Assignment 6

Algorithms & Complexity (CIS 522-01)

Javier Arechalde

April 2, 2018

1. Ford-Fulkerson Algorithm

a. Implementation

We used the Ford-Fulkerson implementation found here.

This implementation models the graph as an Adjacency Matrix, and then runs Ford-Fulkerson algorithm over this graph, using Breadth First Search (BFS) to find the augmenting path in the graph.

Algorithm 1 Ford-Fulkerson Pseudocode

```
1: function FORD-FULKERSON
2:     We initally set the flow to 0 for all the edges in the graph
3:     while There is a path in the residual graph do
4:         We find the minimum residual capacity of the edges along the path
5:         Increment the flow by that minimum residual capacity path_flow
6:         max_flow = max_flow + path_flow
7:         We update the residual graph too
8:     end while
9:     return Maximum flow → max_flow
10: end function
```

b. Time Complexity

c. Results

The maximum possible flow found is 36.

2. Project Selection Problem

3. Doctor Holiday Assignment

4. Advertisement Problem