### Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### CS105 Exercise #2

1. Consider the network shown in the figure.

1

3 1 3

1 6

2

2 2

1

Using distance vector routing:

1. Show the data that node E will receive from each of its neighbors (A, C, F, and G ) on the first iteration of the algorithm.

|  |  |  |
| --- | --- | --- |
| *Routing Table From C* | | |
| *Destination* | *Distance*  *To Destination* | *First Hop to Destination* |
| *A* |  |  |
| *B* |  |  |
| *C* |  |  |
| *D* |  |  |
| *E* |  |  |
| *F* |  |  |
| *G* |  |  |

|  |  |  |
| --- | --- | --- |
| *Routing Table From A* | | |
| *Destination* | *Distance*  *To Destination* | *First Hop to Destination* |
| *A* |  |  |
| *B* |  |  |
| *C* |  |  |
| *D* |  |  |
| *E* |  |  |
| *F* |  |  |
| *G* |  |  |

|  |  |  |
| --- | --- | --- |
| *Routing Table From G* | | |
| *Destination* | *Distance*  *To Destination* | *First Hop to Destination* |
| *A* |  |  |
| *B* |  |  |
| *C* |  |  |
| *D* |  |  |
| *E* |  |  |
| *F* |  |  |
| *G* |  |  |

|  |  |  |
| --- | --- | --- |
| *Routing Table From F* | | |
| *Destination* | *Distance*  *To Destination* | *First Hop to Destination* |
| *A* |  |  |
| *B* |  |  |
| *C* |  |  |
| *D* |  |  |
| *E* |  |  |
| *F* |  |  |
| *G* |  |  |

1. Show the routing table for node E **after** the first iteration of the algorithm has been completed. That is, after it has received routing tables first from A, then from C, then from F, and finally from G.

|  |  |  |
| --- | --- | --- |
| Routing Table for E | | |
| Destination | Distance to Destination | First Hop to Destination |
| A |  |  |
| B |  |  |
| C |  |  |
| D |  |  |
| E |  |  |
| F |  |  |
| G |  |  |

1. Use Dijkstra’s all shortest paths algorithm to determine the shortest paths to node C. Record the order in which the nodes are made permanent along with the next hop and the distance to the destination.

1

1.8 1 4

1 1.5

2.5

1 0.3

1

|  |  |  |
| --- | --- | --- |
| **All Shortest Paths to C** | | |
| **Working Node Name** | **Distance to Destination** | **Next hop** |
| *C* | *0* | *C* |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. Use the Adjusted Winner algorithm to determine the distribution each person will receive given the problem outlined in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item | Bid from Player 1 | Bid from Player 2 | Player 1 Bid/ total amount bid by Player 1 | Player 2 Bid/total amount bid by Player 2 |
| A | 50 | 60 |  |  |
| B | 70 | 80 |  |  |
| C | 40 | 35 |  |  |
| D | 95 | 100 |  |  |
| E | 55 | 100 |  |  |
| F | 74 | 74 |  |  |
| G | 85 | 88 |  |  |

List the winner of each item. Specify the percentage each player receives from a split item. You may use a spreadsheet to compute your answers.