13 - Nguyễn Việt Hoàng - B22DCVT218

Date No

Bài 2 đề 1:

a) void DFS(int u) {
    stack<int> S;
    S.push(u);
    bool used[n] = {false};
    used[u] = true;
    while(!S.empty()){
        int temp = S.top();
        cout << temp << " ";
        S.pop();
        for(int i=n; i>=1; i--){
            if(a[temp][i]==1 && !used[i]){
                S.push(i);
                used[i] = true;
            }
        }
    }
    cout << endl;
}

b)

u ∈ V	DFS(u)	DFS(u)
1	DFS(1) = 1,2,3,4,6,7,8,9,10,5	Yes
2	DFS(2) = 2,3,4,6,1,5,7,8,9,10	Yes
3	DFS(3) = 3,4,2,5,6,1,7,8,9,10	Yes
4	DFS(4) = 4,2,3,6,1,5,7,8,9,10	Yes
5	DFS(5) = 5,4,2,3,6,1,8,9,10,7	Yes
6	DFS(6) = 6,1,2,3,4,9,10,8,5,7	Yes
7	DFS(7) = 7,8,9,1,2,3,4,6,5,10	Yes
8	DFS(8) = 8,9,1,2,3,4,6,7,5,10	Yes
9	DFS(9) = 9,1,2,3,4,6,7,8,10,5	Yes
10	DFS(10) = 10,2,3,4,6,1,5,7,8,9	Yes

=> Đồ thị liên thông mạnh

13 - Nguyễn Việt Hoàng - B22DCVT214

Date No

Bài 2 đề 2

a)
```
void BFS(int u){
    queue<int> q;
    q.push(u);
    bool used[n] = {false};
    used[n] = true;
    while(!q.empty()){
        int temp = q.front();
        cout << temp << " ";
        q.pop()
        for(int i = 1; i <= n; i++){
            if(a[temp][i] && !used[i]){
                q.push(i);
                used[i] = true;
            }
        }
    }
    cout << endl;
}
```

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Date No

b) e ∈ E	BFS(u)	BFS(u)
(1,2)	BFS(1) = 1,6,10,4,5,7,9,3,8,2	N_0
(1,6)	BFS(1) = 1,2,10,3,8,9,4,6,7,5	N_0
(1,10)	BFS(1) = 1,2,6,3,8,4,5,7,9,10	N_0
(2,3)	BFS(1) = 1,2,6,10,8,4,5,7,9,3	N_0
(2,8)	BFS(1) = 1,2,6,10,3,4,5,7,9,8	N_0
(3,4)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(3,7)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(3,8)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(3,9)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(4,5)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(4,6)	BFS(1) = 1,2,6,10,3,8,5,7,9,4	N_0
(5,6)	BFS(1) = 1,2,6,10,3,8,4,7,9,5	N_0
(5,7)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(5,8)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(6,7)	BFS(1) = 1,2,6,10,3,8,4,5,9,7	N_0
(7,8)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(8,9)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0
(9,10)	BFS(1) = 1,2,6,10,3,8,4,5,7,9	N_0

=> Đồ thị không có cạnh cầu

Date No

Bài 2 đề 3

a)
```
void DFS(int u){
    Stack<int> s;
    s.push(u);
    bool used[n] = {false};
    used[u] = true;
    while(!s.empty()){
        int temp = s.top();
        cout << temp << " ";
        s.pop();
        for(int i=n; i>=1; i--){
            if(a[temp][i] == 1 && !used[i]){
                s.push(i);
                used[i] = true;
            }
        }
    }
    cout << endl;
}
```

b)

#	State of the stack
1	1
2	1, 2
3	1, 2, 3
4	1, 2, 3, 4
5	1, 2, 3, 4, 6
6	1, 2, 3, 4, 6, 5

p[v]
p[1] = 0
p[2] = 1
p[3] = 2
p[4] = 3
p[6] = 4
p[5] = 6

=> Đường đi từ đỉnh 1 -> 5: 5 ← 6 ← 4 ← 3 ← 2 ← 1

NOTEBOOK

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Date No

Bài 2 đề 4

a)
```
void BFS(int u){
    queue<int> q;
    q.push(u);
    bool used[n] = {false};
    used[u] = true;
    while(!q.empty()){
        int temp = q.front();
        cout << temp << " ";
        q.pop();
        for(int i=1; i<=n; i++){
            if(a[temp][i] && !used[i]){
                q.push(i);
                used[i] = true;
            }
        }
    }
    cout << endl;
}
```

b)

#	State of the queue
1	3
2	2, 5, 9
3	5, 9, 10
4	9, 10, 4
5	10, 4, 1, 8

p[v]

p[3] = 0

p[2] = p[5] = p[9] = 3

p[10] = 2

p[4] = 5

p[1] = p[8] = 9

=> Đường đi từ đỉnh 3 -> 8: 8 <- 9 <- 3

NOTEBOOK