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1. Classical planning

1. The second heuristic ignoring both Blank(S2) and Adjacent(s1, s2) will result in fewer nodes.
2. Add **not In(c, p)** into PRECOND of Load Action.
3. FLY(P1, JFK, SFO) **or** (AT(P1, SFO) **and** not (FLY(P1, SFO, JFK)))

2. Devision Theory

1. He would choose a lottery. Because the expected utility for C is 40, while for a lottery is 60. And a lottery has higher utility than C.
2. Because Alice's utility function for money is strictly convex, according to Jensen's inequality, weighted sum of utilities of states is larger than utility of average state. So Alice is more likely to choose the option with more risk. So she is risk seeking.
3. According to monotonicity axiom, if an agent prefers A to B, the agent must prefer the lottery that has higher probability for A. While in this case, A in C is 0.2 which is lower than A in D. It is against the axiom, hence no utility function satisfies Cathy's preferences.