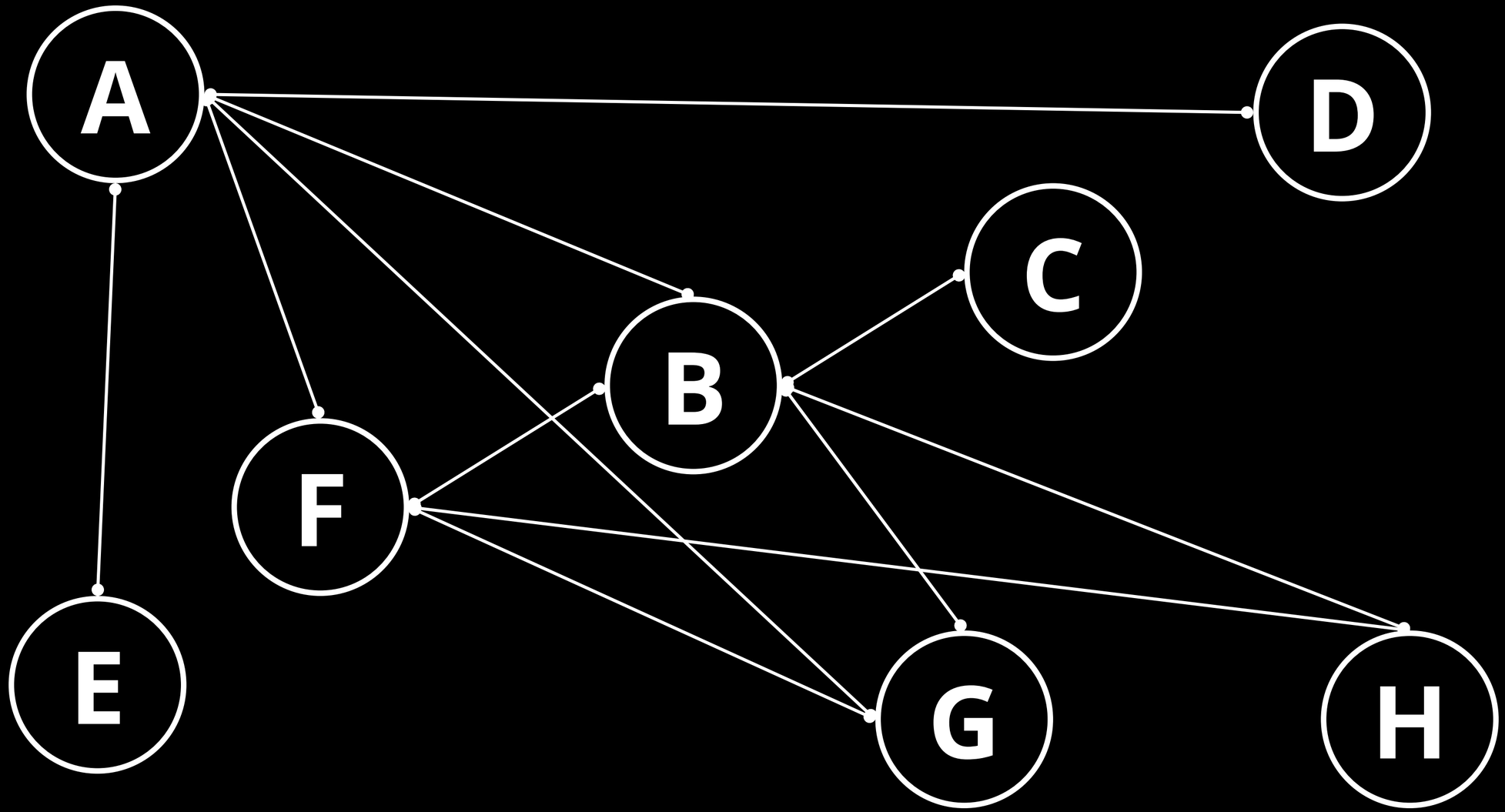
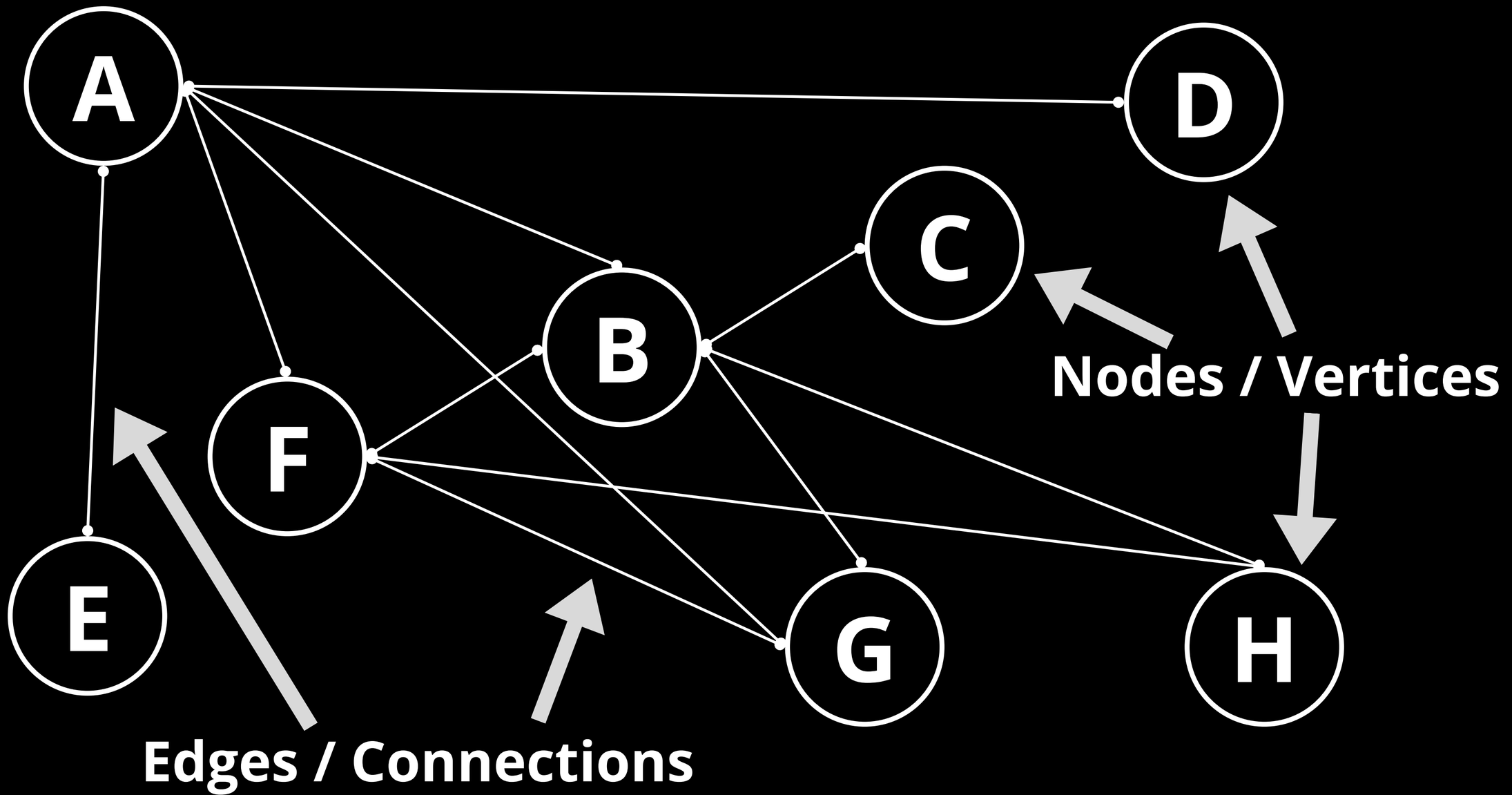
Data Structures

Undirected Graph

Usual Graph Representation



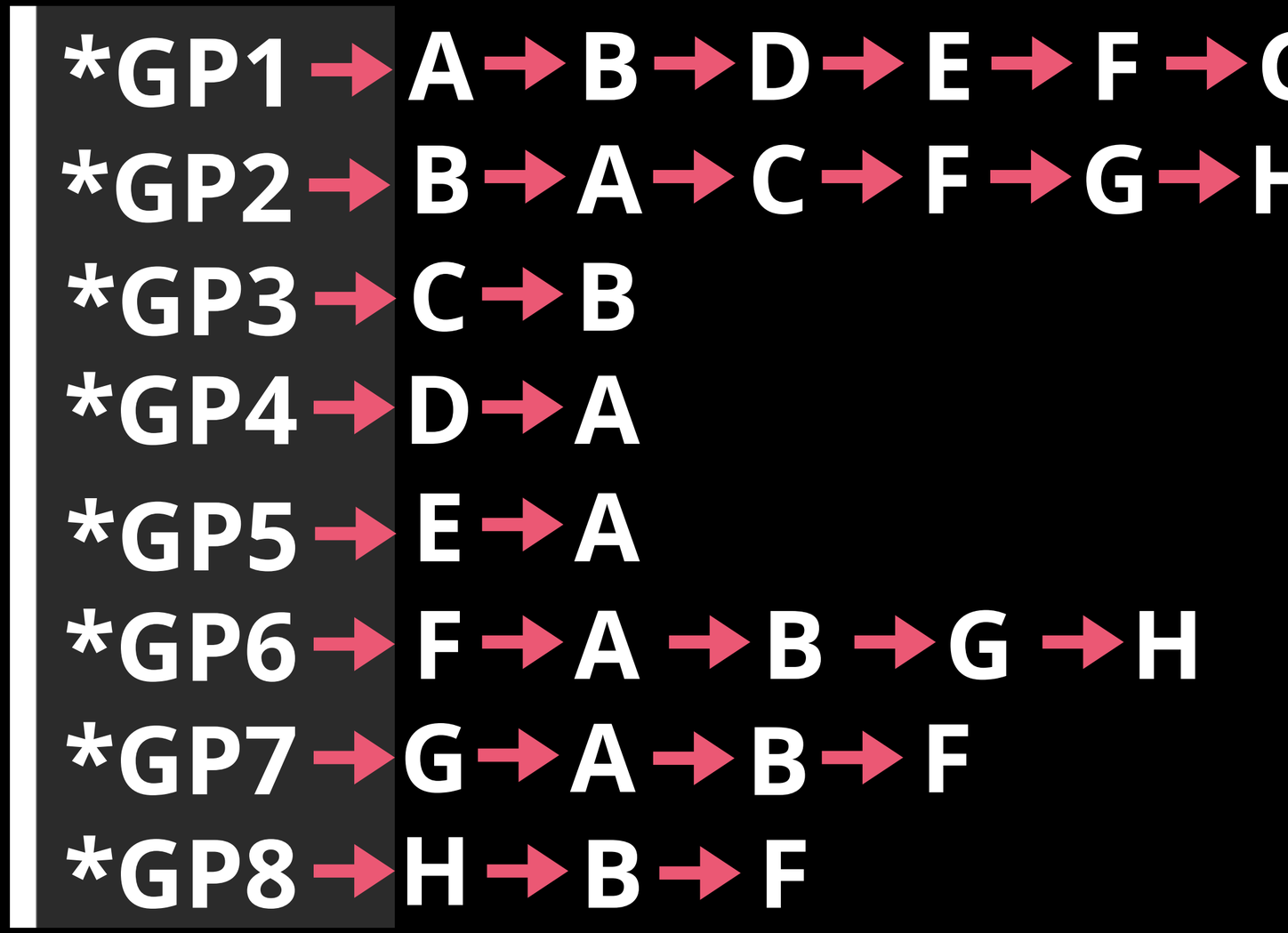
Main Graph Elements:



Undirected Graph Representation with Linked Lists

Basically, we will have a linked list of pointers to linked lists, and within these linked lists, the head node will be the “node” itself, and the next values are the nodes that the head has a connection with.

Undirected Graph Representation with Linked Lists



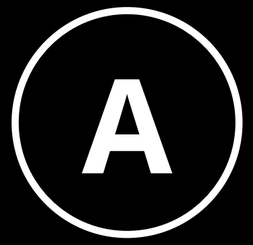
Main Functions we will implement:

- PrintGraph
- AddNode
- ConnectNodes
- RemoveConnection
- RemoveNode
- FreeGraph

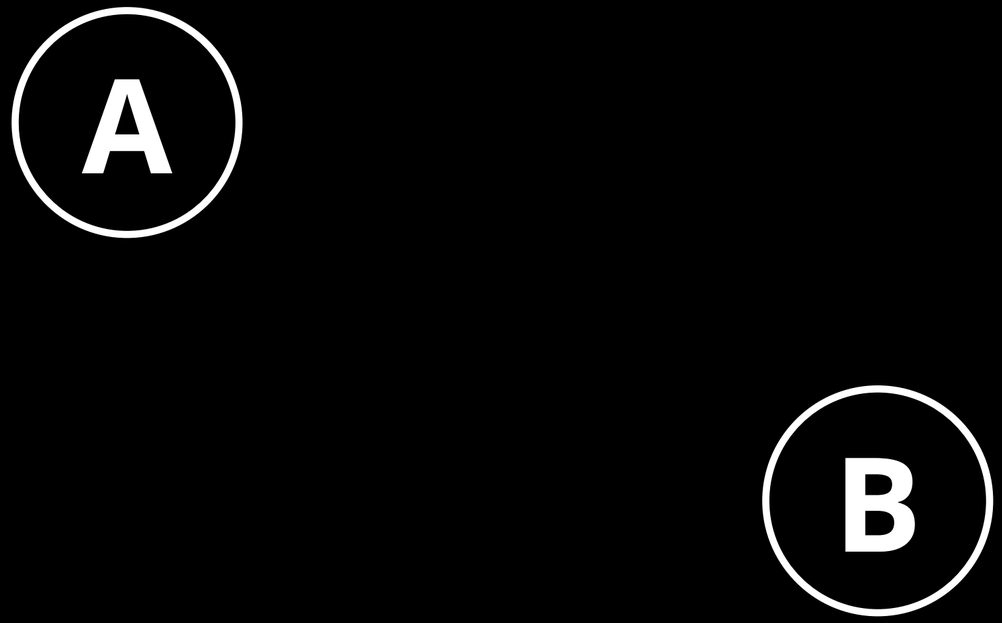
Aux Functions we will implement:

- **PrintLLst**
- **InitLLst**
- **InitGraphNode**

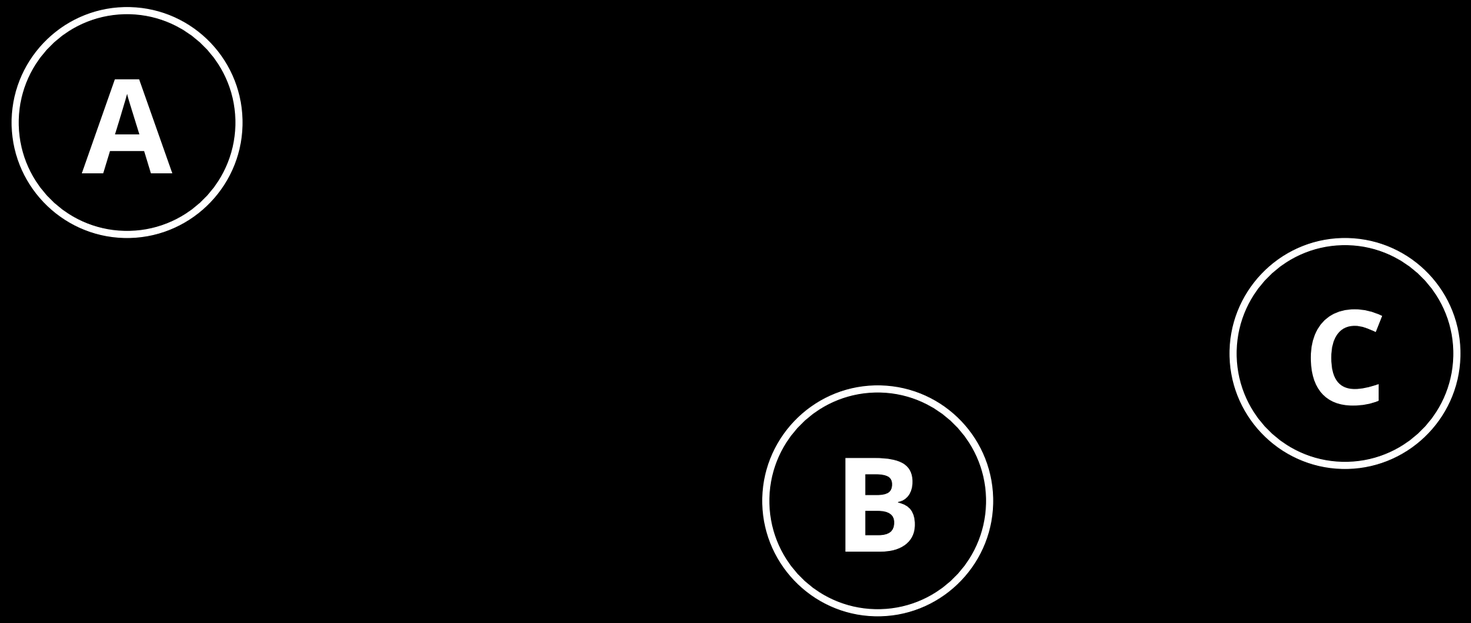
Once we AddNode(A):



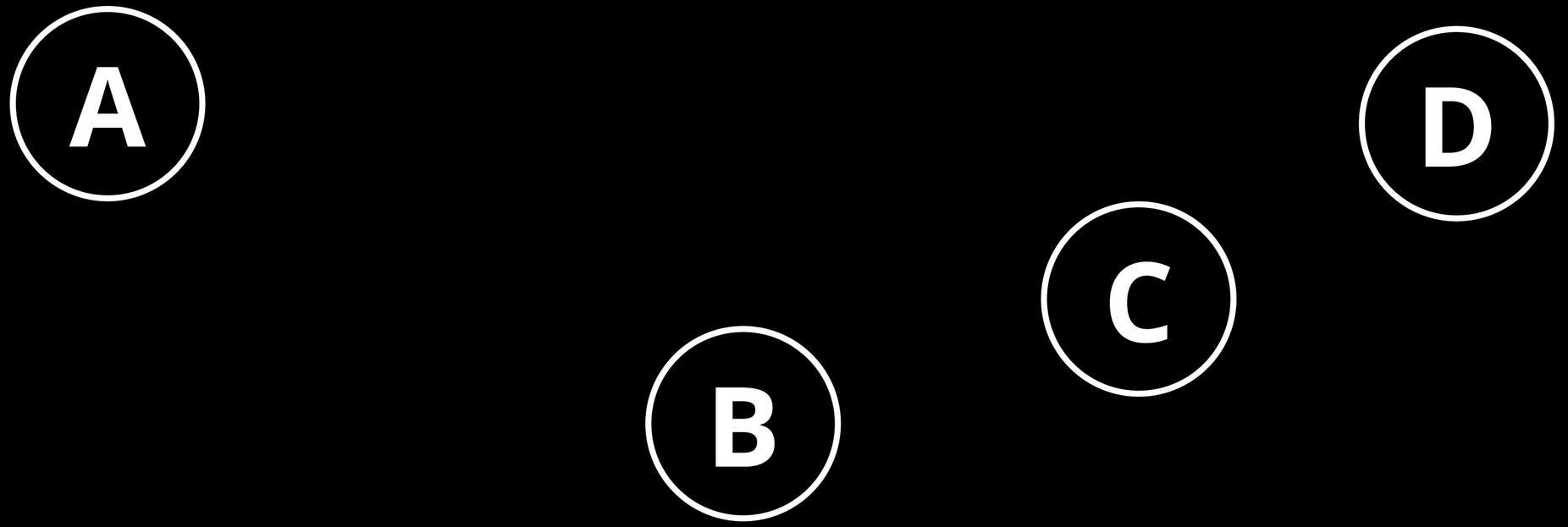
Once we AddNode(B):



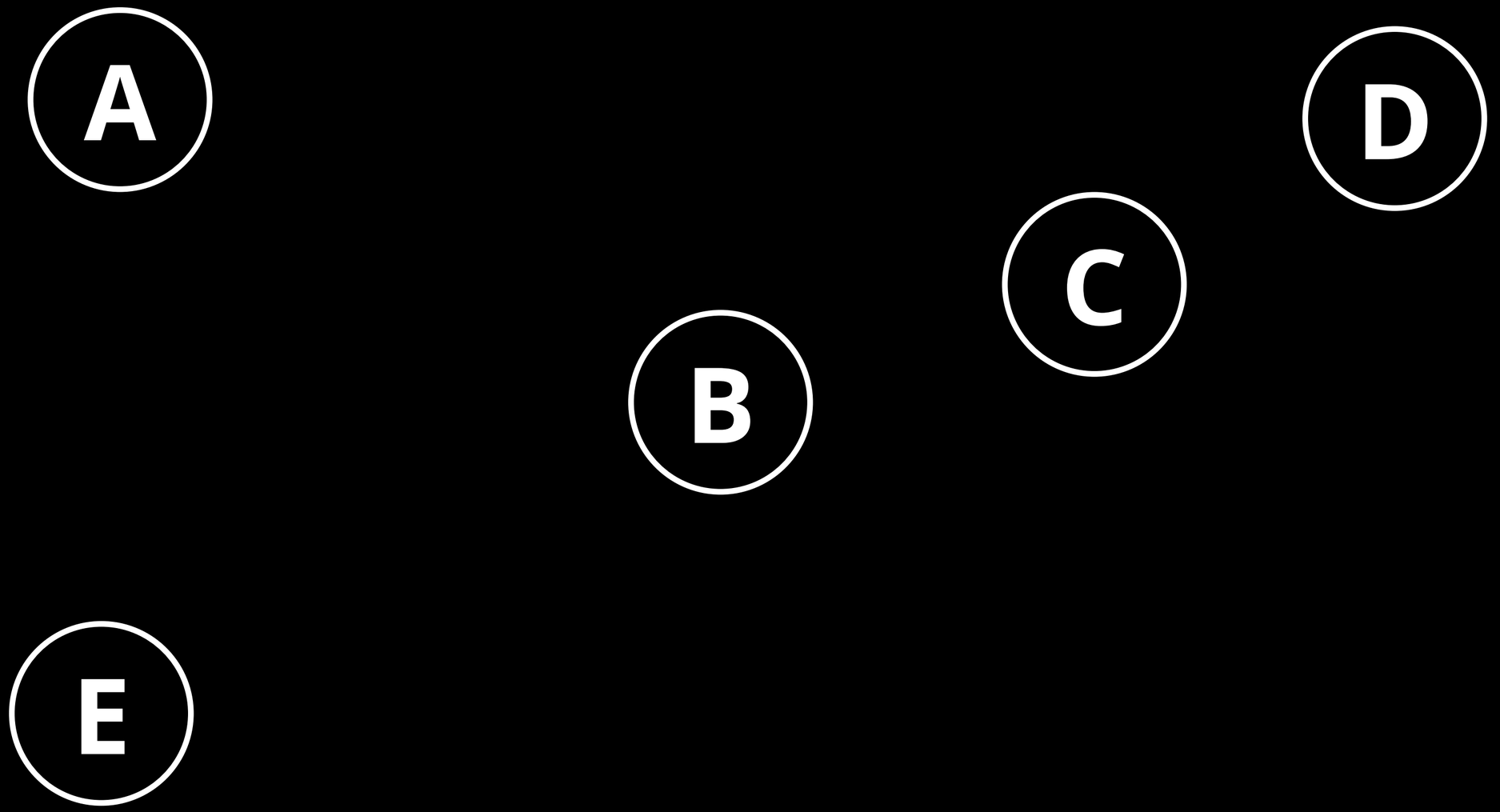
Once we AddNode(C):



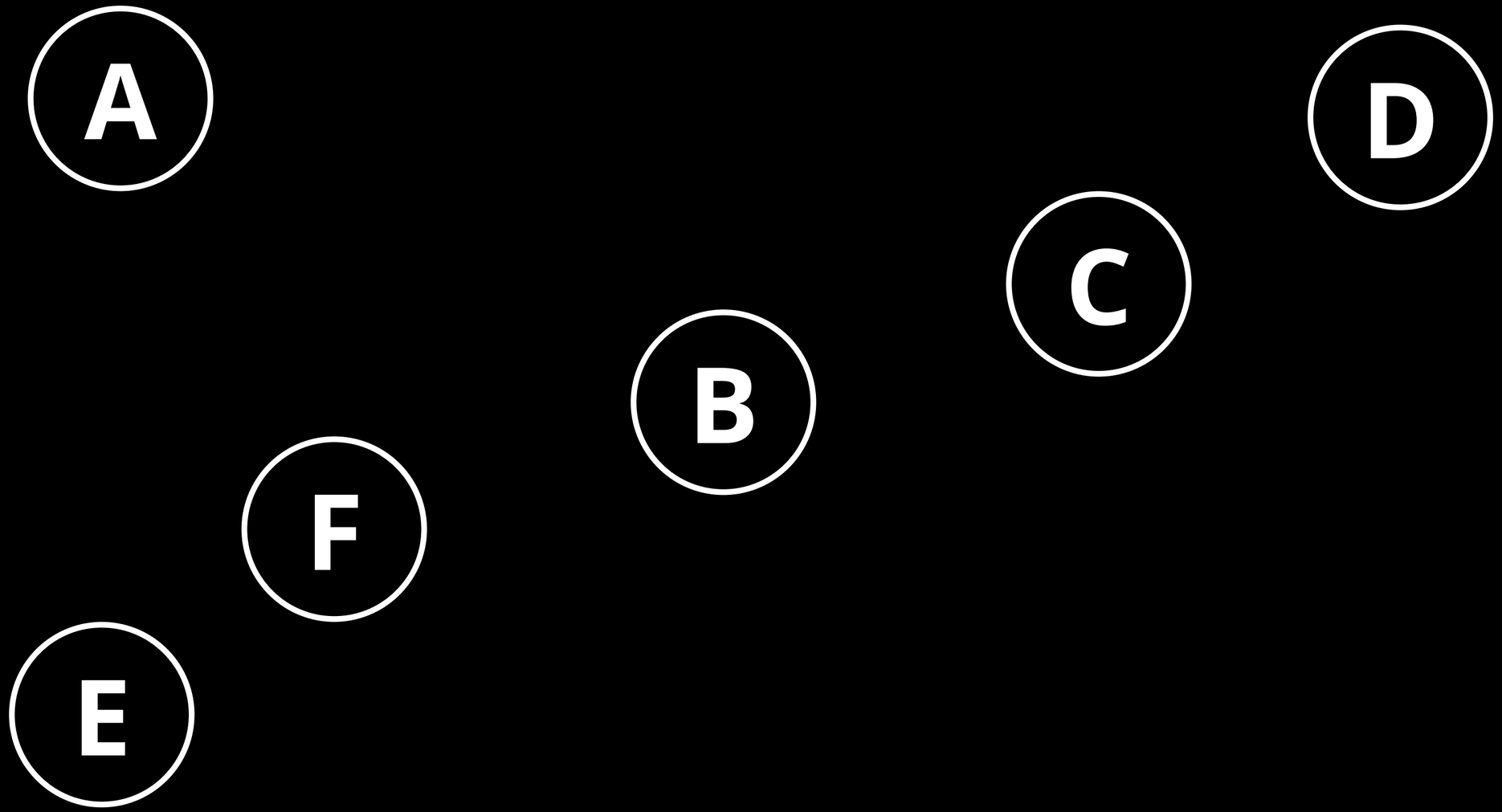
Once we AddNode(D):



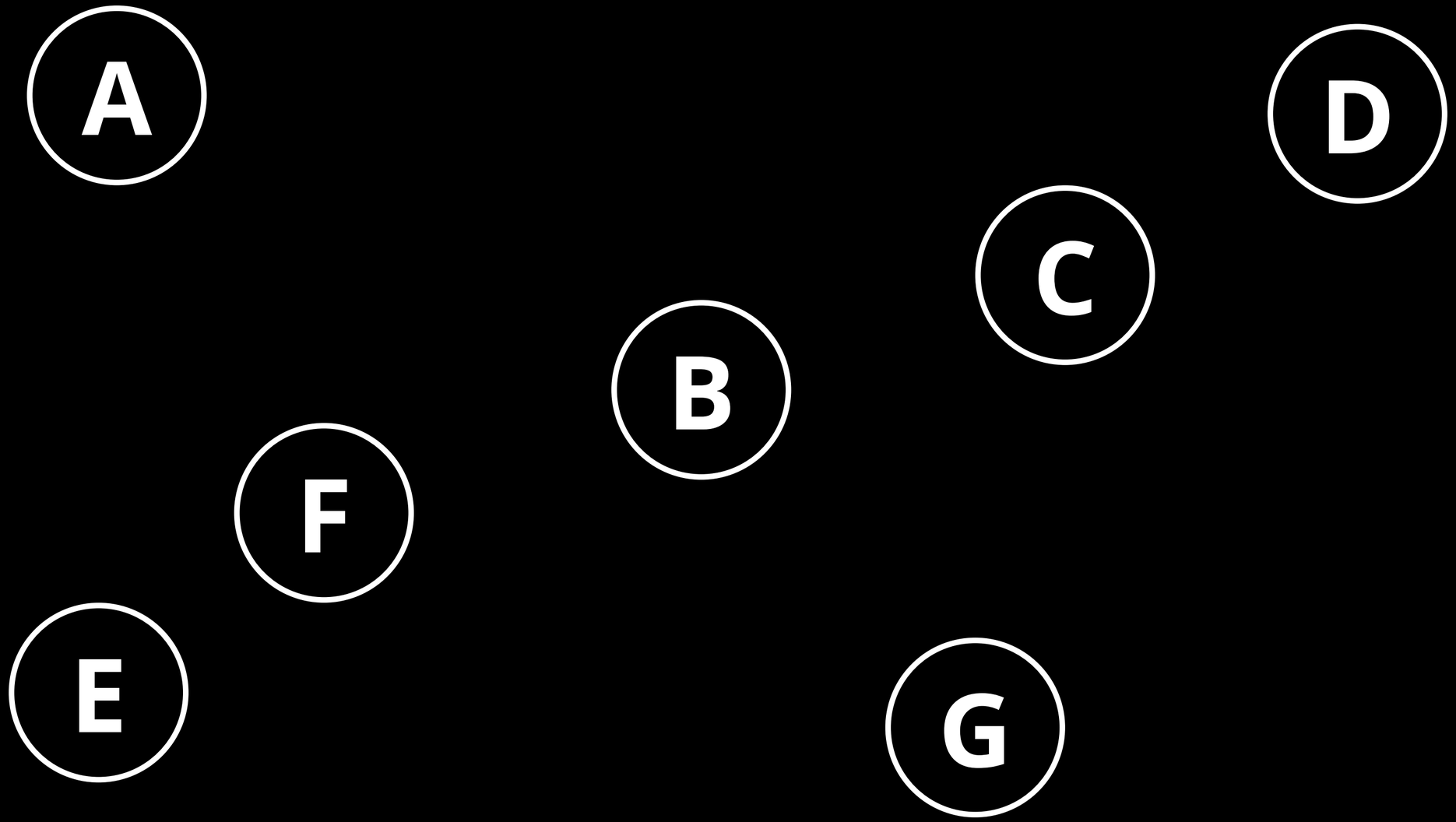
Once we AddNode(E):



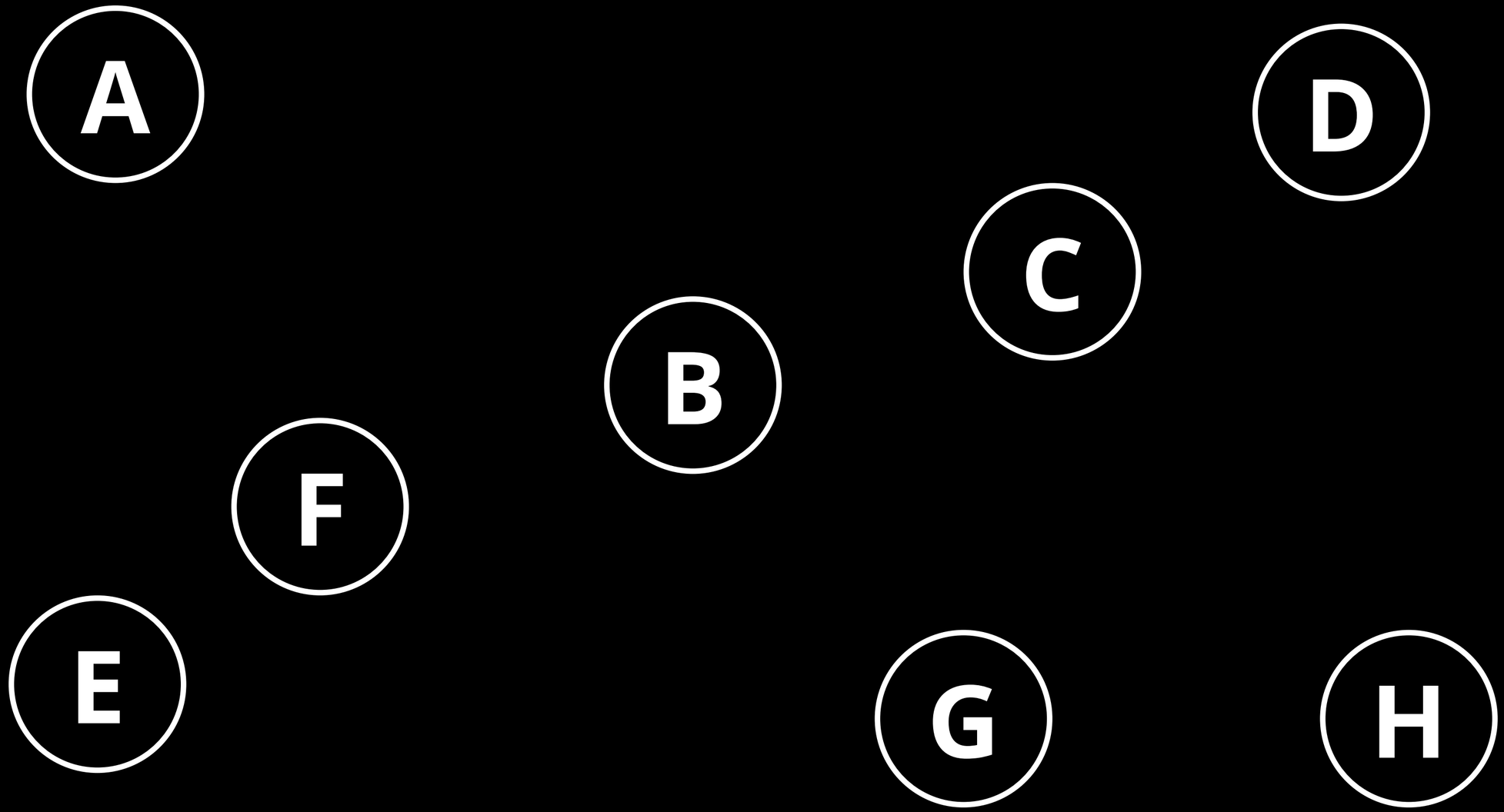
Once we AddNode(F):



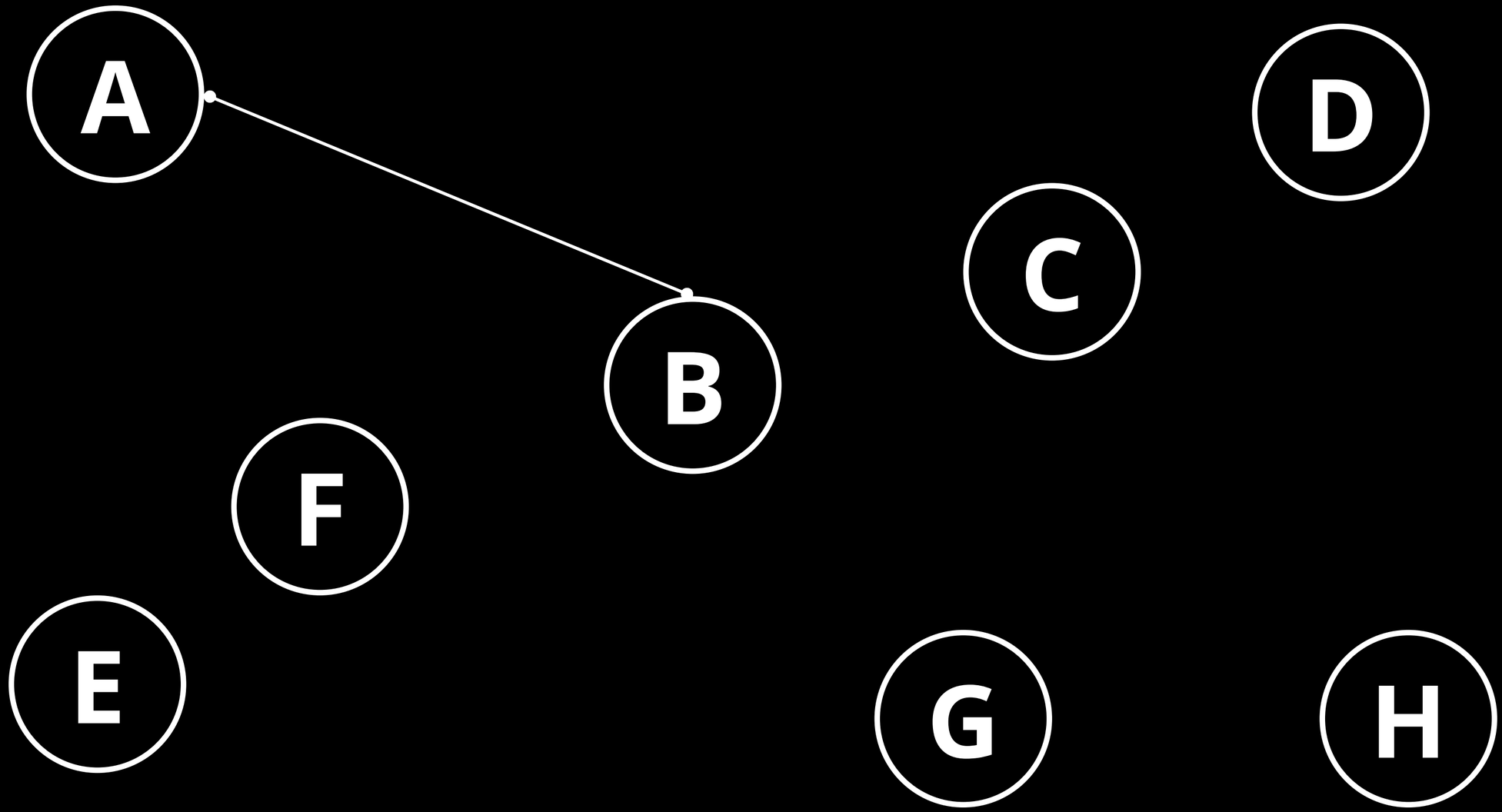
Once we AddNode(G):



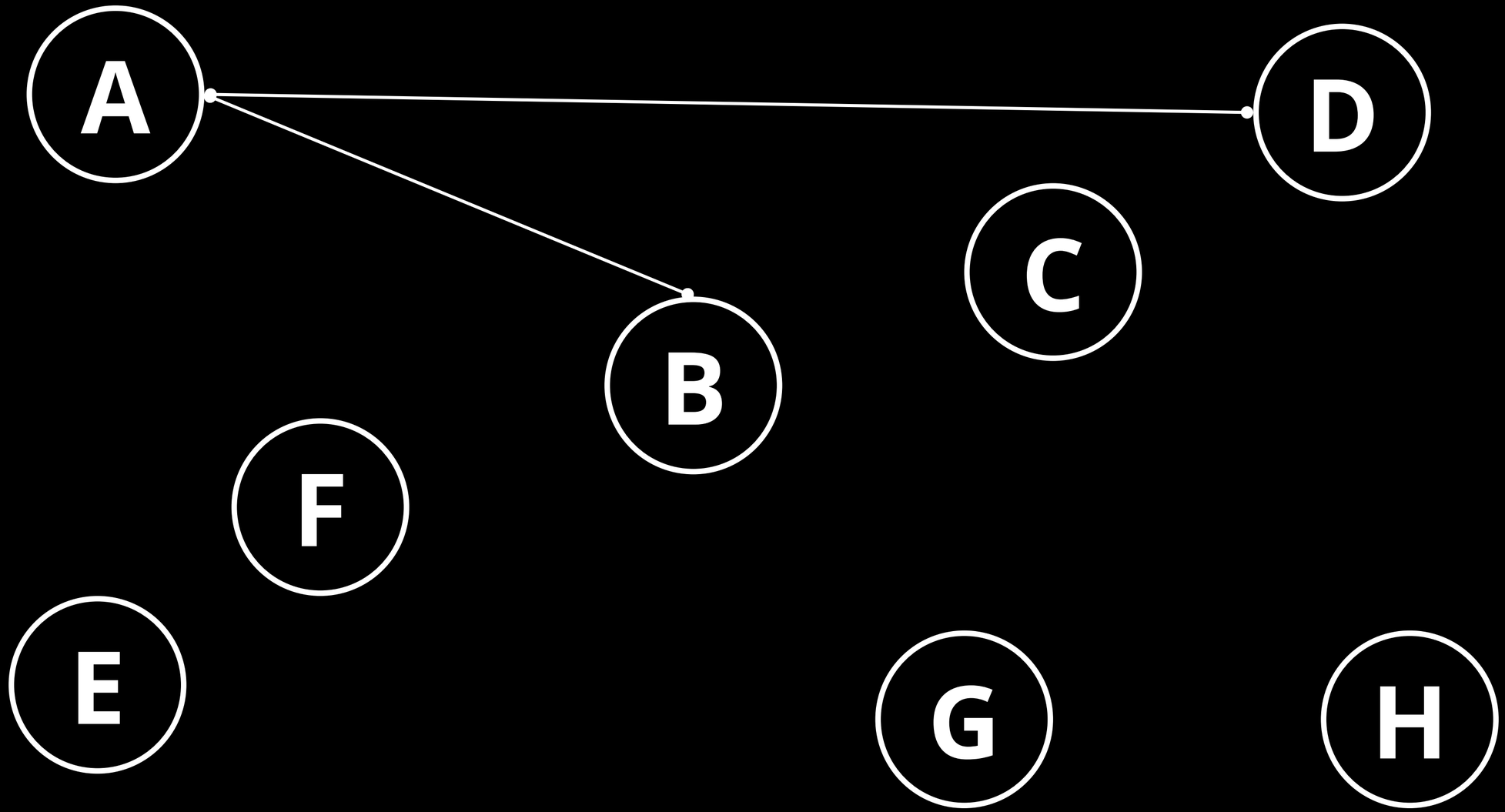
Once we AddNode(H):



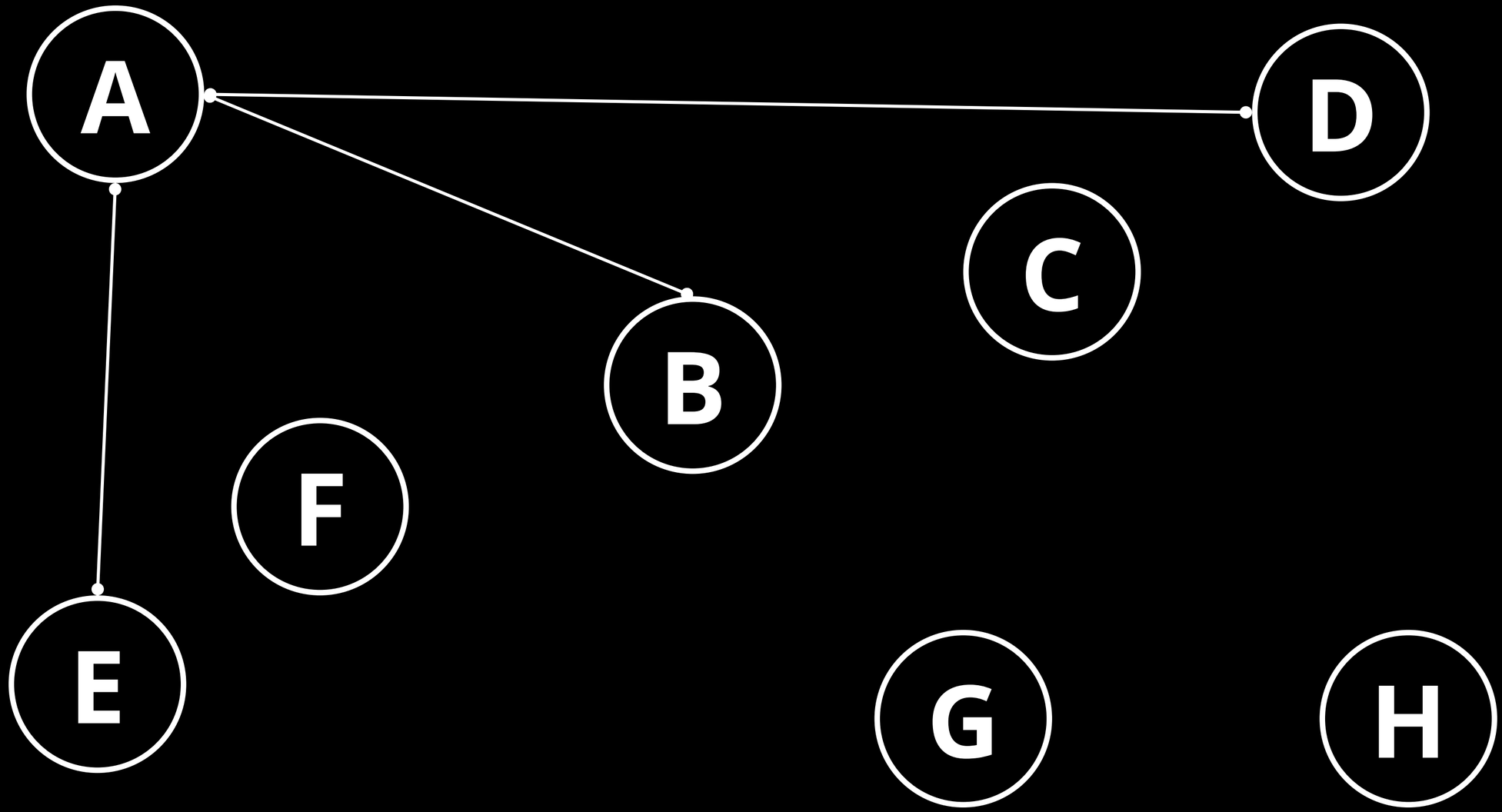
Once we ConnectNodes(A,B):



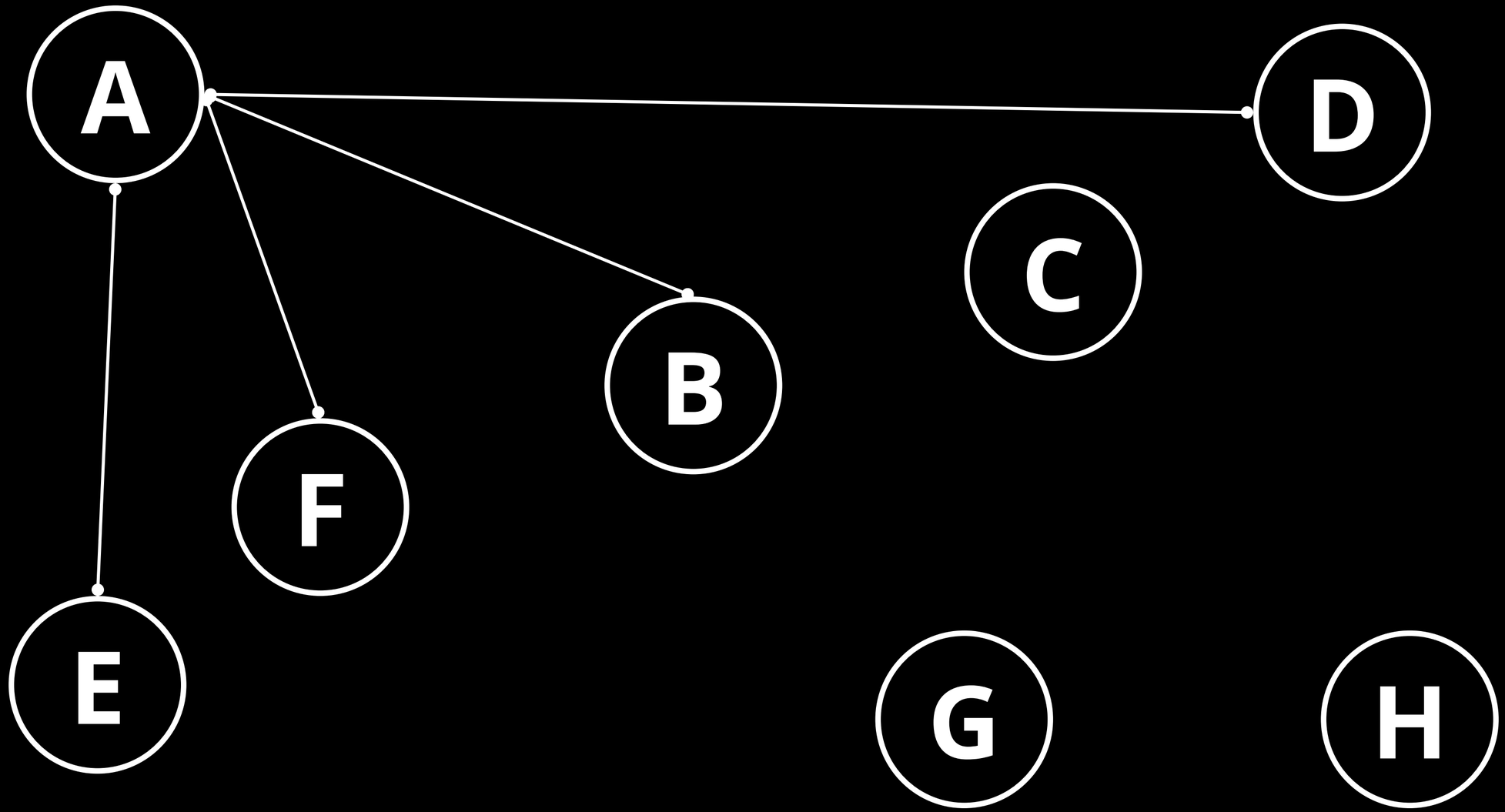
Once we ConnectNodes(A,D):



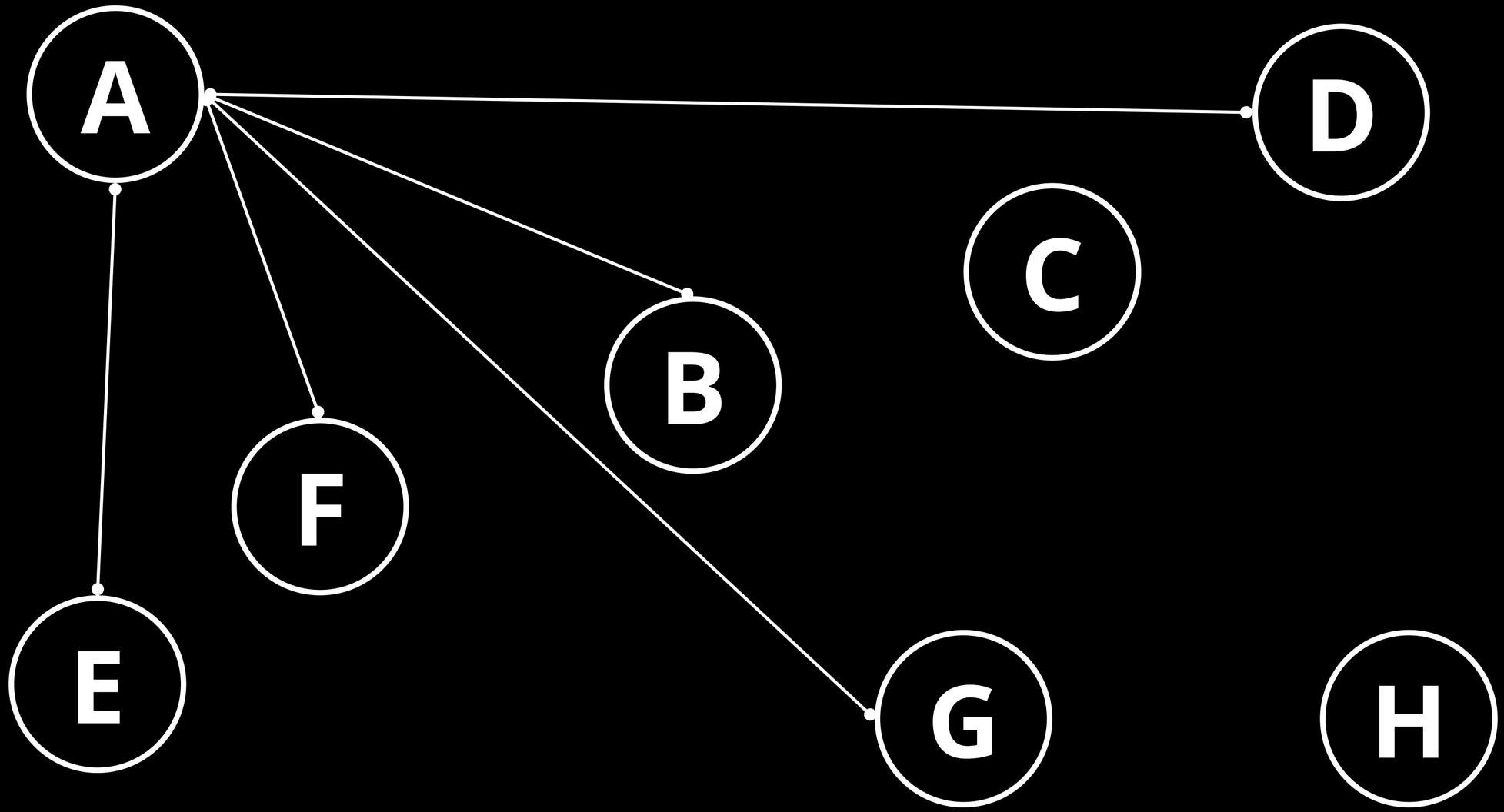
Once we ConnectNodes(A,E):



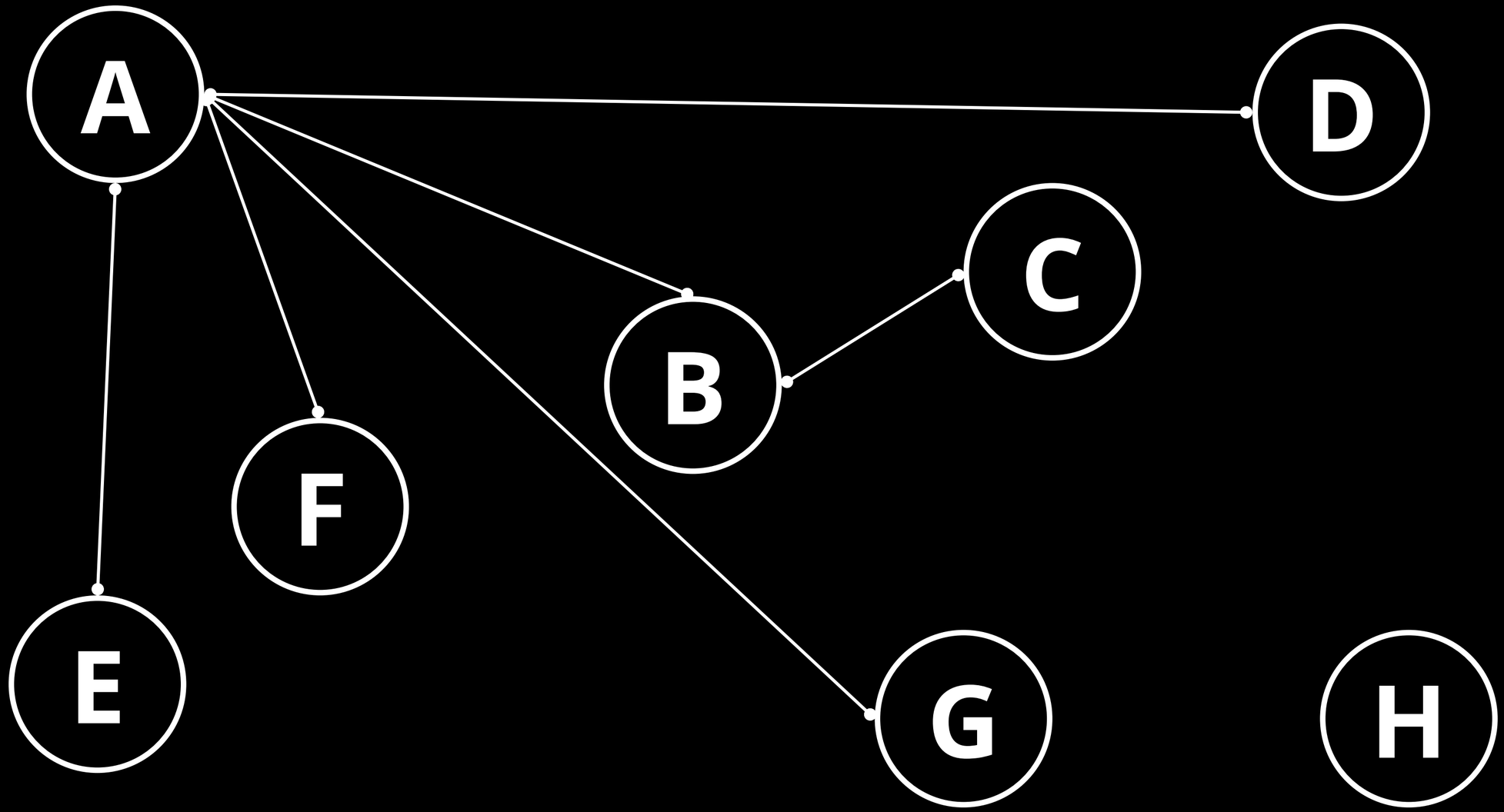
Once we ConnectNodes(A,F):



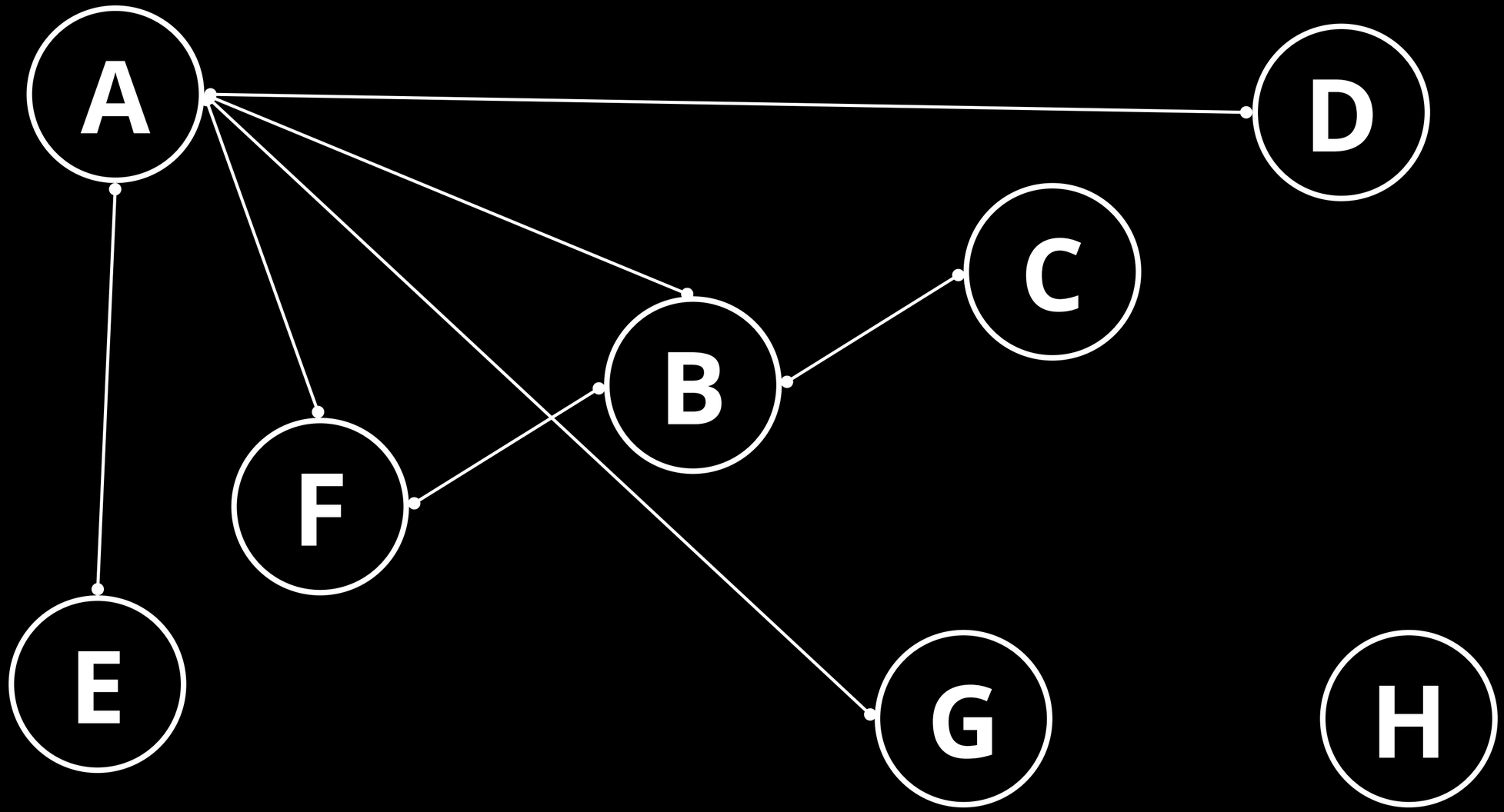
Once we ConnectNodes(A,G):



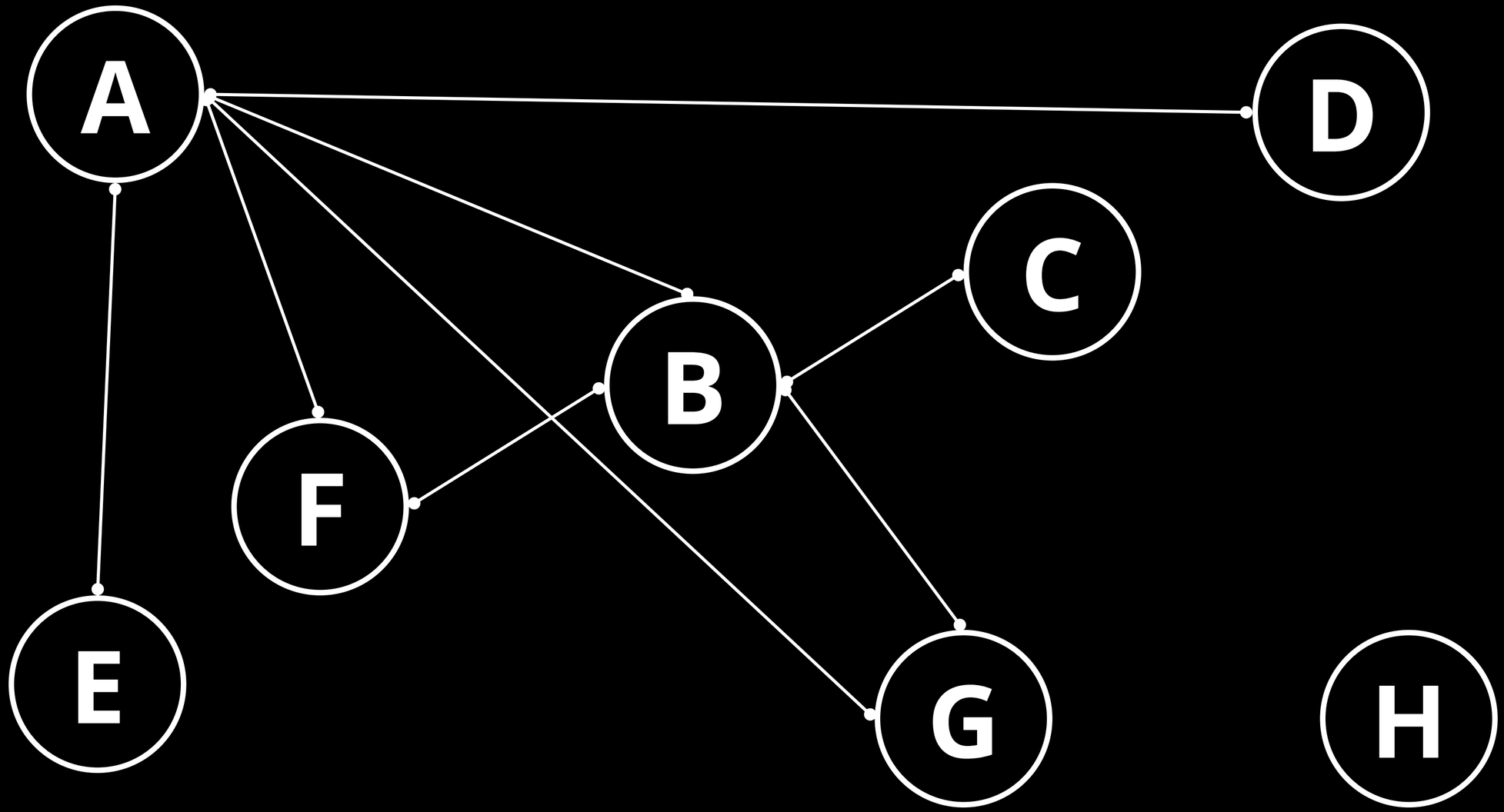
Once we ConnectNodes(B,C):



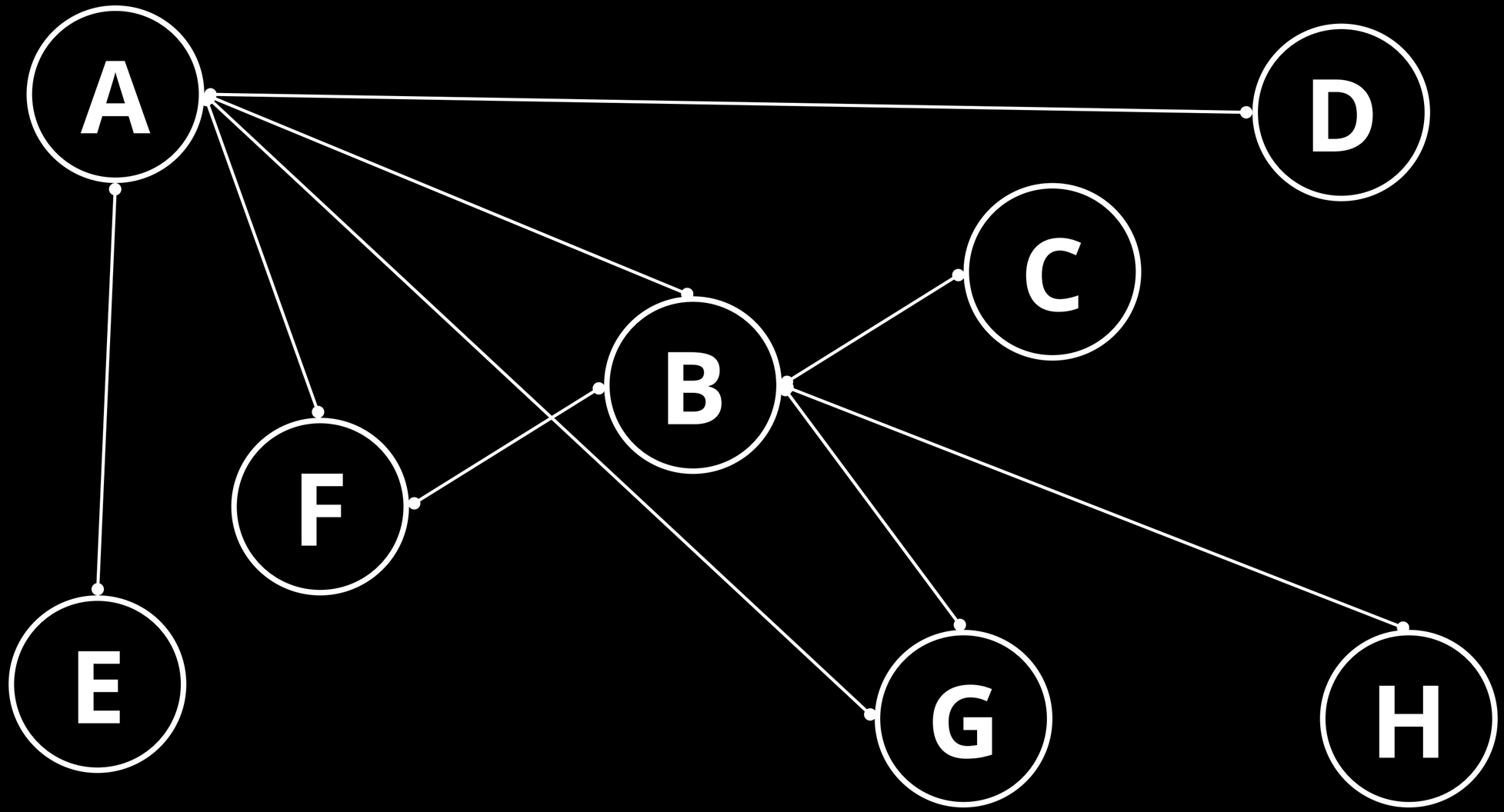
Once we ConnectNodes(B,F):



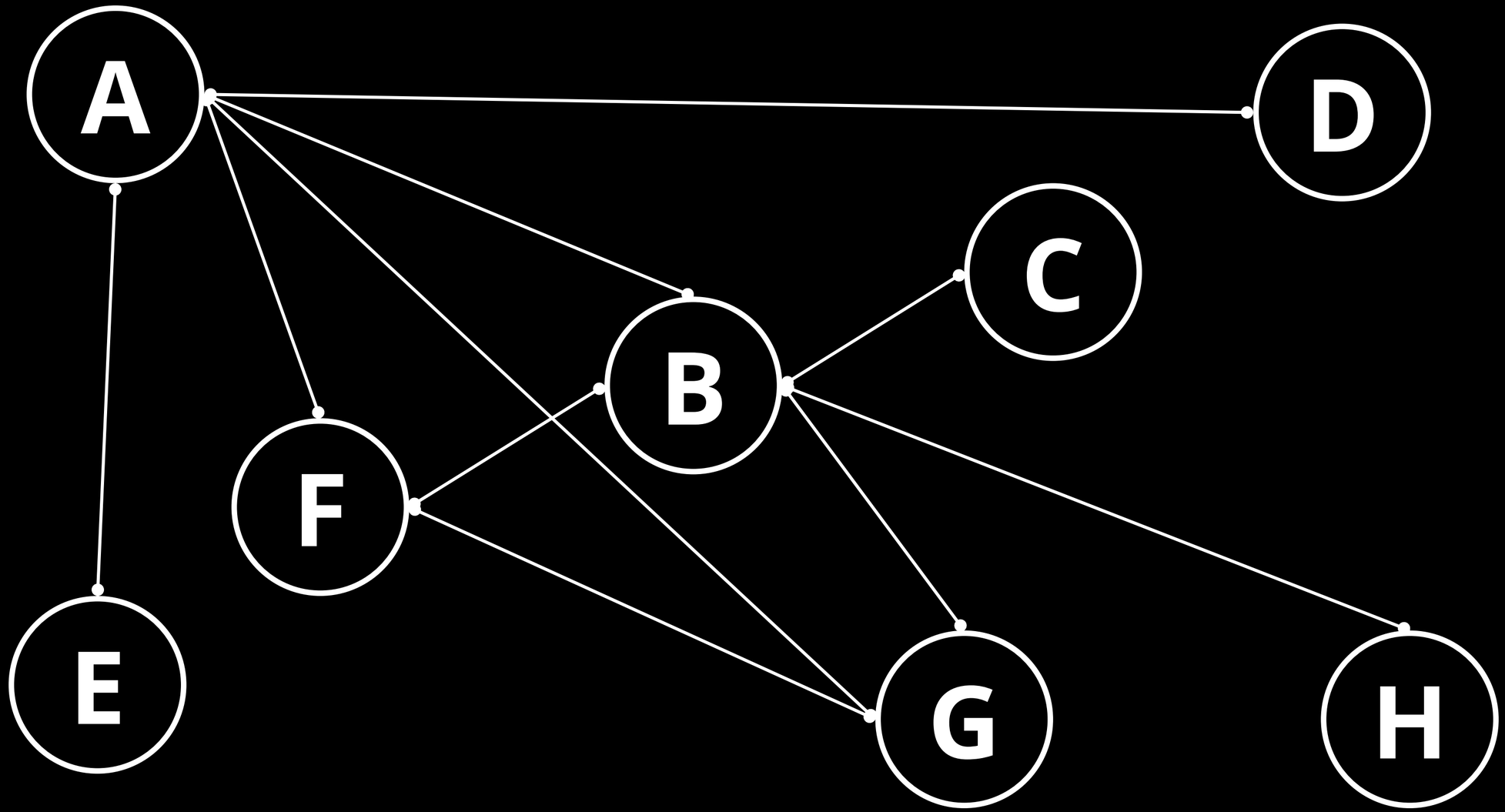
Once we ConnectNodes(B,G):



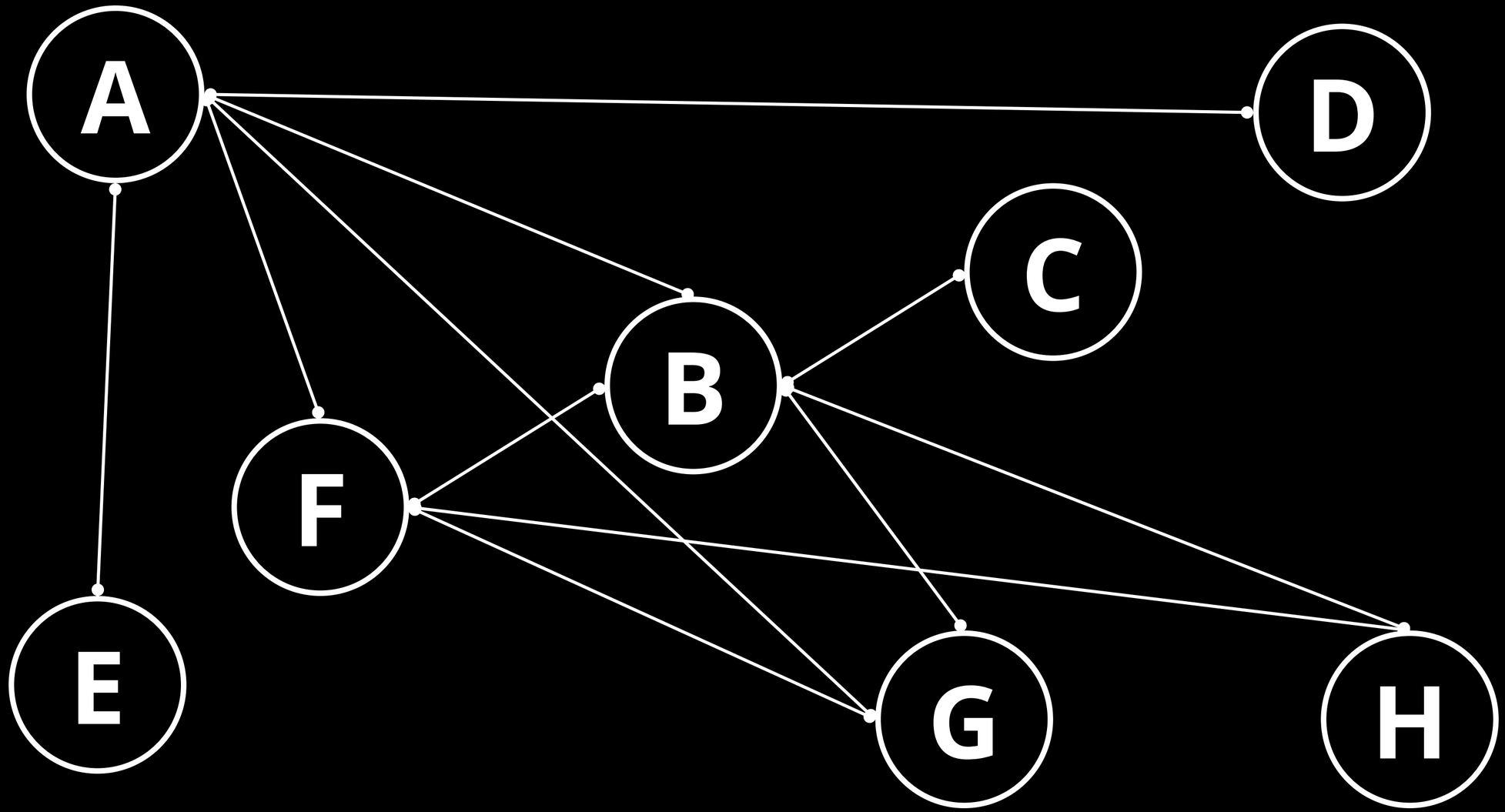
Once we ConnectNodes(B,H):



Once we ConnectNodes(F,G):



Once we ConnectNodes(F,H):



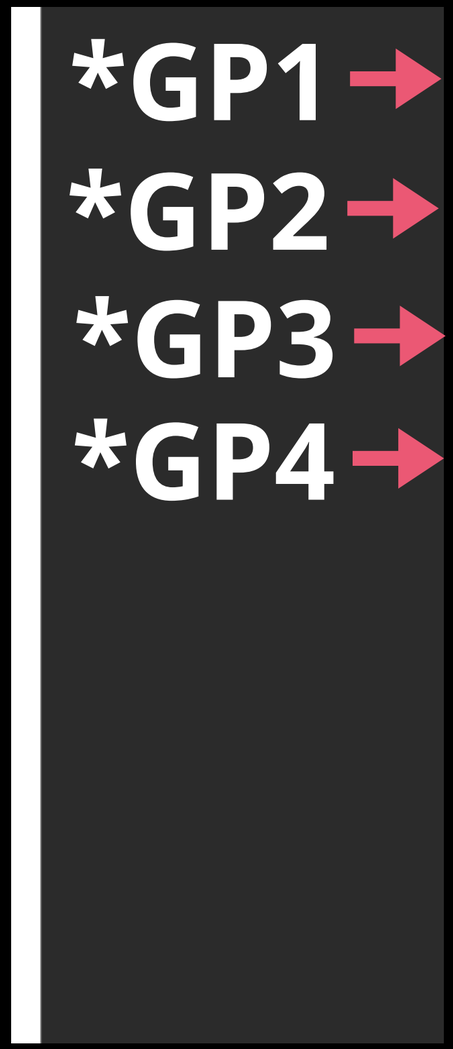
This behavior will be reflected in a similar fashion in our linked lists

Once we AddNode(A):

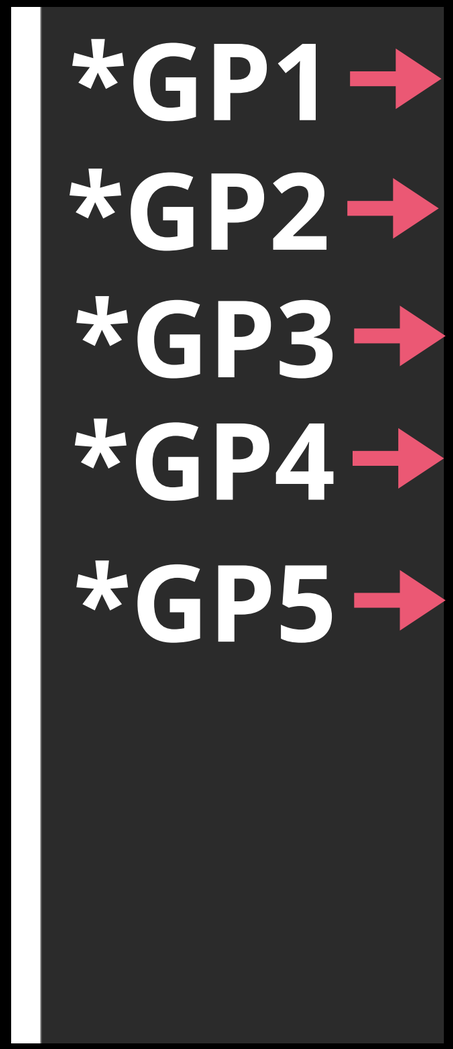
Once we AddNode(B):

Once we AddNode(C):

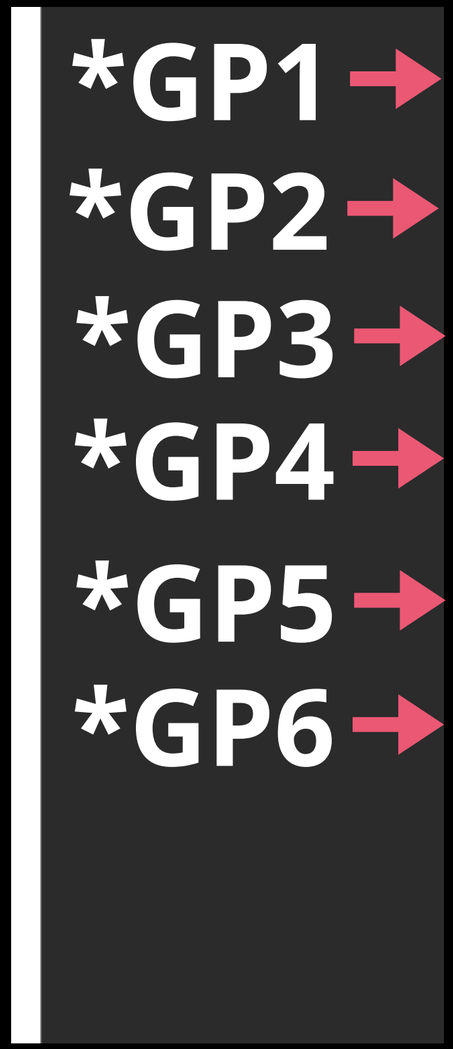
Once we AddNode(D):



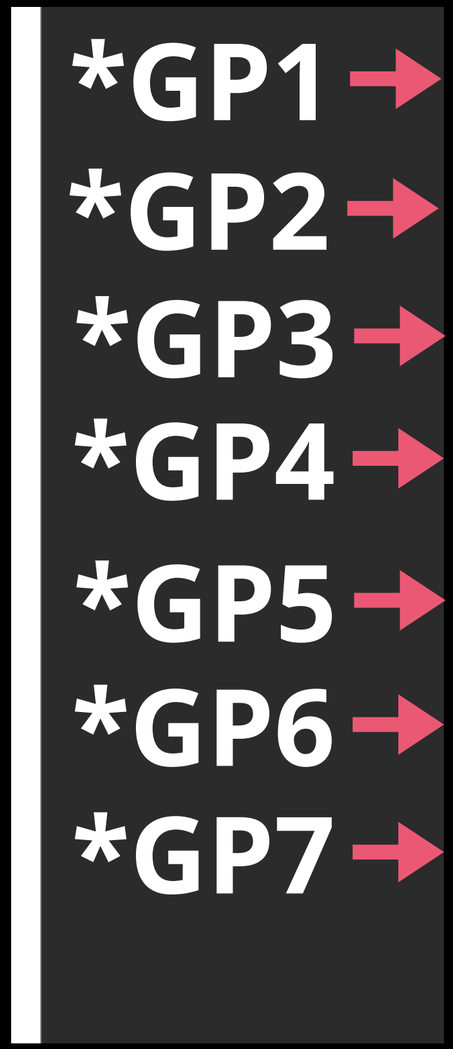
Once we AddNode(E):



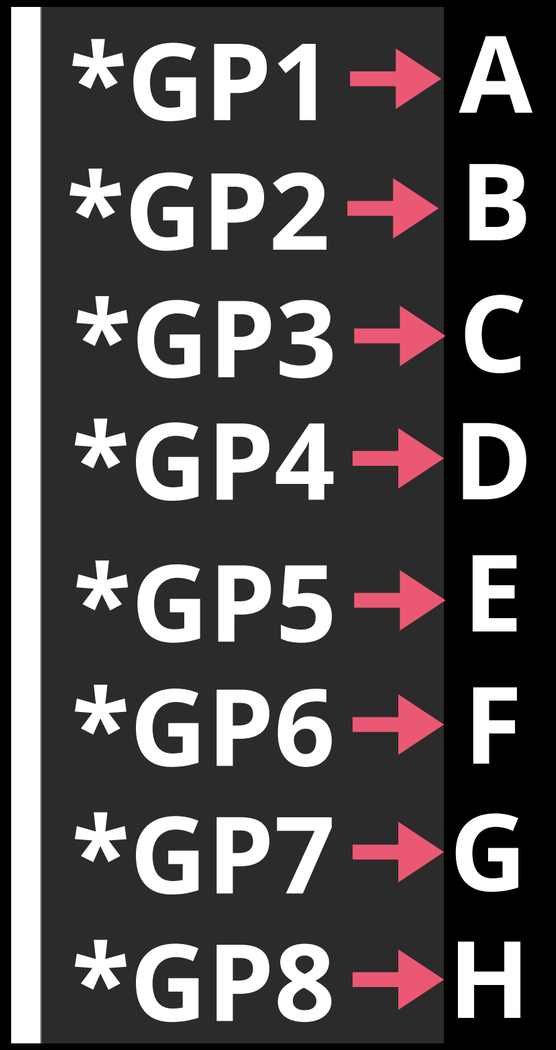
Once we AddNode(F):



Once we AddNode(G):

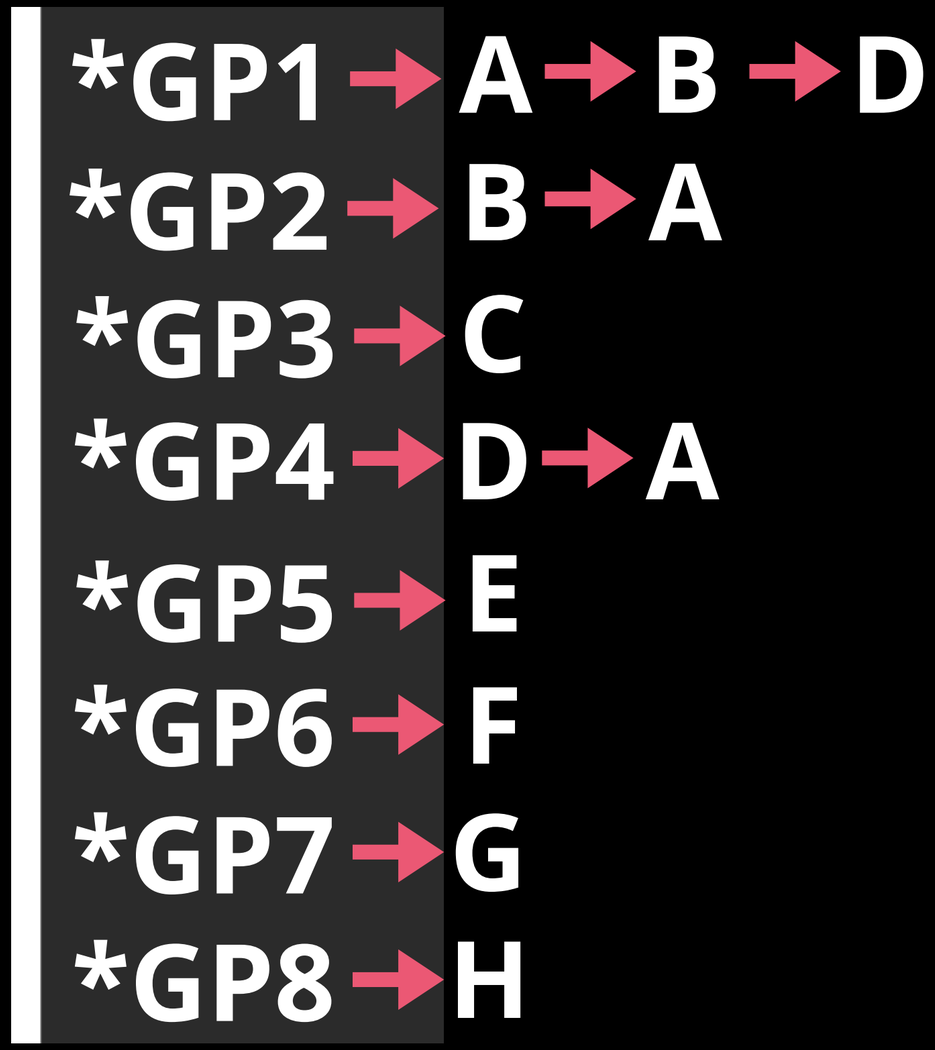


Once we AddNode(H):

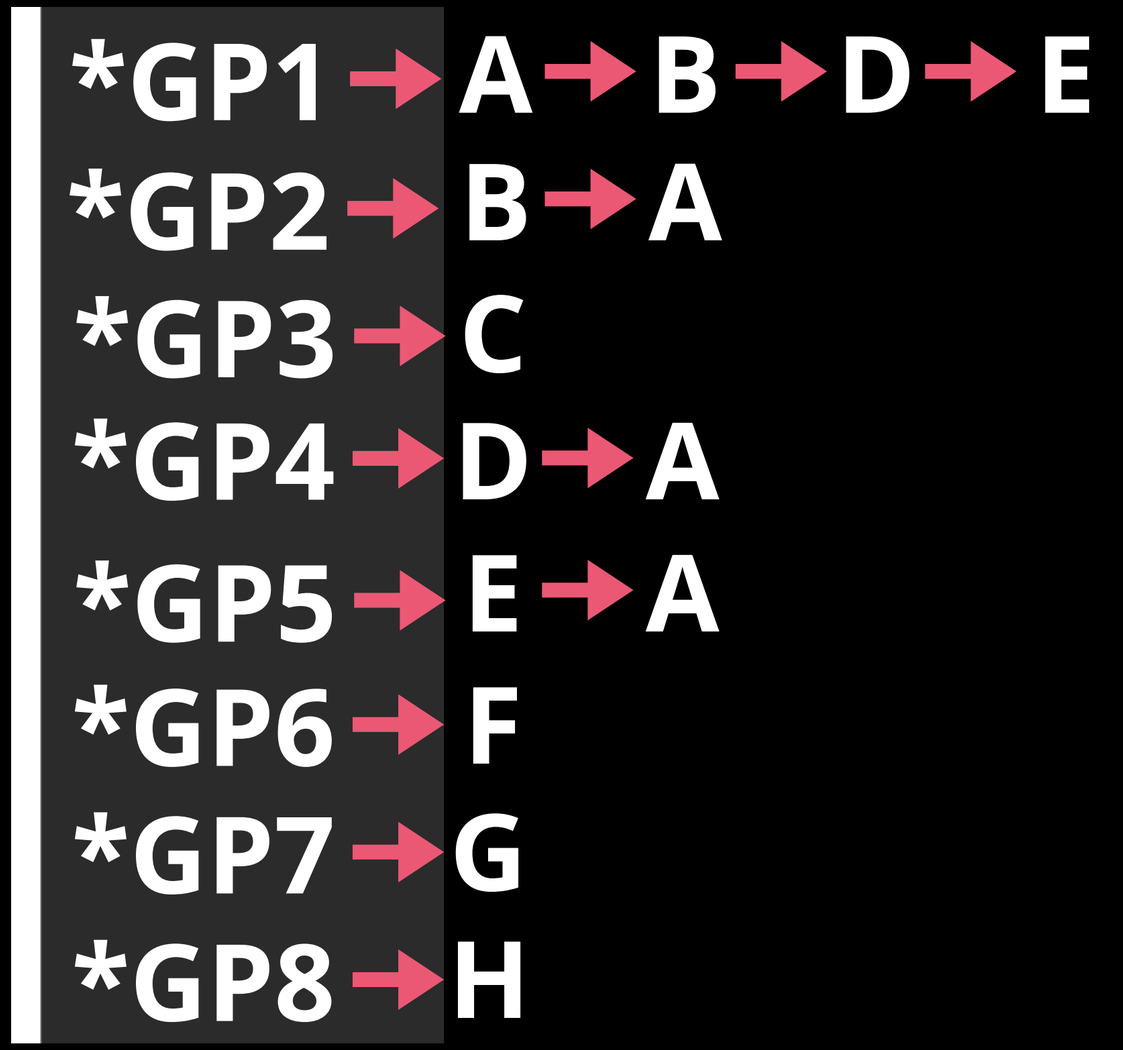


Once we ConnectNodes(A, B):

Once we ConnectNodes(A, D):



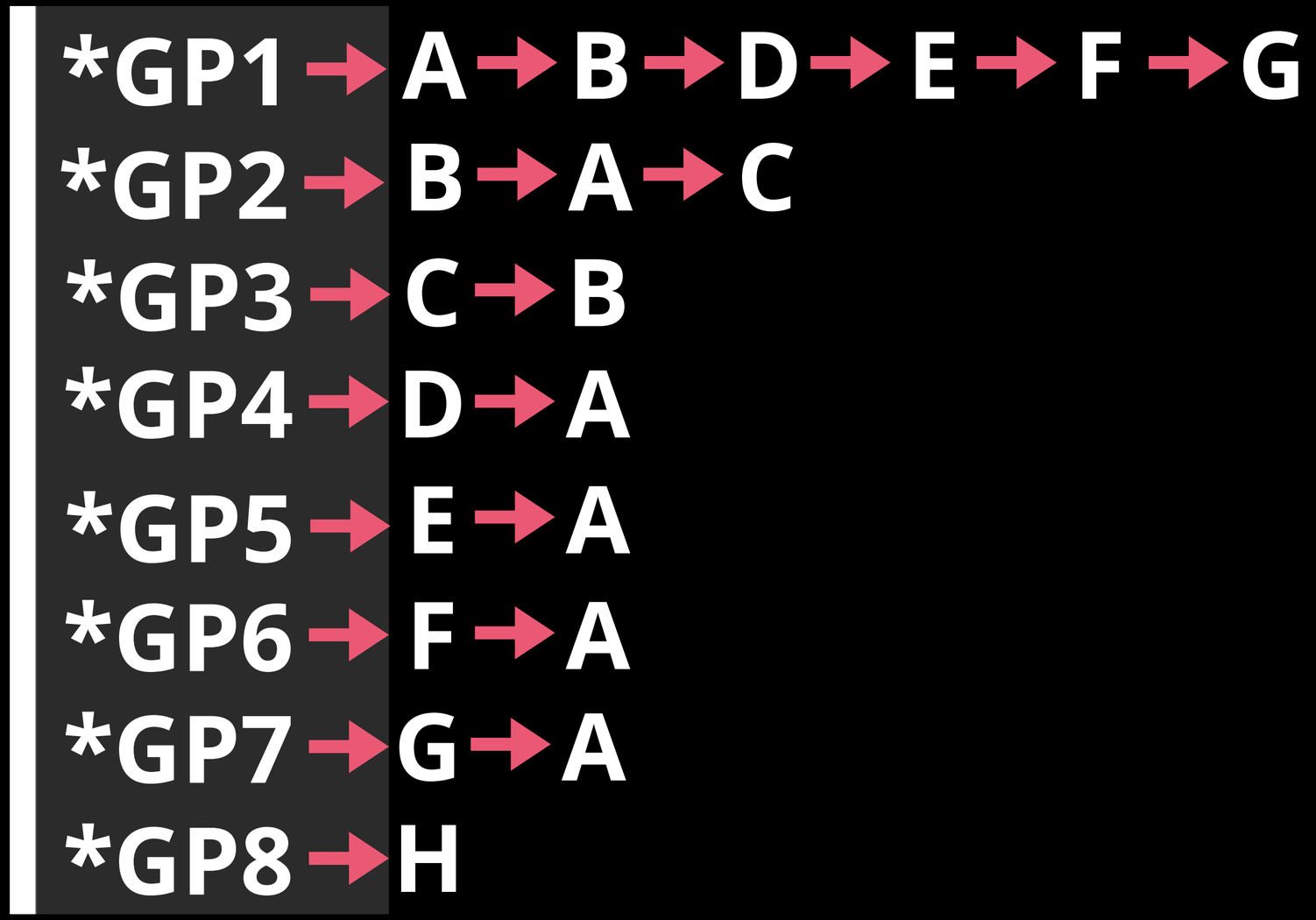
Once we ConnectNodes(A, E):



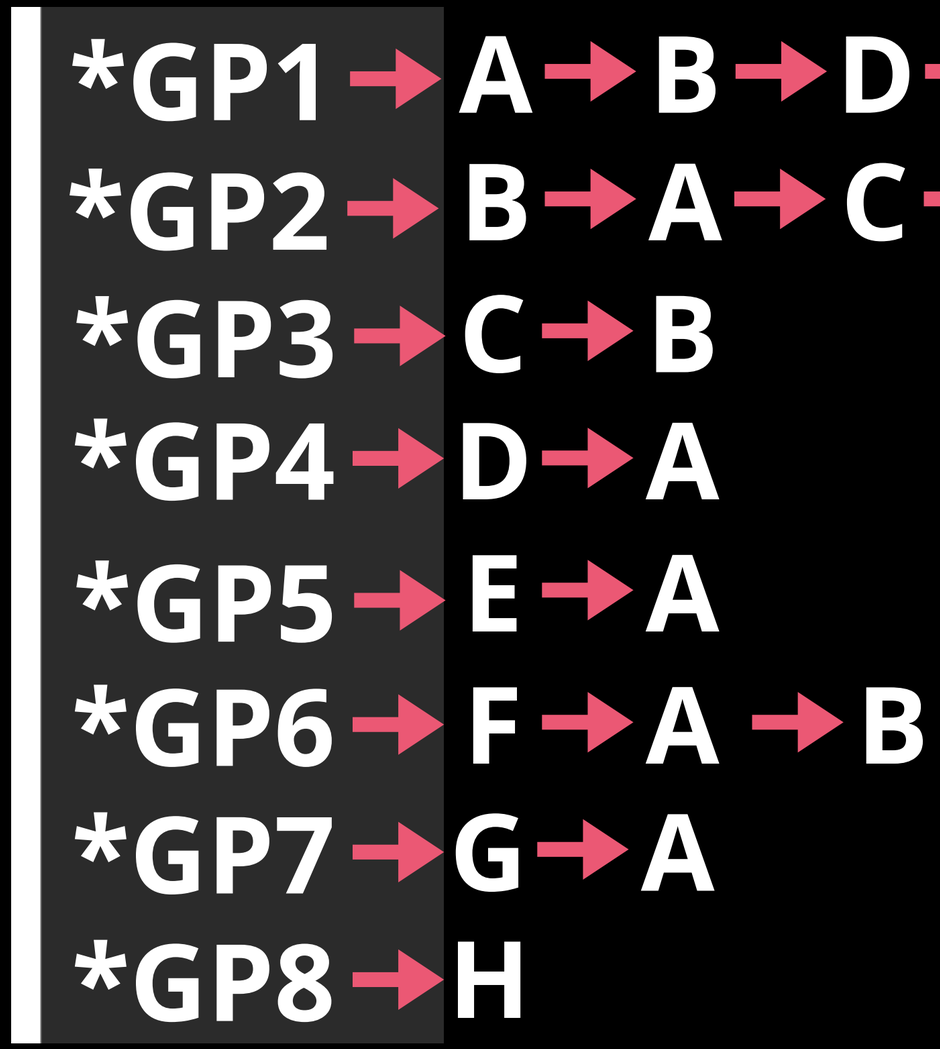
Once we ConnectNodes(A, F):

Once we ConnectNodes(A, G):

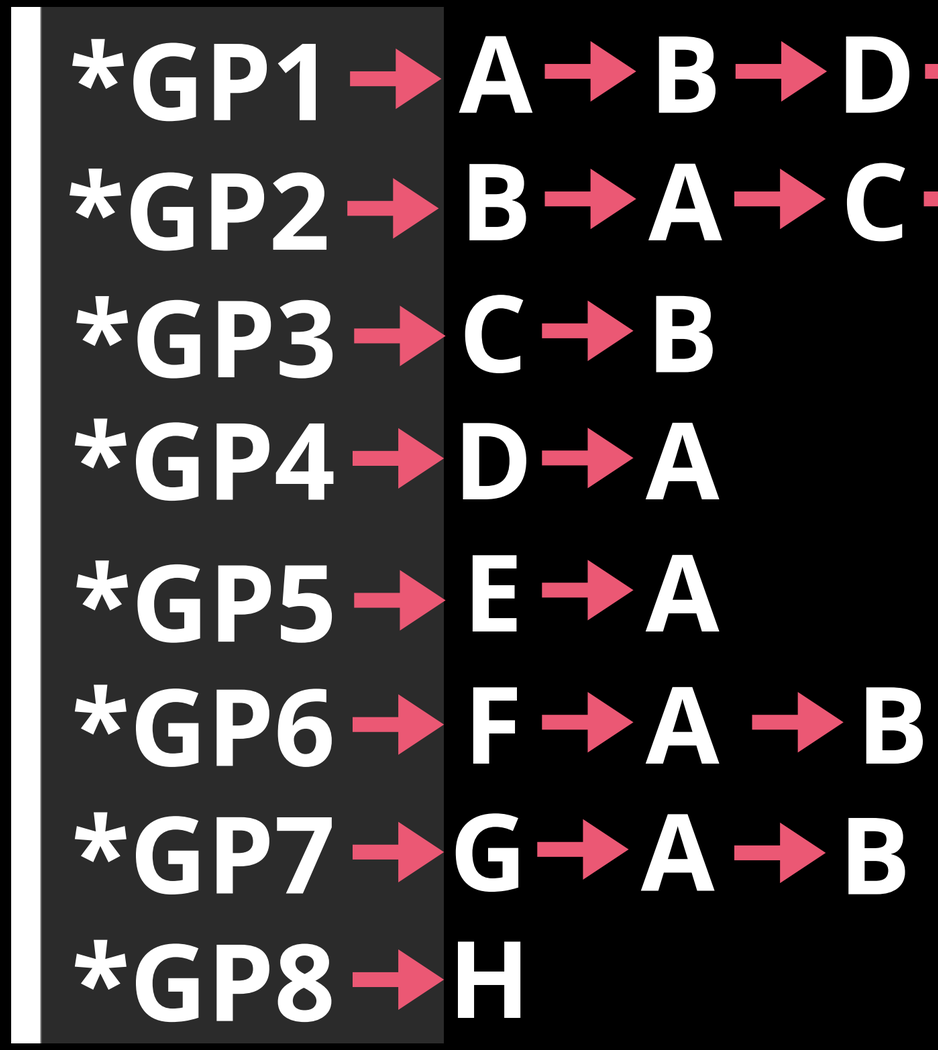
Once we ConnectNodes(B, C):



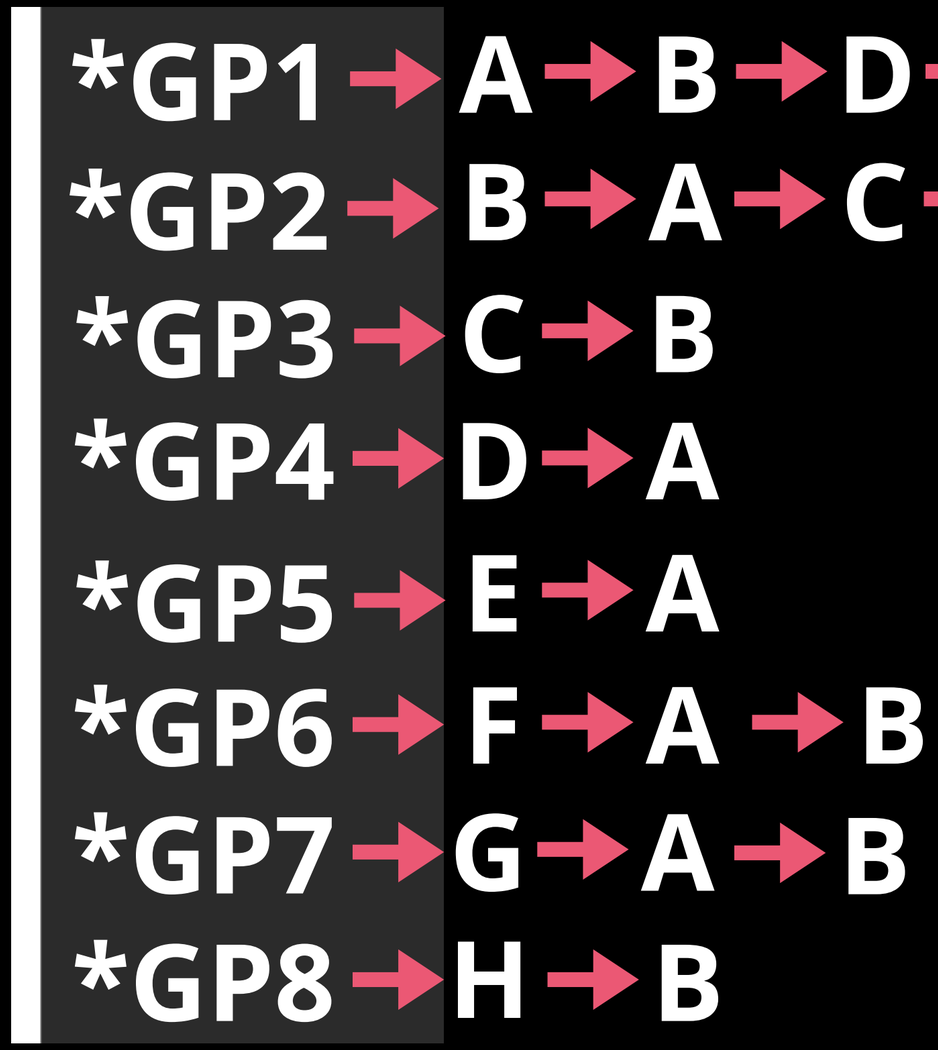
Once we ConnectNodes(B, F):



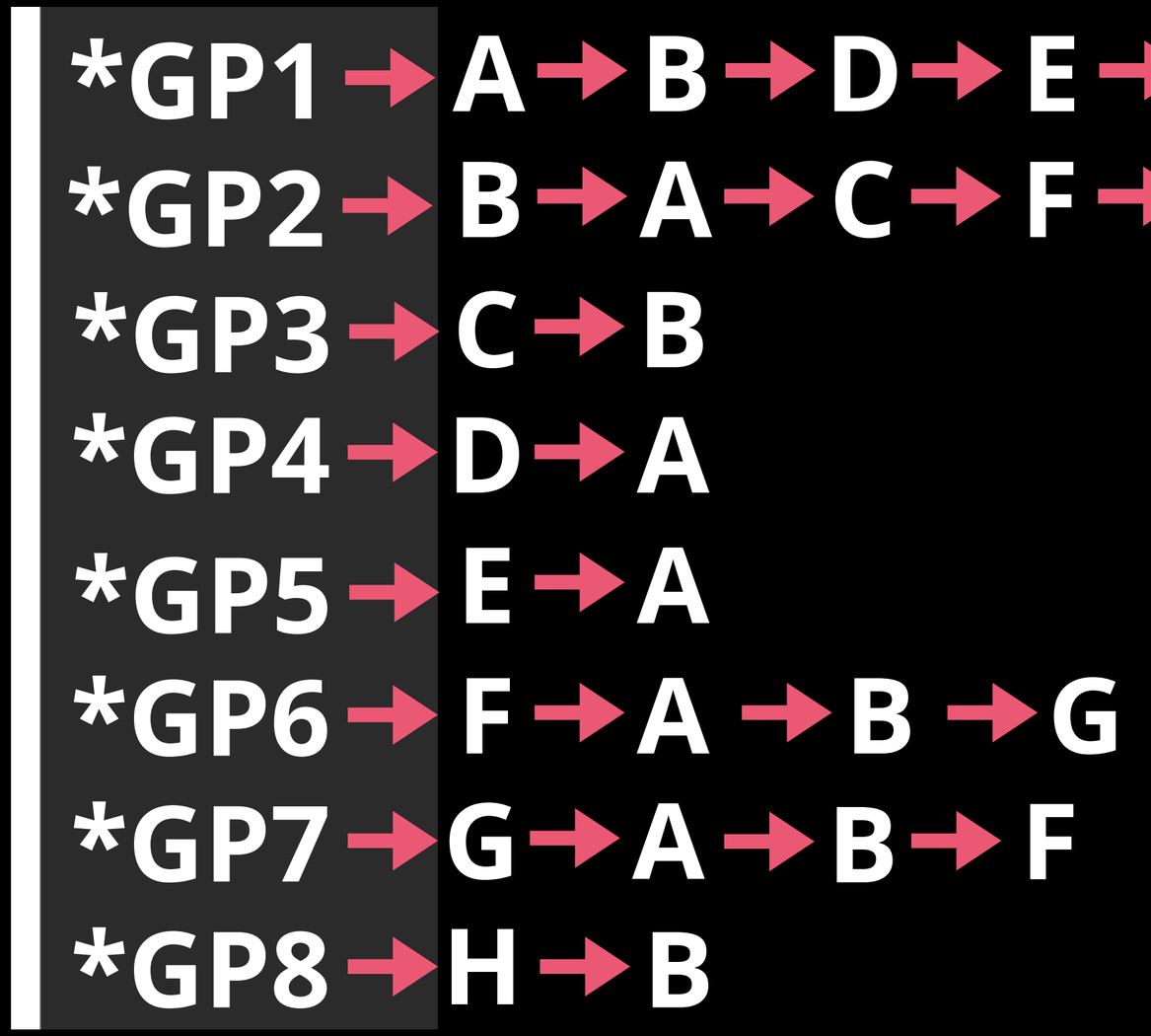
Once we ConnectNodes(B, G):



Once we ConnectNodes(B, H):



Once we ConnectNodes(F, G):



Once we ConnectNodes(F, H):

This is the final Graph Representation