**Problem.**

Follow DEAR1 to discover action rules reclassifying objects from the class d0 to the class d1 in table T1. Attributes a, b are stable.

a b c d

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X1 | 2 | 2 | 1 | 0 |
| X2 | 1 | 1 | 1 | 1 |
| X3 | 2 | 1 | 2 | 1 |
| X4 | 1 | 3 | 1 | 0 |
| X5 | 1 | 3 | 2 | 1 |
| X6 | 1 | 1 | 2 | 0 |

Table T1.

**Solution**. Finding classification rules using LERS (LEM1):

d0\*={1,4,6} d1\*={2,3,5} c1\*={1,2,4} c2\*={3,5,6}

a1\*={2,4,5,6} a2\*={1,3} b1\*={2,3,6} b2\*={1}<d0\* b3\*={4,5}

a1.b1\*={2,6} a1.b3\*=b3\* a1.c1\* ={2,4} a1,c2\* ={5,6}

a2.b1\*={3}<d1\* a2.b3\* a2.c1\*={1} <d0\* a2.c2\*={3}<d1\*

b1.c1\* ={2}<d1\* b1.c2\* ={3,6} b3.c1\* ={4}<d0\* b3.c2\*={5}<d1\*

a1.b1,c1\*={2} <d1\* a1.b1.c2\*={6}<d0\*

|  |  |  |  |
| --- | --- | --- | --- |
| a | b | c | d |
|  | 2 |  | 0 |
| 2 | 1 |  | 1 |
| 2 |  | 1 | 0 |
| 2 |  | 2 | 1 |
|  | 1 | 1 | 1 |
|  | 3 | 1 | 0 |
|  | 3 | 2 | 1 |
| 1 | 1 | 1 | 1 |
| 1 | 1 | 2 | 0 |

d0

|  |  |  |
| --- | --- | --- |
| a | b | c |
|  | 2 |  |
| 2 |  | 1 |
|  | 3 | 1 |
| 1 | 1 | 2 |

T(d0,a1)

|  |  |
| --- | --- |
| b | c |
| 1 | 2 |

T(d0,a1,b1)

|  |
| --- |
| c |
| 2 |

T(d0,a2)

|  |  |
| --- | --- |
| b | c |
|  | 1 |

T(d0,a2, b?)

|  |
| --- |
| c |
| 1 |

T(d0,a?)

|  |  |
| --- | --- |
| b | c |
| 2 |  |
| 3 | 1 |

T(d0,a?,b2)

|  |
| --- |
| c |
|  |

T(d0,a?,b3)

|  |
| --- |
| c |
| 1 |

d1

|  |  |  |
| --- | --- | --- |
| a | b | c |
| 2 | 1 |  |
| 2 |  | 2 |
|  | 1 | 1 |
|  | 3 | 2 |
| 1 | 1 | 1 |

T(d1,a1)

|  |  |
| --- | --- |
| b | c |
| 1 | 1 |

T(d1,a1,b1)

|  |
| --- |
| c |
| 1 |

T(d1,a2)

|  |  |
| --- | --- |
| b | c |
| 1 |  |
|  | 2 |

T(d1,a2,b1)

|  |
| --- |
| c |
|  |

T(d1,a2,b?)

|  |
| --- |
| c |
| 2 |

T(d0,a2, b?)

|  |
| --- |
| c |
| 1 |

a2 \* (c1 -> c2) => (d0 -> d1)

T(d0,a?,b3)

|  |
| --- |
| c |
| 1 |

T(d1,a2,b?)

|  |
| --- |
| c |
| 2 |

a2.b3.(c1 ->c2) => (d0->d1)

**Table

Description automatically generated**

**Table

Description automatically generated**