C Programming Array Exercises

The exercises below are based upon the following declarations/initializations. (You may assume that each exercise starts with freshly initialized arrays.)

```
int square[ 5 ][ 5 ] = { 0 }, product[ 5 ][ 6 ];

int table[ 5 ] [ 6 ] = { {  1,  2, 3,  4,  5 },
                         {  2,  4, 6,  8, 10 },
                         { 20, 10, 5,  3,  1 },
                         {  3,  6, 9, 12, 15 } };
```

1. Write the code (executable statements) to fill the array `square` with the identity matrix.

2. Write the code to fill the array `square` as shown:

1				
	4			
		9		
			16	
				25

3. Write the code to fill the array `square` as shown:

				5
			10	
		20		
	40			
80				

4. Write the code to fill the array `square` as shown:

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

5. The partially initialized array "table" can be viewed as a primitive spreadsheet, in which the last column and bottom row have been left blank. Write the code to fill in this row and column with the totals of each column, each row, and the grand total.

1	2	3	4	5	
2	4	6	8	10	
20	10	5	3	1	
3	6	9	12	15	

6. Write the code to calculate the product of "square" times "table" and put the result in "product".