A STUDY OF MAXIMAL FLOW ALGORITHM AND IT’S COMPUTER APPLICATIONS

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ABSTRACT
To study the basic concepts of maximal flow problem in a network, which is very vital rule in computer applications. This is mainly concentrate on maximal flow problem which is show the flow of paths can decide the solution in the maximal flow problem. Shortest and efficient path finding is the main concerns in all the networks problems. Networks, it’s a collection of nodes for the some concern goal attain. This paper mainly analyse the path on maximal network problem.

Keywords: Maximum Network flow, shortest path, computer applications

1. INTRODUCTION

‘Operations research’ or ‘Operational research’ that deals with the application of advanced analytical methods to help make better decisions. Operation research arrives at optimal or near optimal solutions to complex decision making problems. To find a path between source and destination we have used Prim’s algorithm [1]. Prim’s algorithm finds a minimum spanning tree in a given network [2]. Here, Prim’s algorithm has been utilized to find different paths between source and destination. Our proposed algorithm finds maximum flow for each path selected from Prim’s algorithm. Finally, we find maximum of maximum flow rate that can flow in a network from the set of calculated maximum flow rates.

To find the maximal flow in a network from source to sink with the capacity and flow is called maximal flow problem. This problem involves a directed network with arcs carrying flow [5]. The only relevant parameter is the upper bound on arc flow called arc capacity [6]. In this study, it is clear to know the flow of path plays an important role in a maximal flow problem. The main objective is to determine the maximum amount of flow that can occur through the network. The arcs in these problems have upper and lower flow limits. Example how much water can flow through a network of pipes. How many cars can travel through a network of streets. The efficient algorithm for the maximal problem that can solve the huge networks. Informal definition of the max-flow problem, what is the greatest rate at material can be shipped from source to the sink without violating any capacity constraints. Shortest path finding its important vital role in maximum data flow refers in Fig.1.
A flow in a network is defined as the flow between a source node ‘s’ to a sink node ‘t’ with the weights called capacities on edges. The two distinguishes vertices, namely source’s (vertex with no incoming edges) and sink ‘t’ (vertex with no outgoing edge) Fig. 2 shows the maximum network flow. Fig.3 represents the sample maximal flow algorithm. Network algorithms mainly for searching route and find out the optimum, efficient shortest path in the network. Fig. 4 represents sample maximal flow network.

Fig. 2 Maximum network flow

2. MAXIMUM FLOW ALGORITHM

Maximum flow algorithm, navigate one to another severe recessions of the last century, it is worth asking what comes next [3] [4]. By this revolution is underway in computing. It is a revolution that promises to shake the foundations of how technology is delivered to all organizations. This revolution is cloud computing and it promises to reshape the structure of knowledge. Flow networks it’s a kind of digraph, hence weights called capacities on edges. Two distinguishes vertices are source’s and sink ‘t’. Vertex s as no incoming (only outgoing) and vertex t as no out coming (only incoming). Given a network N, find a flow of maximum value.

Fig. 3 Sample Maximum flow algorithm
Fig 4: Sample maximal flow network

Data movement over computer networks system, data management over network applications. Fig. 5 shows traffic data management in azure factory data management.

3.COMPUTER APPLICATIONS

Electronic mail (email) has been generally utilized as a part of present day data society. Individuals send and read messages from their PCs, business workstation and even cell phones. While messages give an incredible comfort for trading data, it likewise brings a considerable measure of research challenges. One of the imperative issues is the security due to the powerlessness of fundamental system. A safe email framework ought to give the accompanying two security properties called confidentiality and authentication.

4. CONCLUSION

Maximum flow rate algorithm is based on finding a path with maximum allowed flow rate. Our algorithm makes use of classical Prim’s algorithm to find a path between source and destination in a given network. We have considered here that the data is sent from source to destination without buffering. The maximum allowed flow rate is calculated in all the paths and finally maximum of maximum allowed flow rate is selected. We have analyzed our algorithm for different number of nodes and calculated the time complexity.
REFERENCES