

**Lab 1****Objectives:**

To be able to

- design solutions for a binary-number-system-based problem .
- examine design alternatives between a data-driven and control-driven (compute-driven) solutions in C language. Study their relevance to RTOS.
- provide a minimal test data that will completely test the solutions.

**Problem Statement:**

Consider the number squares we discussed in class. These are shown below:

1	3	5	7
9	11	13	15
17	19	21	23
25	27	29	31

2	3	6	7
10	11	14	15
18	19	22	23
26	27	30	31

4	5	6	7
12	13	14	15
20	21	22	23
28	29	30	31

8	9	10	11
12	13	14	15
24	25	26	27
28	29	30	31

16	17	18	19
20	21	22	23
24	25	26	27
28	29	30	31

- The user is asked to think of a number between 1-31 that is kept a secret by the user,
- The computer /program then displays the squares one by one, and asks the user if the number he/she chose is in the square,
- Based on the answers from the user (yes/no), the program determines the secret number chosen by the user.

**Implementation:**

1. Implement two solutions: NumSys1.c and NumSys2.c
2. The numbers for the squares can be either generated during run-time or stored as static data. These two result in quite diverse solutions. Implement both solutions (NumSys1.c, NumSys2.c)
3. Which version is more general? Which version is more time efficient? Which one would you use for a time-critical system? Answer these questions in separate document. Provide the answers as well as the test data used: NumSys.pdf
4. Include the names of the team member in all the files, at the top.

**Due date:**

Submit completed lab1. Due date is: May 20, 2013 by midnight  
(Will give you the details of submission later.)