

**Ex:**

```
function mat_dist = word_dist(mat)

nrows = size(mat,1);
mat_dist = zeros(nrows);

    for ind1 = 1:size(mat,1)
        for ind2 = 1:size(mat,1)
            mat_dist(ind1,ind2) = sum(abs(mat(ind1,:)-mat(ind2,:)));
        end
    end
end
```

For the above Matlab® function, find the result of the following commands:

```
>> D = [1, 0, 1, 0; 0, 0, 1, 1; 1, 0, 0, 1; 0, 0, 0, 1];
>> wd = word_dist(D);
>> wd(find(wd(:,1)>0),:)
```

SOL'N:

```
>> D = [1, 0, 1, 0; 0, 0, 1, 1; 1, 0, 0, 1; 0, 0, 0, 1];
>> wd = word_dist(D);
>> wd(find(wd(:,1)>0),:)
ans =
     2     0     2     1
     2     2     0     1
     3     1     1     0
```

Explanation:

This function calculates how many bits differ (or the distance) between arrays in different rows. In matrix "wd", the entry in the *i*th row and *j*th col is the distance between the array in the *i*th row and the array in the *j*th row.

Note that this function is designed to work with rectangular matrices, too.

In the command `>> wd(find(wd(:,1)>0),:)` the `find` command compares the first col of "wd" with the value zero and extracts those row indices where the entries are greater than zero. (Technically, the values returned by "find" are linear, but linear indices for the 1st col correspond to row numbers.

Finally, `wd(find(wd(:,1)>0),:)` extracts the entire rows where the first entries were greater than zero.