# Final Project Suggestions: Liang 9th CS.

| Assignment | Chapter(s) | Exercise | Description |
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| Final Project I | 7 | One of:  7.9-10 on p283  7.17 on p287  7.24 on p290 | **Multidimensional arrays with graphical user interfaced – See Chapters 15-17 Project Type III**  The exercises suggest many interesting problems in games, simulations, and pattern recognition.  **Tic-Tac-Toe game will not be acceptable since many versions exist for downloading on the Internet.**  Financial tsunami – the input should come from a .txt file consisting of multiple sets of input lines with a blank line after each except for the last set which needs an end-of-data signal after it  Check multiple Sudoku solutions – the input should from a .txt files with multiple sets of puzzle solutions each with 9 rows of numbers separated by spaces with a blank line except for the line after the last puzzle solution which needs an end-of-data signal |
| Or Final Project II | 7, 10, 13 | Extend the output of 10.5 on p401, 13.11-2 on p511-2 | For a while there was a problem of finding the **distribution of the number of different prime factors of non-prime numbers**. Using the results of Exercise 10.5 on p401 develop a program that shows this distribution. For instance 4 has only one prime factor used twice, whereas 6 has two prime factors: 2 and 3. 30 is the first non-prime number with 3 different factors: 2, 3, 5. Develop a program to **graphically display this distribution** as function of bar graph. Examine enough non-primes so that the first 5 primes, 2, 3, 5, 7, and 11 are included, possibly 10,000. |

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| Or Final Project Type III | 12-13, 16-17 | A problem or set of problems in these chapters | **Computer Graphics and Animation**  Use one or more of these sets of problems to explore computer graphics and animation. These are the beginning of computer game development.  Layouts  Game boards other than TicTacToe.  Animation (see Chapter 16)  Buttons and GUI components (see Chapter 17)  Write a short report on what you did. Include the code and provide a set of instructions for me to test your code. |
| Or final Project Type V | 33 | 33.9-10 | **Network Programming**  This project involves communications between clients and servers simulating interaction across a network (although for this project both can be on the same computer). It involves creating GUIs on the client, (and also on the server if only to monitor the interactions), TCP/IP protocols, and streaming I/O from one to the other. An application is a Chat facility. |
| Or Final Project Type IV | 18 | 18.1 on p 698 (use any program you have already written)  18.6 on p699 based on 7.9, 12.7, and 13.7  18.17 on p702  Any other problems or set of problems in this chapter | **Applets**  Make a project out of one or more of these problem  Download any of the modules from Supplement Part V Web Programming that you may want to review.  Tomcat, described in Module E, is a public domain web server that you can install on your own computer to test programs that may access remote web servers and databases.  Alternately you can [enable Internet Information Server (IIS)](file:///C:\ACourses\CS501-SIT\EnablingIIS.docx) that comes with MS Windows and test you applets without access to the Internet.  Using IIS, Tomcat, or any other web server simulate the retrieval of web pages from a remote server.  Write a short report on what you did. Include the code and provide a set of instructions for me to test your code.  I will use IIS, the command prompt window, and/or Eclipse to test your applets. The advantage of Eclipse is that it can run them in native mode without a web server. You are welcome to get into Tomcat but I will not use it. |
| Or Final Project Type VI | 20 | One of  20.19 on p762  20.27 on p764  20.28-31 on p764 | **Recursion and Fractals**  Find a reference on how to create fractals (comparable to the Sierpinski triangle or Koch snowflake) and create a program to draw it at various orders.  Write a short report on what you did. Include the code and provide a set of instructions for me to test your code. |
| Or Final Project of Type VII |  |  | I you have **your own idea** let me know as soon as possible so you don’t get bogged down with little time left. |