# Final Project Suggestions:

| Assignment | | Chapter(s) | Exercise | Description |
| --- | --- | --- | --- | --- |
| Cautions | |  | The exercises in these Project types are examples. Use your own imagination to makes them into a project. | Some of these programs can be difficult and/or take a lot of time. You are welcome to break projects like these into module and/or components that, when all are complete, will do what the suggested exercise asks. Each partial module/component should execute to perform some visible part of the exercise. This is a common way to build applications. |
| Final Project I | | 10, 34-35 | 34.1-2, 4-5 – Section 3 is on SQL | **Database Programming:** Targeted to MIS students but anybody can do this. The data in instances of Java classes can be collected and implemented as relational database tables. This is more fully developed in Chapters 34 and 35 available from the Companion web site. For this project, it is enough to set up the three tables for Course, Student, and Enrollment and implement the programs in Listings 34.1 through 34.3 (really one program with several enhancements) in such a way that the programs can be tested. The basic Course class is in Section 10.5 with Exercise 10.9.  I have MS Access and have used MySQL and SQLite but currently have neither installed. If you use either MySQL or SQLite, I will need extensive instructions of how to install and set them up for your submission. |
| Final Project II | | 8, 14 | One of:  8.17 on 311  8.20 on p313 | **Multidimensional arrays with graphical user interfaces – See Chapters 14**  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  (3) Priority - 3  **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. Not for solving puzzles but for checking for valid solutions.** |
| Or Final Project III | | 6, 14, 22 | Extend the output of 6.10 on p238 and 14.12 on p580 | **(2) – Priority 2**  **For a while there was a problem of finding the distribution of the number of different prime factors of non-prime numbers. 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. Examine enough non-primes so that the first 5 primes, 2, 3, 5, 7, and 11 are included, possibly 10,000. Display your results as a bar graph. Efficient algorithms to find primes are suggested Section 22.7 on p837.** |
| Or Final Project Type IV | 14, 15 | | A problem or set of problems in these chapters | **Computer Graphics and Animation**  Use one or more of the exercises in Chapters 14 and 15 to explore computer graphics and animation. These are the beginning of computer game development.  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 | 14, 31 | | 31.1/3 on p1169 or 31,9-10 on p1171 | **Network Programming (1) – Priority 1**  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.  Some links:  <https://www.codejava.net/java-se/networking/how-to-create-a-chat-console-application-in-java-using-socket>  <https://www.dreamincode.net/forums/topic/259777-a-simple-chat-program-with-clientserver-gui-optional/>  <https://www.youtube.com/watch?v=kqBmsLvWU14> |
| Or Final Project Type VI | 14, 18 | | One of  18.10/18.15 on p730 or, 18.26 on 732 or 18.33 on p734 or 18.38 on p736 | **Recursion and Fractals**  Find a reference on how to create fractals (comparable to the Sierpinski triangle, Exercise 18.19 on p731, or Koch snowflake, Exercise 18.27 on p733 – do not use these, there are many downloadable programs for these), 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 Type VII |  | | 9.2 | **Internet Access**  “Real time” access to the Internet allows users to get timely information and interact with ongoing events. Many are possible, one suggestion in the text is the following:  Exercise 9.2 ask for a Stock class with only predefined and compiled data. Java classes at [StockQuote.java](https://introcs.cs.princeton.edu/java/31datatype/StockQuote.java.html) on the Internet may provide a program to get a quote at the time the program is run.  Follow the imports and downloads carefully.  Provide for exceptions. |
| Or Final Project of Type VIII | 16 | | 16.4 or similar | For students pursuing the MIS track create a GUI that allows users to enter data and have that data be stored in DBMS tables.  I have MS Access and have used MySQL and SQLite but currently have neither installed. If you use either MySQL or SQLite, I will need extensive instructions of how to install and set them up for your submission.  Do not submit this as your final project if you submitted 16.4 as part of Assignment 7. |
| Or Final Project of Type VIX |  | |  | If you have **your own idea** let me know as soon as possible so you don’t get bogged down with little time left. |