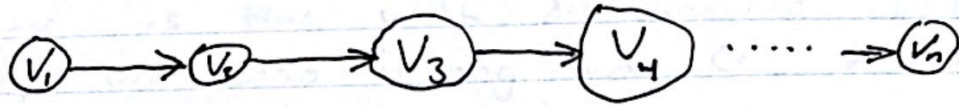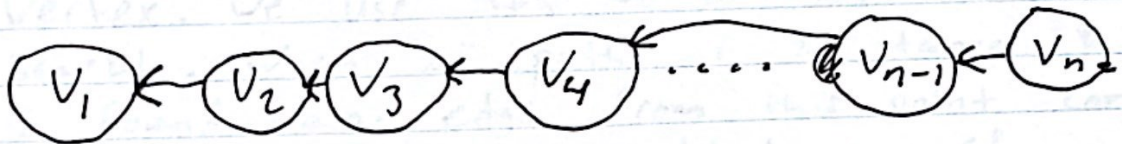Q5. assume For contridiction that all vertices $v \in V$ indegree $\neq \geq 1$.

~~this means all points are connected~~
~~this means all case are connected~~

$$V_1 \longrightarrow V_2 \longrightarrow V_3 \longrightarrow V_4 \cdots \longrightarrow V_n$$

if all vertices V_1 to V_n are connected by out degree there must be an edge connecting every vertex by in degree as well

$$V_1 \longleftarrow V_2 \longleftarrow V_3 \longleftarrow V_4 \cdots V_{n-1} \longleftarrow V_n$$

However the only way to connect all points in these two ways creates a cycle for a finite graph. Since a DAG must connect all vertices with out degree and connecting all points with in degree creates a cycle this contradicts the definition of a DAg.

As well Dag's must be topologically Searchable and without a starting point violate the definition of a Dag