

I will provide a set of logical rules L1 to L28 and facts F1 to F58. Please select one single logical rule from L1 to L28 and a few facts from F1 to F58 to explain the following statement.

Rules:

- L1:  $\forall A, B, C : r1(B, A) \wedge r1(B, C) \wedge r44(A) \rightarrow r2(A, C)$   
 L2:  $\forall A, B, C : r1(B, A) \wedge r1(B, C) \wedge r43(A) \rightarrow r3(A, C)$   
 L3:  $\forall A, B : r1(A, B) \wedge r44(A) \rightarrow r4(A, B)$   
 L4:  $\forall A, B : r1(A, B) \wedge r43(A) \rightarrow r5(A, B)$   
 L5:  $\forall A, B, C : r1(A, B) \wedge r1(B, C) \wedge r44(A) \rightarrow r6(A, C)$   
 L6:  $\forall A, B, C : r1(A, B) \wedge r1(B, C) \wedge r43(A) \rightarrow r7(A, C)$   
 L7:  $\forall A, B, C, D : r1(A, B) \wedge r1(B, C) \wedge r1(C, D) \wedge r44(A) \rightarrow r8(A, D)$   
 L8:  $\forall A, B, C, D : r1(A, B) \wedge r1(B, C) \wedge r1(C, D) \wedge r43(A) \rightarrow r9(A, D)$   
 L9:  $\forall A, B, C, D : r1(B, A) \wedge r1(B, C) \wedge r1(C, D) \wedge r44(A) \rightarrow r10(A, D)$   
 L10:  $\forall A, B, C, D : r1(B, A) \wedge r1(B, C) \wedge r1(C, D) \wedge r43(A) \rightarrow r11(A, D)$   
 L11:  $\forall A, B, C, D, E : r1(B, A) \wedge r1(B, C) \wedge r1(C, D) \wedge r1(D, E) \wedge r44(A) \rightarrow r12(A, E)$   
 L12:  $\forall A, B, C, D, E : r1(B, A) \wedge r1(B, C) \wedge r1(C, D) \wedge r1(D, E) \wedge r43(A) \rightarrow r13(A, E)$   
 L13:  $\forall A, B, C, D, E, F : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r1(D, E) \wedge r1(E, F) \wedge r44(A) \rightarrow r14(A, F)$   
 L14:  $\forall A, B, C, D, E, F : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r1(D, E) \wedge r1(E, F) \wedge r43(A) \rightarrow r15(A, F)$   
 L15:  $\forall A, B, C, D, E : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r1(D, E) \wedge r44(A) \rightarrow r16(A, E)$   
 L16:  $\forall A, B, C, D, E : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r1(D, E) \wedge r43(A) \rightarrow r17(A, E)$   
 L17:  $\forall A, B, C, D, E, F, G : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r1(D, E) \wedge r1(E, F) \wedge r1(F, G) \wedge r44(A) \rightarrow r18(A, G)$   
 L18:  $\forall A, B, C, D, E, F, G : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r1(D, E) \wedge r1(E, F) \wedge r1(F, G) \wedge r43(A) \rightarrow r19(A, G)$   
 L19:  $\forall A, B, C, D, E, F : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r1(D, E) \wedge r1(E, F) \wedge r44(A) \rightarrow r20(A, F)$   
 L20:  $\forall A, B, C, D, E, F : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r1(D, E) \wedge r1(E, F) \wedge r43(A) \rightarrow r21(A, F)$   
 L21:  $\forall A, B : r1(B, A) \wedge r44(A) \rightarrow r22(A, B)$   
 L22:  $\forall A, B : r1(B, A) \wedge r43(A) \rightarrow r23(A, B)$   
 L23:  $\forall A, B, C : r1(B, A) \wedge r1(C, B) \wedge r44(A) \rightarrow r24(A, C)$   
 L24:  $\forall A, B, C : r1(B, A) \wedge r1(C, B) \wedge r43(A) \rightarrow r25(A, C)$   
 L25:  $\forall A, B, C, D : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r44(A) \rightarrow r26(A, D)$

L26:  $\forall A, B, C, D : r1(B, A) \wedge r1(C, B) \wedge r1(D, C) \wedge r43(A) \rightarrow r27(A, D)$

L27:  $\forall A, B, C, D : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r44(A) \rightarrow r28(A, D)$

L28:  $\forall A, B, C, D : r1(B, A) \wedge r1(C, B) \wedge r1(C, D) \wedge r43(A) \rightarrow r29(A, D)$

Facts:

F1:  $r1(\text{nico}, \text{tobias})$

F2:  $r1(\text{nico}, \text{dominik})$

F3:  $r1(\text{elena}, \text{tobias})$

F4:  $r1(\text{elena}, \text{dominik})$

F5:  $r1(\text{emily}, \text{angelina})$

F6:  $r1(\text{florian}, \text{clara})$

F7:  $r1(\text{florian}, \text{valentin})$

F8:  $r1(\text{isabella}, \text{valentina})$

F9:  $r1(\text{stefan}, \text{valentina})$

F10:  $r1(\text{lea}, \text{clara})$

F11:  $r1(\text{lea}, \text{valentin})$

F12:  $r1(\text{sebastian}, \text{angelina})$

F13:  $r1(\text{tobias}, \text{marlene})$

F14:  $r1(\text{tobias}, \text{johanna})$

F15:  $r1(\text{sarah}, \text{stefan})$

F16:  $r1(\text{noah}, \text{stefan})$

F17:  $r1(\text{charlotte}, \text{luca})$

F18:  $r1(\text{dominik}, \text{luca})$

F19:  $r1(\text{valentina}, \text{marlene})$

F20:  $r1(\text{valentina}, \text{johanna})$

F21:  $r1(\text{valerie}, \text{nico})$

F22:  $r1(\text{valerie}, \text{raphael})$

F23:  $r1(\text{valerie}, \text{adrian})$

F24:  $r1(\text{valerie}, \text{marie})$

F25:  $r1(\text{elias}, \text{nico})$

F26:  $r1(\text{elias}, \text{raphael})$

F27:  $r1(\text{elias}, \text{adrian})$

F28:  $r1(\text{elias}, \text{marie})$

F29:  $r1(\text{marie}, \text{emily})$

F30:  $r1(\text{marie}, \text{florian})$

F31:  $r1(\text{leo}, \text{emily})$

F32:  $r1(\text{leo}, \text{florian})$

F33:  $r43(\text{nico})$

F34:  $r44(\text{elena})$

F35:  $r43(\text{tobias})$

F36:  $r43(\text{dominik})$

F37:  $r44(\text{valentina})$

F38:  $r44(\text{johanna})$

F39:  $r44(\text{valerie})$

F40:  $r43(\text{elias})$

F41:  $r44(\text{marie})$

F42:  $r43(\text{leo})$

F43:  $r44(\text{emily})$

F44:  $r43(\text{florian})$

F45:  $r44(\text{marlene})$

F46:  $r44(\text{isabella})$

F47:  $r43(\text{stefan})$

F48:  $r44(\text{lea})$

F49:  $r44(\text{clara})$

F50:  $r43(\text{raphael})$

F51:  $r43(\text{sebastian})$

F52:  $r44(\text{angelina})$

F53:  $r44(\text{sarah})$

F54:  $r43(\text{noah})$

F55:  $r44(\text{charlotte})$

F56:  $r43(\text{luca})$

F57:  $r43(\text{valentin})$

F58:  $r43(\text{adrian})$

Statement:  $r5(\text{tobias}, \text{marlene})$

Answer with the numbers of the selected rule and facts. The selected rule and facts are (There may be multiple explanations for the statement, please provide one) :