

Array Reshape, Repeat and Expand Examples

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Basic Examples of Reshape

```
a = [1,2,3,4,5,6]';  
b = reshape(a, [3,2])
```

```
b = 3x2  
    1     4  
    2     5  
    3     6
```

```
b(:)
```

```
ans = 6x1  
     1  
     2  
     3  
     4  
     5  
     6
```

```
a = [1,2,3;4,5,6;7,8,9;10,11,12]'
```

```
a = 3x4  
     1     4     7    10  
     2     5     8    11  
     3     6     9    12
```

```
b = reshape(a, [6,2])
```

```
b = 6x2  
     1     7  
     2     8  
     3     9  
     4    10  
     5    11  
     6    12
```

Stack Two Matrix of Equal Column Count Together

```
a = [1,2;3,4];  
a_stacked = [a;a;a];  
disp(a_stacked);
```

```
     1     2  
     3     4  
     1     2  
     3     4  
     1     2  
     3     4
```

Repeat/Duplicate Matrix Downwards

There is a 2 by 3 matrix, to be repeated 4 times, downwards. This is useful for replicating data matrix for say counterfactual purposes.

Below, we have two ways of repeating a matrix downwards. Copy as whole, or copy row by row.

```
row_count = 2;
col_count = 3;
repeat_mat_count = 2;

data_vec = 1:(row_count*col_count);
searchMatrix = reshape(data_vec,row_count,col_count);

% To repeat matrix downwards
rep_rows_idx = [1:row_count]'*ones(1,repeat_mat_count);
rep_rows_idx = rep_rows_idx(:);

rep_cols_idx = [1:col_count];
rep_cols_idx = rep_cols_idx(:);

searchMatrixRep_stack = searchMatrix(rep_rows_idx, rep_cols_idx);

% To insert repeated rows following original rows
rep_rows_idx = ([1:row_count]'*ones(1,repeat_mat_count))';
rep_rows_idx = rep_rows_idx(:);

searchMatrixRep_dup = searchMatrix(rep_rows_idx, rep_cols_idx);

disp(searchMatrix)
```

```
1    3    5
2    4    6
```

```
disp(searchMatrixRep_stack)
```

```
1    3    5
2    4    6
1    3    5
2    4    6
```

```
disp(searchMatrixRep_dup)
```

```
1    3    5
1    3    5
2    4    6
2    4    6
```

Index Dimension Transform

```
it_inner_fin = 5; it_outter_fin = 3;
```

```
it_inner_cur = it_outter_fin it_outter_cur = it_inner_fin
```

```
ar_it_cols_idx = 1:1:(it_inner_fin*it_outter_fin) ar_it_cols_inner_dim = repmat(1:it_inner_cur, [it_outter_cur, 1])
ar_it_cols_inner_dim(:)'
```

```
mt_it_cols_idx = reshape(ar_it_cols_idx, [it_inner_cur, it_outter_cur])' mt_it_cols_idx(:)'
```

```
it_inner_fin = 5;  
it_outter_fin = 3;  
  
ar_it_cols_idx = 1:1:(it_inner_fin*it_outter_fin)
```

```
ar_it_cols_idx = 1×15  
1    2    3    4    5    6    7    8    9   10   11   12   13 ...
```

```
mt_it_cols_idx = reshape(ar_it_cols_idx, [it_outter_fin, it_inner_fin])'
```

```
mt_it_cols_idx = 5×3  
1    2    3  
4    5    6  
7    8    9  
10   11   12  
13   14   15
```

```
mt_it_cols_idx(:)'
```

```
ans = 1×15  
1    4    7   10   13    2    5    8   11   14    3    6    9 ...
```