Quiz #12

1. Write a script using **nested for loops** that will multiply 2 3x3 matrices. Use the following matrices for test purposes. Do not use built-in MATLAB functions or the . operator in your code.

```
A = [2 1 -1;3 1 2;0 -2 -3]
B = [1 -1 1;2 -1 2;3 0 3]
```

Recall: Multiplying matrices is taking the dot product of rows and columns. See the example below.

$$\begin{bmatrix}2 & 4\\ 6 & 8\end{bmatrix}\begin{bmatrix}1 & 3\\ 5 & 7\end{bmatrix} = \begin{bmatrix}22 & 34\\ 46 & 74\end{bmatrix}$$

$$(2,4)\cdot(1,5) = 2*1+4*5 = 22$$

$$(6,8)\cdot(3,7) = 6*3+8*7 = 74$$

2. Pascal's Triangle is a commonly studied number pattern. Essentially the triangle is formed with a one in the top row and two ones in the second row. Starting with the third row, the numbers in the middle of the triangle are found by summing the two numbers directly above it. This triangle has several interesting patterns. One pattern is shown below. If you sum up the values in each row you will find that the sums double each time you move down a row.

	Sum of row
1	**1**
1 1	**2**
1 2 1	**4**
1 3 3 1	**8**
1 4 6 4 1	**16**
1 5 10 10 5 1	**32**
1 6 15 20 15 6 1	**64**
1 7 21 35 35 21 7 1	**128**

15+6=21

You will create an 8-row Pascal's triangle using nested for loops. In addition, sum up the values of each of the 8 rows to prove that the sums do indeed double as you move down the triangle. Your final triangle will look like the one below:

1	0	0	0	0	0	0	0
1	1	0	0	0	0	0	0
1	2	1	0	0	0	0	0
1	3	3	1	0	0	0	0
1	4	6	4	1	0	0	0
1	5	10	10	5	1	0	0
1	6	15	20	15	6	1	0
1	7	21	35	35	21	7	1