1. Consider the structures $A$ and $B$ above.

   (a) Does one of the structures simulate the other ($A \preceq B$ or $B \preceq A$)? Are they bisimilar ($A \equiv B$)?

   (b) If there is no bisimulation, what is the simplest CTL* formula to distinguish both structures?

2. Find the simplest bisimilar structures for $A$ and $B$ and specify the bisimulation relations.

3. * Suppose two structures $S$ and $S'$ are not bisimilar. Show that there exists a formula containing only $\textbf{AX}$ and $\textbf{EX}$ as temporal operators that distinguishes both structures.
Abstraction

4. Create an abstract model from the C program below using the predicates \( z = 0 \) and \( x = y \).

```c
int x, y, z, w;

void foo()
{
    do {
        z = 0;
        x = y;
        if (w) {
            x++;
            z = 1;
        }
    } while (x != y);

    if (z) assert(0); // Error
}
```