## Project Ideas

Below are some sample projects that were assigned recently in CMSC 132. Click the project name to view the full project description. We do not suggest assigning all of these in one semester -- usually 8 to 10 projects are assigned during the course, depending on the difficulty.

We include the name of the primary authors so that instructors at UMCP may request project files. These files will not be made available to anyone outside of this department.

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| **Project Link** | **Skills Required** | **Primary Author(s)** |
| [Sudoku Game](about:blank) | Review of basic Java, two-dimensional rectangular arrays | [Bill Pugh](http://www.cs.umd.edu/~pugh) |
| [BlackJack Game](about:blank) | Review of basic Java, ArrayList, Java interfaces | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson), [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Minimum Snippet](about:blank) | Asymptotic complexity, Iterable interface, using Iterators, Java List interface | [Bill Pugh](http://www.cs.umd.edu/~pugh), [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Clear Cell Game](about:blank) | Two-dimensional (rectangular) arrays, abstract class | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Linked List](about:blank) | Complete implementation of linked list, Java generics (implementation with parameterized types), Comparator | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Dense Bag](about:blank) | Java generics (implementation with parameterized types), implementing an Iterator | [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Huffman Trees](about:blank) | Trees, polymorphism, using iterators | [Bill Pugh](http://www.cs.umd.edu/~pugh), [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Binary Search Tree](about:blank) | Implementation of a tree (with parameterized types), Java Map interface, polymorphism, recursion | [Bill Pugh](http://www.cs.umd.edu/~pugh), [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Graphs](about:blank) | Graph implementation, depth-first search, breadth-first search, Djikstra's algorithm | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Maze Solver](about:blank) | [Overlaps with Graph project, above, but quite different.] | [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Hash Table](about:blank) | Implementation of hash table using buckets, implementing an Iterator, Java Set interface, Java hashCode method | [Bill Pugh](http://www.cs.umd.edu/~pugh), [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Orders Processor](about:blank) | Concurrent programming, reading and writing to/from files | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Online Test](about:blank) | Project design, reading and writing to/from files | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |
| [Web Crawler](about:blank) | Concurrent programming, Set interface, writing a thread-safe queue, networking (connecting to a web server)  **Important:** This project requires the following **optional** topics: Java's wait() and notifyAll() methods. | [Fawzi Emad](http://www.cs.umd.edu/~fpe) |
| [Interest Table](about:blank) | Inner classes, **Important:** This project requires the following **optional** topics: Lambda expressions, basic GUI development | [Nelson Padua-Perez](http://www.cs.umd.edu/~nelson) |