Question 2 – SCCs, Meta Graph (Condensation), Topological Order

Computed with NetworkX. Figures and outputs included.

(a) Strongly Connected Components (SCCs):

C1: [1, 2, 3]
C2: [4]
C3: [5, 6, 7, 8, 9, 10]
C4: [11]
C5: [12]

(b) Meta-graph edges:

{5,6,7,8,9,10} -> {11}
{1,2,3} -> {5,6,7,8,9,10}
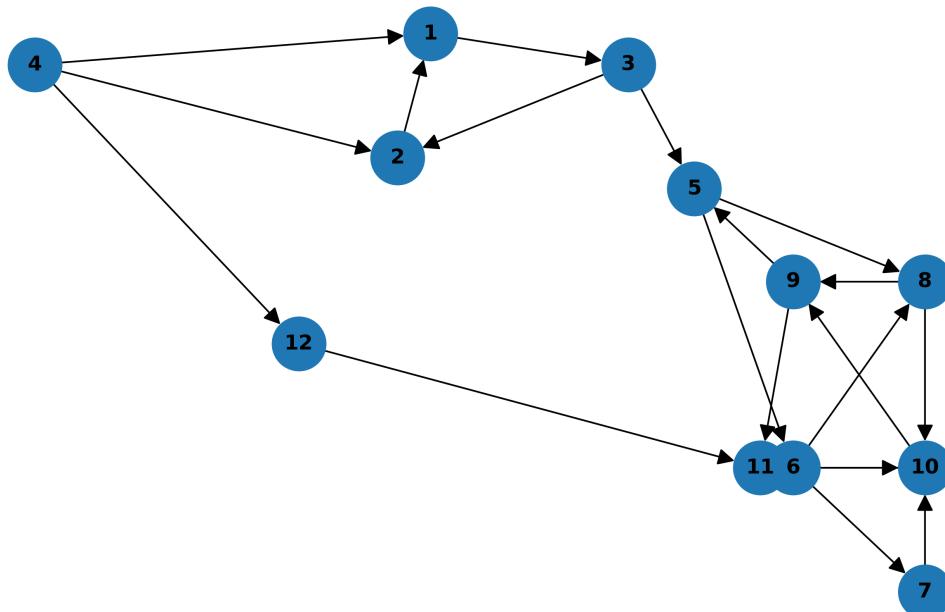{12} -> {11}
{4} -> {1,2,3}
{4} -> {12}

(c) One valid topological order:

{4} -> {1,2,3} -> {12} -> {5,6,7,8,9,10} -> {11}

Original Digraph:

Original Directed Graph (Digraph)

Meta Graph (SCC DAG):

Meta Graph (SCC Condensation DAG)