```
main(G):
    G_r = graph_reverse(G) //flip all edges in graph, O(m)

    G_sinks = DFS_all(G_r).sources //black box DFS_all to find sources from G_r

    return maximum of (find_longest_path for each of G_sinks)

graph_reverse(G):  //O(m)
    for all edges in G:
        edge(u,v) = edge(v,u)
    return G

find_longest_path(G, v):
    if v has no children:
        return v.time

    return v.time + max(find_longest_path for each of v.children)
```