Good morning everyone, today we’re gonna present he approach to the problem Cookie Galore. This is the contents that we will present. Let’s start with the first one problem statement. So, the scenario is that there is a matrix of N times M size. And Santa must travel from the top-left to the bottom-right of the matrix

He can only travel to adjacent cells with no diagonal move and whenever he enters the cell with cookie, he will eat it. However, Since the Santa wants to keep his body slim, we must find the minimum number of cookies he must eat to travel from the first cell to the bottom right cell.

Let’s see the sample input and output.

For the input, the first is gonna be the number of rows and the number of columns respectively to form a matrix. Then the rest will be a “.” or a character “C” belongs to a particular cell in the matrix. In this case, the input can be interpreted as the right picture. For example, the first row has cookie at the first and fourth column. Just like that. Then the output for this sample is 3 and the blue lines tell the path that the Santa takes which give the minimum number of cookies from the starting point to the destination. That’s for the problem statement.

Next is the approach to the problem. Before jumping to the problem, there are 2 constraints that need to be considered. The first constraint is the adjacent moves, Santa can move only in four directions up right down or left and he cannot move in diagonal. And the second constraint is valid moves, Santa must travel in the matrix, if there is a move outside the matrix, then we will consider that move. Also, if the cell has been visited by Santa, then he cannot move to that cell again. Let’s jump to approach for the problem. First we need to initialize 3 matrices with size of N times M. The first matrix is grid matrix that convert the input a “.” And character “C” to 0 and 1 respectively to make it easier for calculating. The second matrix is visited matrix, it will show whether the cell has been visited. And when we initiated all values are gonna be False except the first cell because it’s the starting point. Lastly, the third matrix is dynamic table matrix, it shows and updates the minimum cookies taken in every cell. Initially, the cells will contain infinity values except the first cell that is same as the first cell of the grid matrix. These are the matrices needed to achieve the problem. And the rest of the approach will be presented by Kaung.