

I will give you a set of facts F1 to F94, facts G1 to G5 and a template for a logical rule. Please generate one single rule to match the template and logically entail the facts G1 to G5 based on facts F1 to F94.

F1: *r1*(moritz, natalie).

F2: *r45*(natalie, moritz).

F3: *r1*(moritz, sophie).

F4: *r45*(sophie, moritz).

F5: *r1*(valerie, natalie).

F6: *r45*(natalie, valerie).

F7: *r1*(valerie, sophie).

F8: *r45*(sophie, valerie).

F9: *r1*(katharina, victoria).

F10: *r45*(victoria, katharina).

F11: *r1*(katharina, benjamin).

F12: *r45*(benjamin, katharina).

F13: *r1*(david, theodor).

F14: *r45*(theodor, david).

F15: *r1*(david, helga).

F16: *r45*(helga, david).

F17: *r1*(david, patrick).

F18: *r45*(patrick, david).

F19: *r1*(theodor, fabian).

F20: *r45*(fabian, theodor).

F21: *r1*(patrick, tobias).

F22: *r45*(tobias, patrick).

F23: *r1*(emily, fabian).

F24: *r45*(fabian, emily).

F25: *r1*(vanessa, tobias).

F26: *r45*(tobias, vanessa).

F27: *r1*(natalie, theodor).

F28: *r45*(theodor, natalie).

F29: *r1*(natalie, helga).

F30: *r45*(helga, natalie).

F31: *r1*(natalie, patrick).

F32: *r45*(patrick, natalie).

F33: $r1(\text{noah}, \text{victoria})$.
F34: $r45(\text{victoria}, \text{noah})$.
F35: $r1(\text{noah}, \text{benjamin})$.
F36: $r45(\text{benjamin}, \text{noah})$.
F37: $r1(\text{olivia}, \text{moritz})$.
F38: $r45(\text{moritz}, \text{olivia})$.
F39: $r1(\text{stefan}, \text{moritz})$.
F40: $r45(\text{moritz}, \text{stefan})$.
F41: $r1(\text{sophie}, \text{marie})$.
F42: $r45(\text{marie}, \text{sophie})$.
F43: $r1(\text{sophie}, \text{jonas})$.
F44: $r45(\text{jonas}, \text{sophie})$.
F45: $r1(\text{oliver}, \text{marie})$.
F46: $r45(\text{marie}, \text{oliver})$.
F47: $r1(\text{oliver}, \text{jonas})$.
F48: $r45(\text{jonas}, \text{oliver})$.
F49: $r1(\text{jonas}, \text{katharina})$.
F50: $r45(\text{katharina}, \text{jonas})$.
F51: $r1(\text{jonas}, \text{vincent})$.
F52: $r45(\text{vincent}, \text{jonas})$.
F53: $r1(\text{jonas}, \text{amelie})$.
F54: $r45(\text{amelie}, \text{jonas})$.
F55: $r1(\text{jonas}, \text{larissa})$.
F56: $r45(\text{larissa}, \text{jonas})$.
F57: $r1(\text{jonas}, \text{sebastian})$.
F58: $r45(\text{sebastian}, \text{jonas})$.
F59: $r1(\text{emilia}, \text{katharina})$.
F60: $r45(\text{katharina}, \text{emilia})$.
F61: $r1(\text{emilia}, \text{vincent})$.
F62: $r45(\text{vincent}, \text{emilia})$.
F63: $r1(\text{emilia}, \text{amelie})$.
F64: $r45(\text{amelie}, \text{emilia})$.
F65: $r1(\text{emilia}, \text{larissa})$.
F66: $r45(\text{larissa}, \text{emilia})$.
F67: $r1(\text{emilia}, \text{sebastian})$.

F68: $r45(\text{sebastian}, \text{emilia})$.

F69: $r43(\text{moritz})$.

F70: $r44(\text{valerie})$.

F71: $r44(\text{natalie})$.

F72: $r44(\text{olivia})$.

F73: $r43(\text{stefan})$.

F74: $r44(\text{sophie})$.

F75: $r43(\text{oliver})$.

F76: $r43(\text{jonas})$.

F77: $r44(\text{emilia})$.

F78: $r43(\text{sebastian})$.

F79: $r44(\text{katharina})$.

F80: $r43(\text{vincent})$.

F81: $r43(\text{david})$.

F82: $r43(\text{theodor})$.

F83: $r44(\text{helga})$.

F84: $r43(\text{patrick})$.

F85: $r44(\text{emily})$.

F86: $r43(\text{fabian})$.

F87: $r44(\text{vanessa})$.

F88: $r43(\text{tobias})$.

F89: $r43(\text{noah})$.

F90: $r44(\text{victoria})$.

F91: $r43(\text{benjamin})$.

F92: $r44(\text{marie})$.

F93: $r44(\text{amelie})$.

F94: $r44(\text{larissa})$.

G1: $r16(\text{helga}, \text{marie})$

G2: $r16(\text{helga}, \text{jonas})$

G3: $r16(\text{marie}, \text{theodor})$

G4: $r16(\text{marie}, \text{helga})$

G5: $r16(\text{marie}, \text{patrick})$

Template: $\forall A, B, C, D, E : \#\#(A, B) \wedge \#\#(B, C) \wedge \#\#(C, D) \wedge \#\#(D, E) \wedge + +$
 $(A) \rightarrow r16(A, E)$

Note that the symbol ‘##’ in the template should be filled with either ‘r1’ or ‘r45’, while the symbol ‘++’ should be filled with either ‘r43’ or ‘r44’. After filling in the template, the generated rule is: