

1. (10 points) Draw a flow chart to illustrate how to implement multiplication of two matrices by nested for-looping.
2. (10 points) Write a matlab function to implement your flow chart.
3. (10 points) Give definition of the reduced echelon form.
4. (10 points) Try to find the reduced echelon form of the following matrix by row operations.

$$\begin{bmatrix} 0 & 0 & 2 & -2 & 2 \\ 3 & 3 & -3 & 9 & 12 \\ 4 & 4 & -2 & 11 & 12 \end{bmatrix}$$

5. (10 points) Describe the Gauss-Jordan elimination for translating an augmented matrix to the reduced echelon form
6. (10 points) Draw a flow chart to illustrate the Gauss-Jordan elimination.
7. (10 points) Write a matlab function, my_rref.m, to implement your flow chart.
8. (30 points) Verification of my_rref.m

```
>> A=[0 0 2 -2;3 3 -3 9;4 4 -2 11]; b=[2 12 12];my_rref(A,b')
```

```
ans =
```

```
    1    1    0    0   17
    0    0    1    0    -5
    0    0    0    1    -6
```

```
>>A=[3 -3 3 ;2 -1 4 ;3 -5 -1]; b=[9 7 7];my_rref(A,b')
```

```
ans =
```

```
    1    0    3    4
    0    1    2    1
    0    0    0    0
```

```
>>A=[1 2 -1 3;2 4 -2 7 ;-1 -2 1 -4 ];b=[4 10 -6];my_rref(A,b')
```

```
ans =
```

```
    1    2   -1    0   -2
    0    0    0    1    2
    0    0    0    0    0
```

```
>>A=[1 1 5 ;0 1 3 ; 1 2 8 ];b=[3 -1 3];my_rref(A,b')
```

```
ans =
```

```
    1    0    2    0
    0    1    3    0
    0    0    0    1
```