

1. Define an  $m \times n$  matrix of zeros and then enter a nested-for loop to fill the locations of the matrix, only if the two indexes differ.

- The purpose is to create a lower triangular matrix, that is a matrix whose elements below the main diagonal are non-zero, the others are left untouched to their initialized zero value.
- When the indexes are equal (if condition in the inner loop, which runs over  $j$ , the column index), a break is executed and the innermost loop is interrupted with a direct jump to the instruction following the inner loop, which is a print; then control gets to the outer for condition (over the rows, index  $i$ ), which is evaluated again.
- If the indexes differ, the assignment is performed and the counter is incremented by 1.
- At the end, the program prints the counter  $ctr$ , which contains the number of elements that were assigned.

**Not Discussed in Class.**