51/6010/51 Quiz 8, 3/21/2017

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exercise 3.7.1: Use the chase test to tell whether each of the following dependencies hold in a relation R(A, B, C, D, E) with the dependencies A->>BC, B->D, and C->>E.

1. A->D
2. A->>D
3. A->E
4. A->>E

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c1 | d1 | e1 |
| a | b2 | c2 | d2 | e2 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c1 | d | e1 |
| a | b | c | d2 | e |
|  |  |  |  |  |
|  |  |  |  |  |

Exercise 3.7.2: If we project the relation R of Exercise 3.7.1 onto S(A, C, E), what nontrivial FD’s and MVD’s hold in S? We only need to chase dependencies with LHS C, AC, AE, and CE

LHS = {C}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a1 | b1 | c | d1 | e1 |
| a2 | b2 | c | d2 | e2 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a1 | b1 | c | d | e1 |
| a | b | c | d2 | e |
|  |  |  |  |  |
|  |  |  |  |  |

LHS = {AC}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c | d1 | e1 |
| a | b2 | c | d2 | e2 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c | d | e1 |
| a | b | c | d2 | e |
|  |  |  |  |  |
|  |  |  |  |  |

LHS = {AE}

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c1 | d1 | e |
| a | b2 | c2 | d2 | e |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| a | b1 | c1 | d | e |
| a | b | c | d2 | e |
|  |  |  |  |  |
|  |  |  |  |  |

LHS = {CE}