1. (a) What is the output when the following script is executed? Show work.

```matlab
A = zeros(100,100);
for i=1:100
    for j=1:100
        A(i,j) = 2*i+j;
    end
end
fprintf('%10.1f
',A(100,1))
for i=1:100
    for j=1:100
        A(i,j) = A(j,i);
    end
end
fprintf('%10.1f
',A(100,1))
```
1. (b) Write a complete specification for the following function:

```matlab
function B = f(A)
    [m,n] = size(A);
    for j=1:n-1
        B(:,j) = (A(:,j)+A(:,j+1))/2;
    end
```

2. Write a function \( z = \text{ModifiedSum}(A,p,q) \) that takes a matrix and \( A \) and integers \( p \) and \( q \) and returns the sum of all the entries in \( A \) that are neither in row \( p \) or column \( q \). Assume that \( A \) has at least \( p \) rows and at least \( q \) columns. Thus, if \( p = 2, q = 3 \), and

\[
A = \begin{bmatrix}
    1 & 2 & 3 & 4 \\
    5 & 6 & 7 & 8 \\
    9 & 10 & 11 & 12 \\
   13 & 14 & 15 & 16 \\
   17 & 18 & 19 & 20 \\
\end{bmatrix}
\]

then the value of \( \text{ModifiedSum}(A,p,q) \) would be \( 1+2+4+9+10+12+13+14+16+17+18+20 \).
3. Complete the following function so that it performs as specified

function B = Update(A,f,g)
    % A is an m-by-n matrix.
    % f is a column m-vector.
    % g is a row n-vector.
    % B is an m-by-n matrix. The i-th row of B is obtained by subtracting
    % f(i) times g from the i-th row of A.