(Bus 99) Bus 99 serves towns 1 through 10. We assume that town *k* is |*k* − *j*| miles from town *j*. The numbers of people in the towns who want to take the bus each hour are listed in the file P08\_29.xlsx. Bus 99 will make two stops and anyone who wants to take the bus will walk to the closest bus stop. If the goal is to minimize the total distance people walk, where should the bus stop?



**Discussion: -**

Our problem is to identify two towns to build bus stops with minimum total distance that people must travel to bus stop. So, our decision variable should be whether to build bus stop in town or not. To calculate the total distance, we must assign each town to the bus stop. We must create a calculated variable and create Distance matrix .

****

**Mathematical Model: -**

*Parameters (Inputs):*

*Decision Variables:*

*Calculated Variables:*

*Objective:*

*Constraints:*

Constraint 2 will make sure that our optimal solution will consider only two towns as bus stop.

Constraint 3 will make sure that at least one bus stop is assigned to each town. Constraint 4 will bound the number of towns assigned to each bus stop.

*Excel Implementation:* Please find the attached spreadsheet for solution.



