

1. a) $\text{OpenLate}(r) := \text{Restaurant}(r, \text{'Friday'}, o, c) \text{ AND } c > 9:00\text{pm} \text{ AND } \text{Restaurant}(r, \text{'Saturday'}, o2, c2) \text{ AND } c2 > 9:00\text{pm}$

b) $\text{OpenEarly}(r) := \text{Restaurant}(r, \text{'Saturday'}, o, c) \text{ AND } o < 8\text{am} \text{ AND } \text{Restaurant}(r, \text{'Sunday'}, o2, c2) \text{ AND } o < 8\text{am}$

$\text{HappyNighthawks}(p) := \text{Nighthawks}(p, r) \text{ AND } \text{OpenLate}(r) \text{ AND } \text{OpenEarly}(r)$

Technically correct, but relational select for a constant is better per above.

a) $\text{OpenLate}(r) := \text{Restaurant}(r, d, o, c) \text{ AND } d = \text{'Friday'} \text{ AND } c > 9:00\text{pm} \text{ AND } \text{Restaurant}(r, d2, o2, c2) \text{ AND } d2 = \text{'Saturday'} \text{ AND } c2 > 9:00\text{pm}$

b) $\text{OpenEarly}(r) := \text{Restaurant}(r, d, o, c) \text{ AND } d = \text{"Saturday"} \text{ AND } o < 8\text{am} \text{ AND } \text{Restaurant}(r, d2, o2, c2) \text{ AND } d2 = \text{"Sunday"} \text{ AND } o \leq 8$

$\text{HappyNighthawks}(p) := \text{Nighthawks}(p, r) \text{ AND } \text{OpenLate}(r) \text{ AND } \text{OpenEarly}(r)$

Think about: Suppose a HappyNighthawk is one who can find a place to eat for each of the four meals, but they need not be the same restaurant?