A. Write a pseudocode for a graph search agent. Represent the agent in the form of a flow chart. Clearly mention all the implementation details with reasons.

Considering a Simple Search Agent which consists of two types of nodes primarily:

1) *Current/Open Node List:* This will contain the current node, parent node and successor node information.

2) *Explored/Closed Node List:* This will contain the alreadyexplored nodes.

It is important to keep the parent node information in case ofsequence or planning problems, because in order to backtrack the path, we need parent information.

The simple search algorithm will keep a track of the pathto a new state. After taking nodes from Current list, it also checks the current state and tests it with the goal state and generates its successor.

The algorithm will finish when the Goal state node is pickedand return the reverse of path found. Current list contains pathsand explored list contains states.

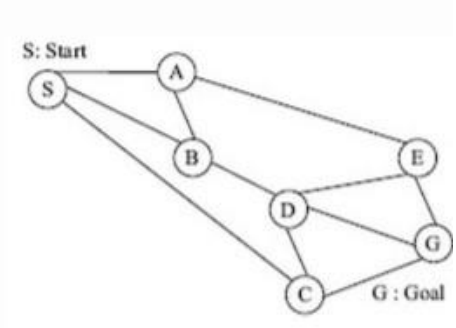

Diagram 2.10 of the reference book. This is an unweighted graph with S as the starting node and G as the goal state.

Algorithm 1 Simple Search Agent

```
1: Current ← {start}
2: Explored ← {}
3: loop:
4: while Current is not empty do
5:     Pick some node N from Current
6:     h ← head(N).
7:     if Goalstate(H) then return reverse(N)
8:     else
9:         Explored ← Explored ∪ {h}
10:        Successors ← {NextNodes(h)\h}
11:        Successors ← {Successors\ Map(Current)}
12:        Current ← Current ∪ {N}
13: return Path not found
```

Using the pseudo code above Let us consider current andexplored lists

Current	Explored
(S)	()
(AS),(BS),(CS)	(S)
(BS),(CS),(EAS)	(AS)
(CS),(DBS),(EAS)	(BAS)
(CS), (GDBS),(EAS)	(DBAS)

Since G is the goal state, the algorithm terminates at GDBS,reversing this path SBDG will give the path from start to goal nodes.