

assi

Assignment Set 2 (Uploaded on August 08, 2014)

Clarification deadline date: August 11, 2014

Submission deadline date: August 14, before lab starts

Problem 1:

Write a C program that takes as input a positive integer 'n' and generates a matrix of size $2^n \times 2^n$ using pointer to pointer. Fill the matrix with integers in the range $[1, 2^{(2n)}]$. Write a recursive function to print the matrix in a spiral fashion.

Problem 2:

Write a C program to dynamically allocate an array A of size $n \times m$. n and m are inputs to be taken from the user. The array A is treated as a maze in which a mouse is trying to find its way. $A[i][j]=0$ indicates that the mouse can step onto the location (i,j) and $A[i][j]=1$ indicates that the mouse can't step onto the location (i,j). A mouse starts from $A[0][0]$ and has to reach $A[n-1][m-1]$, by passing only through positions that are set to 0. A mouse can move in any of the 8 directions -- N, S, E, W, NE, NW, SE, SW provided that those locations have a 0 and they are valid array entries.

You have to write a recursive program that finds the path of the mouse if such a path exists. The array entries of A are to be generated randomly.

Naming conventions for program files. xx is your roll number:

For Problem 1:

assi

The name of the src file for problem 1 of assignment 2 should be
`cs14xx-assign2-src-prog1.c'`.

The name of the app file for problem 1 of assignment 2 should be
`cs14xx-assign2-prog1.c'`.

The name of the include file for problem 1 of assignment 2 should be
`cs14xx-assign2-prog1.h'`.

For Problem 2:

The name of the src file for problem 2 of assignment 2 should be
`cs14xx-assign2-src-prog2.c'`.

The name of the app file for problem 2 of assignment 2 should be
`cs14xx-assign2-prog2.c'`.

The name of the include file for problem 2 of assignment 2 should be
`cs14xx-assign2-prog2.h'`.

At the top of each of your program files, add the following.
If you are
writing multi-file programs, then each file should have it.

```
/*-----  
-----  
Name:  
Roll Number:  
Date of Submission:  
Deadline date:  
Program description:  
Acknowledgements:  
-----  
-----*/
```

assi

You need to copy the files from your location to the destination.
where you store your files is your headache. But the file naming convention and destination should be as we have mentioned.

We assume that you have created a directory 'pds1ab', and under it you have created a directory for Assignment 2 named 'assign2',

Assignment submission for Problem 1:

(1) Create a directory named 'prog1' under '~/.pds1ab/assign2/' to do programs related to Problem 1. So, we assume you are under the directory '~/.pds1ab/assign2/prog1/'. Under this directory, create three directories -- 'src', 'app', 'include'.

(2) Write .c, .h files in respective folders with the following naming convention --

- (a) cs14xx-assign2-src-prog1.c for the source files;
 - (b) cs14xx-assign2-prog1.c for the app files;
 - (c) cs14xx-assign2-prog1.h for the header files;
- where xx is your roll number.

Assuming the above mentioned directory structure, copy the files as follows:

(3) cp ~/.pds1ab/assign2/prog1/src/cs14xx-assign2-src-prog1.c
/home/backup/matlab/mtc14/pds1ab/assign2/prog1/src/

assi

(4) `cp ~/pds1ab/assign2/prog1/app/cs14xx-assign2-prog1.c
/home/backup/matlab/mtc14/pds1ab/assign2/prog1/app/`

(5) `cp ~/pds1ab/assign2/prog1/include/cs14xx-assign2-prog1.h
/home/backup/matlab/mtc14/pds1ab/assign2/prog1/include/`

Assignment submission for Problem 2:

(1) Create a directory named 'prog2' under
'~/pds1ab/assign2/' to do
programs related to Problem 2. So, we assume you are under
the directory
'~/pds1ab/assign2/prog2/'. Under this directory, create
three
directories -- 'src', 'app', 'include'.

(2) Write .c, .h files in respective folders with the
following naming
convention --
 (a) cs14xx-assign2-src-prog2.c for the source files;
 (b) cs14xx-assign2-prog2.c for the app files;
 (c) cs14xx-assign2-prog2.h for the header files;
where xx is your roll number.

Assuming the above mentioned directory structure, copy the
files as
follows:

(3) `cp ~/pds1ab/assign2/prog2/src/cs14xx-assign2-src-prog2.c
/home/backup/matlab/mtc14/pds1ab/assign2/prog2/src/`

(4) `cp ~/pds1ab/assign2/prog2/app/cs14xx-assign2-prog2.c
/home/backup/matlab/mtc14/pds1ab/assign2/prog2/app/`

(5) `cp ~/pds1ab/assign2/prog2/include/cs14xx-assign2-prog2.h
/home/backup/matlab/mtc14/pds1ab/assign2/prog2/include/`