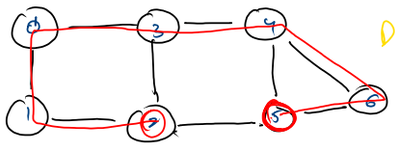
Hamiltonian path

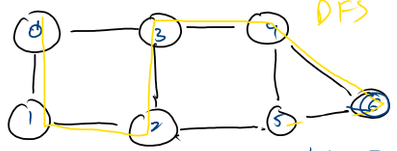
-> A path in the graph which visits each vertex exactly once



DFS

Hamiltonian Cycle : , end vtx is having the same vtx as one of its nbrs

① Push in PSF
② Mark in path
③ if(PSJ.sz = gv.sz){



DFS 0123456
0123465

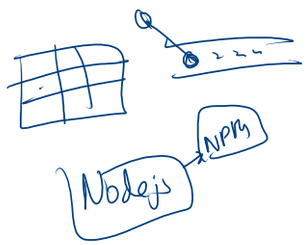
{4,5}

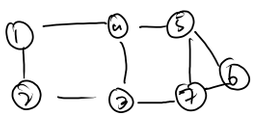
Psf {0 1 2 3 4 }

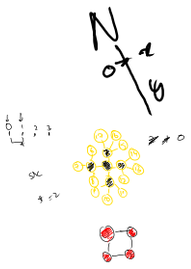
path [I I I I I _ _]

3

④ Try all Nbrs
⑤ PSJ.remove(PSJ.sz-1)
⑥ path(curr)=false
⑦ return








```
//dijkstra
int lastFound = 0;
boolean[] vis = new boolean[N+1];
PriorityQueue<Pair> pq = new PriorityQueue<>((a,b)->{
    return a.cost-b.cost;
});

pq.add(new Pair(K,0));

while(pq.size()>0){
    Pair curr = pq.remove();
    //mark
    if(vis[curr.node]) continue;
    vis[curr.node] = true;

    // lastFound = Math.max(lastFound,curr.cost);
    lastFound = curr.cost;

    for(Edge e: graph[curr.node]){
        if(!vis[e.nbr]) pq.add(new Pair(e.nbr,curr.cost + e.wt));
    }

}
for(int i= 1;i<=N;i++) if(!vis[i]) return -1;
return lastFound;
```