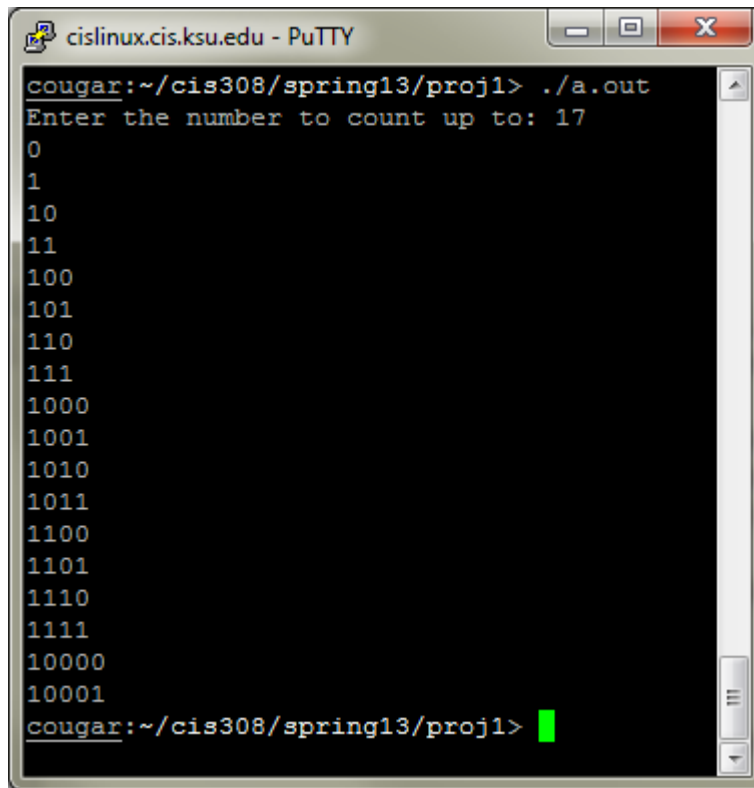


Programming Project 1 (30 points)
Due: Tuesday, February 5 by midnight

Assignment Description:

You are to write a program in C that takes a number and then counts in binary from 0 up to that number, printing each one. Here is a sample run of the program:



```
cislinux.cis.ksu.edu - PuTTY
cougar:~/cis308/spring13/proj1> ./a.out
Enter the number to count up to: 17
0
1
10
11
100
101
110
111
1000
1001
1010
1011
1100
1101
1110
1111
10000
10001
cougar:~/cis308/spring13/proj1>
```

Implementation Requirements:

Your assignment must meet the following requirements:

- Your program should contain three separate functions: one for calculating the biggest power of two less than a given decimal (base-10) number, one that takes a decimal number and prints the corresponding binary number, and the main function.
- The biggest power of two and the decimal-to-binary functions must be **recursive**
- Your prompt and output format should exactly match the example above.
- You should not declare any global variables or any static variables

Documentation:

Your program must include a comment block at the top of every file, as well as at the top of each function. The function comments should include a brief description of what the

function does, and explain any function arguments and return values. You may use the comment block below as a template:

```
/******  
* Name: (YOUR NAME) *  
* Date: (THE DUE DATE) *  
* Assignment: Project 1: Binary counting *  
*****  
* (WRITE A DESCRIPTION OF THE PROGRAM) *  
*****/
```

Submission:

First, you will need to create a zip file of your project. To create a zip file in Unix, put all your code for this project (probably just one .c file) in a directory called “proj1”. Change directories to one back from the proj1 directory. To create a zip file of your project called “proj1.zip”:

```
zip proj1.zip proj1/*
```

It should list all the files that it included in the zip file.

To create a zip file in Windows, again put all your code for the project in a directory called “proj1”. Then, right-click on the proj1 folder and right-click, select “Send To”, and then select “Compressed (zipped) file”. This will create a zip file with your code called proj1.zip.

To submit your project, find the proj1.zip file that was created above. Then, go to “Files and Content->Modules->File Dropbox” on K-State Online, and upload the proj1.zip file. **Put your name and Project 1 in the description box.**

Grading:

Programs that do not compile will receive a grade of 0. A grading breakdown for programs that do compile appears below:

User input	2
Correct binary numbers and formatting in output	15
Documentation and submission	2
Error handling: don't allow negative input	2
Program design (contains recursive functions for biggest power of two and for decimal-binary conversion plus a main function, code is as short and simplified as possible)	9
Total	30