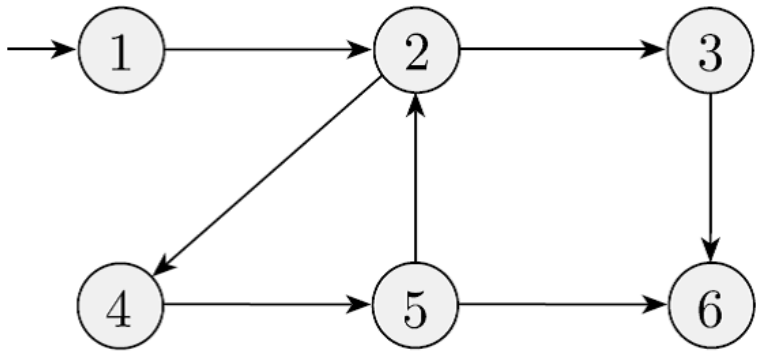
Problem

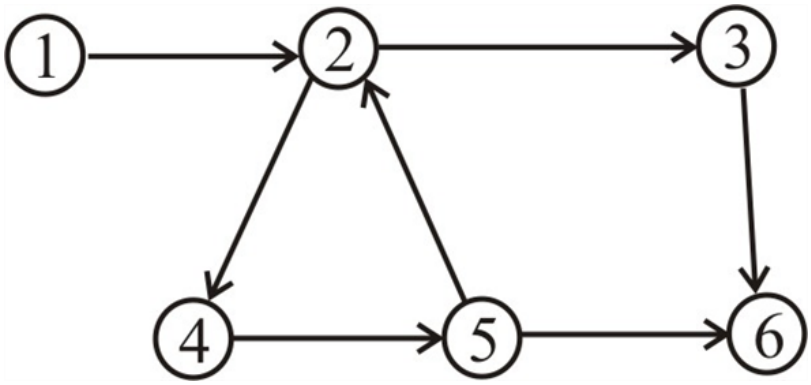
Consider the following generalized geography game wherein the start node is the one with the arrow pointing in from nowhere. Does Player I have a winning strategy? Does Player II? Give reasons for your answers.



Step-by-step solution

Step 1 of 3

Given generalized geography game is



Comment

Step 2 of 3

Geography is a game contains nodes connecting. When one player begins at one node, another player continues with connecting the same nodes. If who will get stuck first i.e., there is no connection of node that player will lost the game.

For given problem, say that player I is the one who moves first and player II second.

Comment

Step 3 of 3

Player I has a wining strategy as follows:

• Player I starts at node I, the designated start node.

• Node 1 points only at node 2, so player I must select node 2.

• Now Node 2 points at nodes 3 and 4.

• So player II must choose one of these two choices. He chooses node 3.

• Then player I must select 6, which doesn't point to any node.

• So player II is stuck, and thus player I win.

Player II has a wining strategy as follows:

• Player II starts at node 1, the designated start node.

• Node 1 points only at node 2, so player I must select node 2.

• Node 2 point at nodes 3 and 4.

• So player II must choose one of these two choices. He chooses node 4.

• Then player I must select node 5.

• Node 5 points at nodes 2 and 6.

• As node 2 already chosen, so player II must select node 6, which doesn't point to any node.

• So player I get stuck and thus player II wins.

Comment