ESc101N: Fundamentals of computing(Lab Session 8)

September 22, 2009

Instructions

1. Please read the question carefully and write the program accordingly
2. Make sure that the TA has graded you program
3. The marks are distributed as follows. You get 60% of the marks if the basic algorithm is current, 20% if you manage to compile and execute and 20% for writing the code cleanly, i.e. using proper variable names, intending and making the code more readable.

Question 1. (a) Write a `C` functions for the following tasks.

i. (2 marks) The function `int ** allocMatrix(int m, int n)` that wil allocates, using malloc, space for an $m \times n$ matrix

ii. (2 marks) The function `void free(int **a, int m)` to free up the memory allocated for an $m \times n$ matrix.
.5.5.5

iii. (0.5 marks) The function `void readMatrix(int **a, int m, int n)` that reads an $m \times n$ matrix.
.5.5.5

iv. (0.5 marks) The function `void printMatrix(int **a, int m, int n)` that prints an $m \times n$ matrix.

(b) (5 marks) Write the function `int ** sumMatrix(int **a, int **b, int m, int n)` that returns the sum of two $m \times n$ matrix using the above defined functions. Write a program that reads two matrices and sums it up.

The sample solution is given below

```
Script started on Tue 22 Sep 2009 11:10:47 IST
$ ./a.out
enter the number m of rows:2
enter the number n of columns:3
enter the first matrix:
        enter [0][0] th entry:1
        enter [0][1] th entry:2
        enter [0][2] th entry:3
        enter [1][0] th entry:1
        enter [1][1] th entry:2
        enter [1][2] th entry:1
enter the second matrix:
        enter [0][0] th entry:2
        enter [0][1] th entry:3
        enter [0][2] th entry:4
        enter [1][0] th entry:1
```

```
        enter [1][1] th entry:2
        enter [1][2] th entry:1
The sum of the matrices:
        1       2       3
        1       2       1
and
        2       3       4
        1       2       1
are
        3       5       7
        2       4       2
$
Script done on Tue 22 Sep 2009 11:11:07 IST
```