CS 1173: REPMAT for repeating array patterns
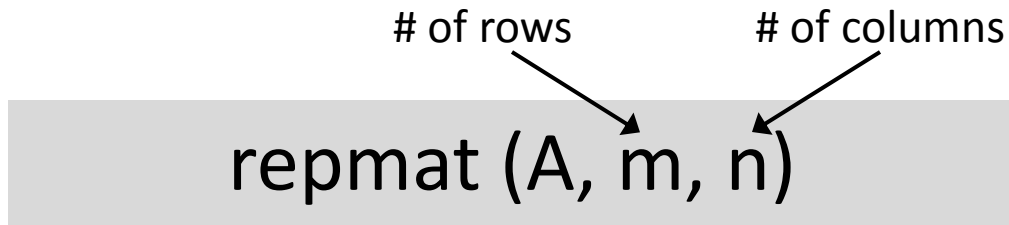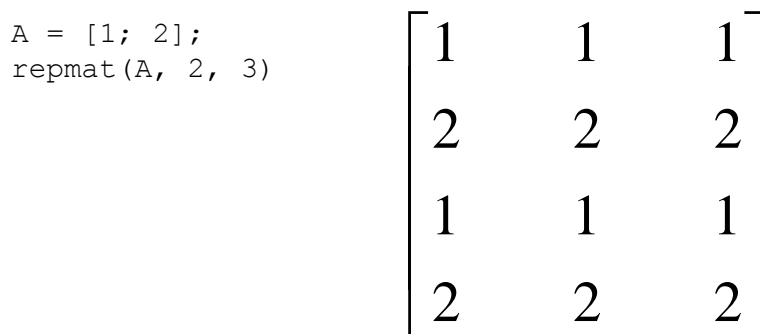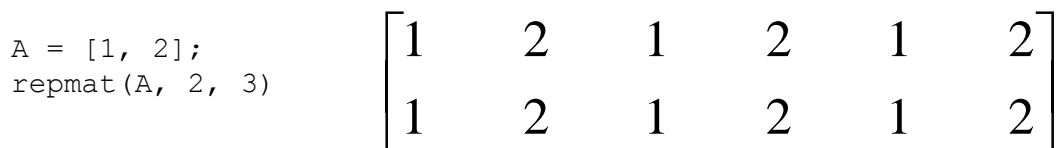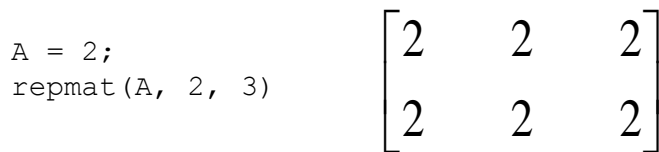
The MATLAB repmat creates a tiling or mosaic of arrays

# of rows   # of columns

repmat (A, m, n)

Example 1: Mosaic has 2 rows and 3 columns

repmat(A, 2, 3)

$$
\begin{array}{ccc}
A & A & A \\
A & A & A
\end{array}
$$

```
A = 2;
repmat(A, 2, 3)
```

$$
\begin{bmatrix}
2 & 2 & 2 \\
2 & 2 & 2
\end{bmatrix}
$$

```
A = [1, 2];
repmat(A, 2, 3)
```

$$
\begin{bmatrix}
1 & 2 & 1 & 2 & 1 & 2 \\
1 & 2 & 1 & 2 & 1 & 2
\end{bmatrix}
$$

```
A = [1; 2];
repmat(A, 2, 3)
```

$$
\begin{bmatrix}
1 & 1 & 1 \\
2 & 2 & 2 \\
1 & 1 & 1 \\
2 & 2 & 2
\end{bmatrix}
$$

Example 2: Mosaic has 1 rows and 3 columns

```
repmat(A, 1, 3)
```



```
A = 2;
repmat(A, 1, 3)
```

$$\begin{bmatrix} 2 & 2 & 2 \end{bmatrix}$$

```
A = [1, 2; 3, 4];
repmat(A, 1, 3)
```

$$\begin{bmatrix} 1 & 2 & 1 & 2 & 1 & 2 \\ 3 & 4 & 3 & 4 & 3 & 4 \end{bmatrix}$$

Example 3: Remove column means from an array

Suppose measles is a 41×12 array holding the monthly measles counts for NYC for the years 1931 to 1971. Calculate meanMeasles, the monthly averages of the measles cases and devMeasles, an array containing the deviations of the monthly counts of measles from their monthly means.

```
meanMeasles = mean(measles, 1);
devMeasles = measles - repmat(meanMeales, 41, 1);
```

Note: a more robust approach would not hard-code the value 41 for the number of rows, but rather calculate it from the measles array:

```
meanMeasles = mean(measles, 1);
measlesRows = size(measles, 1);
devMeasles = measles - repmat(meanMeales, measlesRows, 1);
```