CSE 200 Spring 2008, HW 2 – due date: Feb. 5, in class.

All problems are from the textbook, A. Gilat, *MATLAB: An introduction with applications*, **3rd edition**

1. **Chapter 2, problem 11 (2 pts)**

```
%  a) Separate rows with semicolons

>> [a; b; c]

ans =

    2    -1     0     6
   -5    20    12    -3
   10     7    -2     1

%  b) take the transpose

>> [a; b; c]'

ans =

    2    -5    10
   -1    20     7
    0    12    -2
    6    -3     1
```

2. **Chapter 2, problem 14 (4 pts)**

```
%  a) The first row

>> va = A(1, :)

va =

    1     2     3     4     5

%  b) The third column transposed to be a row vector

>> vb = A(:, 3)'

vb =
```

```
    3     8    13
```

```
%  c) The second row and transpose of fourth column concatenated
```

```
>> vc = [A(2, :) A(:, 4)']
```

```
vc =

    6     7     8     9    10     4     9    14
```

```
%  d) The first and fifth columns transposed and concatenated
```

```
>> vd = [A(:, 1)' A(:, 5)']
```

```
vd =

    1     6    11     5    10    15
```

3. Chapter 2, problem 18 (3 pts)

```
%  a) Concatenate matrices created using zeros and ones
```

```
>> [zeros(2, 3) ones(2, 3)]
```

```
ans =

    0     0     0     1     1     1
    0     0     0     1     1     1
```

```
%  b) Concatenate matrices created using zeros and eye.
```

```
>> [ones(4, 1) eye(4, 5)]
```

```
ans =

    1     1     0     0     0     0
    1     0     1     0     0     0
    1     0     0     1     0     0
    1     0     0     0     1     0
```

```
%  c) Make a 2 x 4 matrix and transpose
```

```
>> [ones(2, 1) zeros(2) ones(2, 1)]'
```

```
ans =
```

```
1    1
0    0
0    0
1    1
```

4. **Chapter 2, problem 21 (2 pts)**

% create the 3 x 3 matrix

```
>> A = ones(3)

A =

    1    1    1
    1    1    1
    1    1    1
```

% address the region between 4th and 6th rows and 4th and 6th columns and assign A there. the matrix will be resized to include that region.

```
>> A(4:6, 4:6) = A

A =

    1    1    1    0    0    0
    1    1    1    0    0    0
    1    1    1    0    0    0
    0    0    0    1    1    1
    0    0    0    1    1    1
    0    0    0    1    1    1
```

5. **Chapter 3, problem 3. (10 pts).**
   Note: In addition to a MatLab code, you also need to provide a formula for your calculation

% Generating the closed form formula: (not matlab commands)
% sqrt(x) stands for square root of x, sqr(x) stands for square of x and pow(x, y) stands for y'th power of x
% v(i) and h(i) are the i'th impact velocity and i'th max height
% h(0) is 2mt

% 1. v(i) = sqrt(2 g h(i)) (given)

```
% 2. h(i+1) = sqr(0.85 v(i)) / 2 g              (given, upward velocity is 0.85 times impact
velocity)
% 3. h(i+1) = sqr(0.85) h(i)                   (substituted v(i) from 1. to 2.)
% 4. h(i+1) = 0.7225 h(i)
% 5. h(0) = 2                                  (given)
% 6. h(i) = pow(0.7225, i - 1) 2               (4. and 5., recursive)


% now we are ready to compute

>> n = 1:8

n =

    1     2     3     4     5     6     7     8

>> hmax = power(0.7225, n) * 2

hmax =

   1.4450    1.0440    0.7543    0.5450    0.3937    0.2845    0.2055    0.1485

% first element of hmax is how high the ball gets after the first bounce
```

These problems copied from the book are also posted on the webpage for your convenience.