Artifical Intelligence Problem Set 5

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Problem 1.

A. Amy and Barry both sing "Yesterday".

$$S(A, Y) \land S(B, Y)$$

B. Amy does not sing any songs that Barry wrote.

$$\forall_s, S(A, s) \implies \neg C(B, s)$$

C. David does sing some songs that Barry wrote.

$$\exists_s, S(D, s) \land C(B, s)$$

D. David likes all the songs that Amy and Barry both sing.

$$\forall_s, (S(A, s) \land S(B, s)) \implies L(D, s)$$

E. Barry has not written any songs in a major key.

$$\forall_s, C(B, s) \lor M(s)$$

F. There is someone who dislikes "Yesterday".

$$\exists_p, \neg L(p, Y)$$

G. There is someone who dislikes all the songs that David wrote.

$$\exists_p, \forall_s C(D, s) \implies \neg L(p, s)$$

H. There is a songwriter who has written some songs, but not any that Amy likes.

$$\exists_p, \exists_{s_1}, C(p, s_1) \land \forall_{s_2}, \neg L(A, s_2) \lor \neg C(p, s_2)$$

I. If a person dislikes "Yesterday" then the only songs they like are those they wrote themselves.

$$\forall_p, \neg L(p, Y) \implies (\forall_s, L(p, s) \implies C(p, s))$$