



The Academic College of Tel-Aviv-Yaffo
121113 Computer Structure and the 8086 Assembly Language
Summer 2002

Home Assignment No. 2

Due date: Aug 29, 2002

1. Declare two WORD size numbers in the data segment (A and B). Write a recursive program to find their Greatest Common Divisor (GCD), and print it.

For those of you who forgot how to compute the GCD, I included a C code to do the computation using Euclid's remarkable algorithm.

```
// assume num2 > num1
int gcd( int num1, int num2 )
{
    int remainder = num2 % num1;
    if ( remainder != 0 )
        return gcd( remainder, num1 );
    return num1;
}
```

2. Declare an N*N Matrix in the data segment (in 8086 ASM, matrices are declared using single dimensional arrays). Check whether the matrix you declared is symmetric relative to the primary and secondary diagonals. Print your checks results.

$$\begin{pmatrix} X & & & \\ & X & & \\ & & X & \\ & & & X \end{pmatrix} \text{ Primary Diagonal}$$

$$\begin{pmatrix} & & & X \\ & & X & \\ & X & & \\ X & & & \end{pmatrix} \text{ Secondary Diagonal}$$

Hint: Use the index registers to go through the matrix...

3. Declare a 4X4 matrix in you data segment. Write a program that counts the number of positive values in the matrix, and prints out the result.

Have fun,

Eliav.