02894491129783,"selected":false},{"from":14,"to":17,"connection":0,"x1":1310.2627737226287,"y1":1038.8175182481739,"x2":1310.2627737226287,"y2":1068.8175182481739,"selected":false},{"from":18,"to":19,"connection":0,"x1":2472.0028011204386,"y1":175.73522987176523,"x2":2472.0028011204363,"y2":223.45938375350144,"selected":false},{"from":20,"to":22,"connection":0,"x1":3065.840336134455,"y1":161.2464985994398,"x2":3101.4047619047633,"y2":290.46610644257737,"selected":false},{"from":21,"to":22,"connection":1,"x1":3450.994397759108,"y1":157.66666666666669,"x2":3352.4047619047633,"y2":290.46610644257737,"selected":false},{"from":23,"to":24,"connection":0,"x1":3918.3944954128438,"y1":172.65137614678895,"x2":3914.724770642202,"y2":201.7339449541284,"selected":false}],"relations":[{"id":1,"name":"Aspiration"},{"id":2,"name":"Skill"},{"id":3,"name":""},{"id":4,"name":"S\_code of Aspired Skill"},{"id":5,"name":"S\_code of Skill"},{"id":6,"name":"Achievement"},{"id":7,"name":"Aspiration"},{"id":8,"name":""},{"id":9,"name":""},{"id":10,"name":""},{"id":11,"name":""},{"id":12,"name":""},{"id":13,"name":""},{"id":14,"name":""},{"id":15,"name":""},{"id":16,"name":""},{"id":17,"name":""},{"id":18,"name":""},{"id":19,"name":"C\_id, S\_code of Achievement-Aspiration pair w/ achieved and aspired score"},{"id":20,"name":"C\_id, S\_code of Achievement-Aspiration pair w/ achievement-gap data"},{"id":21,"name":"Achievement"},{"id":22,"name":"Aspiration"},{"id":23,"name":""},{"id":24,"name":"<span style=\"font-size: medium; white-space: pre;\">C\_id, S\_code of Aspiration</span>"},{"id":25,"name":"<span style=\"font-size: medium; white-space: pre;\">C\_id, S\_code of Achievement </span>"},{"id":26,"name":"C\_id, S\_code of&nbsp; unachieved Aspiration"},{"id":27,"name":"C\_id, S\_code of unachieved Aspiration with its score"},{"id":28,"name":"Achievement"},{"id":29,"name":"C\_id, S\_code of Achievement or unachieved Aspiration with its score"},{"id":30,"name":"Aspiration"},{"id":31,"name":"<div style=\"font-size: medium;\"><span style=\"font-size: 16px;\">(C\_id, S\_code of Achievement or unachieved Aspiration with its score) - Aspiration pair w/ achieved and aspired score</span><br></div>"},{"id":32,"name":"(C\_id, S\_code of Achievement or unachieved Aspiration with its score) - Aspiration pair w/ achievement\_gap data"},{"id":33,"name":"S\_code of Skill w/ its median\_score\_gap and max\_score\_gap data"},{"id":34,"name":"(C\_id, S\_code of Achievement or unachieved Aspiration with its score) - Aspiration pair w/ achievement\_gap data"},{"id":35,"name":"(C\_id, S\_code of Achievement or unachieved Aspiration with its score) - Aspiration pair w/ achievement\_gap data"},{"id":36,"name":"C\_id of Creature w/ its min\_score\_gap data"},{"id":37,"name":"(C\_id, S\_code of Achievement or unachieved Aspiration with its score) - Aspiration pair w/ achievement\_gap data"},{"id":38,"name":"C\_id of Creature w/ its min\_score\_gap data"},{"id":39,"name":""},{"id":40,"name":""},{"id":41,"name":""},{"id":42,"name":""},{"id":43,"name":""},{"id":44,"name":"C\_id, S\_code of Achievement-Aspiration pair w/ it's score\_gap"},{"id":45,"name":"C\_id, S\_code of Achievement-Aspiration pair w/ it's score\_gap"},{"id":46,"name":"C\_id of Creature with it's achieved skills and score\_gaps"}],"updatedAt":1670552607395}