```
// returning S[i][j] using binary search in compact matrix M
// M = compact matrix that is sorted first by row and then column.(row,column,value)

function binary_search_compact_matrix(M, i, j):
      first = 0
      last = length(M) - 1

      while first <= last:
            mid = (first + last) / 2

            row = M[mid][0]
            col = M[mid][1]
            value = M[mid][2]

            if row == i and col == j:
                  return value // found the value at S[i][j]

            else if row < i or (row == i and col < j):
                  first = mid + 1 // search the right half

            else:
                  last = mid - 1 // search the left half, because we are after [i][j]

      return 0 // if not found in compact matrix(M) then S[a][b] is zero in sparse
```

$Amirreza Mohammadi Yegane$