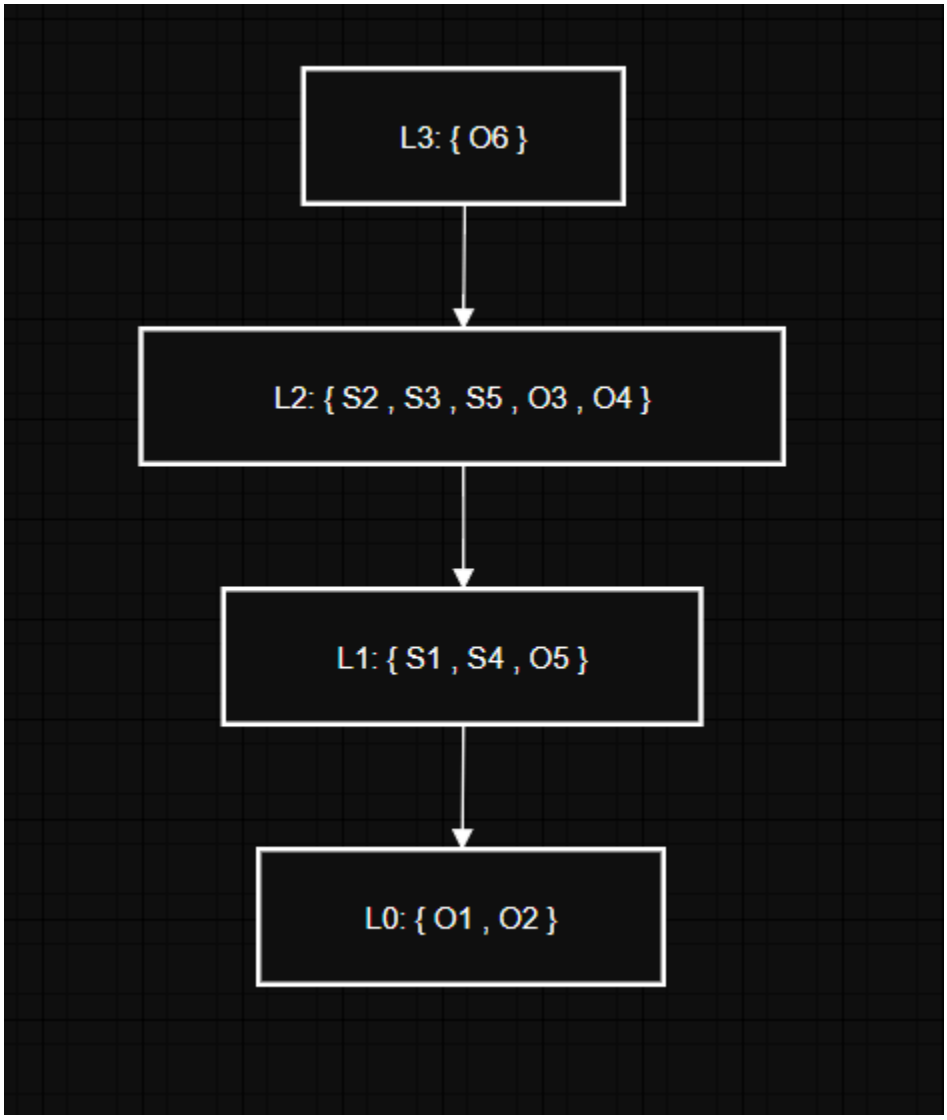
Task 1



L3 being the most clearance and L0 being the least clearance

Task 2

To derive the Bell–LaPadula (BLP) lattice, the access control matrix was analyzed using the two core confidentiality rules: Simple Security (“no read up”) and the Star Property (“no write down”). First, all read (R) relationships were used to determine which subjects must be at or above the level of the objects they read. For example, since S1 can read O1 and O2, both objects must be at a lower level than S1. Similarly, S3 can read and write O3, meaning they must exist at the same level. Next, write (W) relationships were used to ensure no subject writes down to a lower level. For instance, S1 writes to O4, so O4 must be higher than S1’s level. S3 writes to O6, placing O6 at the top. After comparing all constraints, four valid levels were identified:L3 (highest): {O6}, L2: {S2, S3, S5, O3, O4}, L1: {S1, S4, O5}, and L0 (lowest): {O1, O2}.

This structure forms a valid lattice where each pair of elements has a least upper and greatest lower bound, ensuring BLP confidentiality.