Martyr2's Mega Project List

Martyr2

Foreword

Over the past couple years I have seen many threads asking about project ideas. I have seen a few answers, and given a few answers, that listed a couple common projects. I never felt it was a good enough job to just list 2 or 3 topics. So I have set forth on a mission to compile a list of projects (common and not) for all you programmers out there in search of a simple learning project. No these are not going to be thesis level projects and are meant to also spark ideas for ways to expand from these ideas.

Below you will find 150 project ideas I have come up with just brainstorming. I have divided them into 10 different topic areas that I think the project may use the most. Keep in mind that a few of these projects could have been classified in more than one topic.

So I hope you enjoy and here they are!

Martyr2

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1 Numbers

1.1 Find PI to the Nth Digit

Enter a number and have the program generate PI up to that many decimal places. Keep a limit to how far the program will go.

1.2 Fibonacci Sequence

Enter a number and have the program generate the Fibonacci sequence to that number or to the Nth number.

1.3 Prime Factorization

Have the user enter a number and find all Prime Factors (if there are any) and display them.

1.4 Next Prime Number

Have the program find prime numbers until the user chooses to stop the asking for the next one.

1.5 Find Cost of Tile to Cover W x H Floor

Calculate the total cost of tile it would take to cover a floor plan of width and height, using a cost entered by the user.

1.6 Mortgage Calculator

Calculate the monthly payments of a fixed term mortgage over given Nth terms at a given interest rate. Also figure out how long it will take the user to pay back the loan.

1.7 Change Return Program

The user enters a cost and then the amount of money given. The program will figure out the change and the number of quarters, dimes, nickels, pennies needed for the change.

1.8 Binary to Decimal and Back Converter

Converter to convert a decimal number to binary or a binary number to its decimal equivalent.

1.9 Calculator

A simple calculator to do basic operators. Make it a scientific calculator for added complexity.

1.10 Unit Converter (temp, currency, volume, mass and more)

Converts various units between one another. The user enters the type of unit being entered, the type of unit they want to convert to and then the value. The program will then make the conversion.

1.11 Alarm Clock

A simple clock where it plays a sound after X number of minutes/seconds or at a particular time.

1.12 Distance Between Two Cities

Calculates the distance between two cities and allows the user to specify a unit of distance. This program may require finding coordinates of the cities like latitude and longitude.

1.13 Credit Card Validator

Takes in a credit card number of a common credit card vendor (Visa, MasterCard, American Express, Discoverer) and validates it to make sure that it is a valid number (look into how credit cards use a checksum).

1.14 Tax Calculator

Asks the user to enter a cost and either a country or state tax. It then returns the tax plus the total cost with tax.

1.15 Dijkstras Algorithm

Create a program that finds the shortest path through a graph using its edges.

2 Text

2.1 Reverse a String

Enter a string and the program will reverse it and print it out.

2.2 Pig Latin

Pig Latin is a game of alterations played on the English language game. To form the Pig Latin form of an English word the initial consonant sound is transposed to the end of the word and an ay is affixed (Ex.: "banana" would yield anana-bay). Read Wikipedia for more information on rules.

2.3 Count Vowels

Enter a string and the program counts the number of vowels in the text. For added complexity have it report a sum of each vowel found.

2.4 Check if Palindrome

Checks if the string entered by the user is a palindrome. That is that it reads the same forwards as backwards like racecar

2.5 Count Words in a String

Counts the number of individual words in a string. For added complexity read these strings in from a text file and generate a summary.

2.6 Text Editor

Notepad style application that can open, edit, and save text documents. Add syntax highlighting and other features.

2.7 RSS Feed Creator

A program which can read in text from other sources and put it in RSS or Atom news format for syndication.

2.8 Post it Notes Program

A program where you can add text reminders and post them. You can have the program also add popup reminders.

2.9 Quote Tracker (market symbols etc)

A program which can go out and check the current value of stocks for a list of symbols entered by the user. The user can set how often the stocks are checked and the program can show green up and red down arrows to show which direction the stock value has moved.

2.10 Guestbook / Journal

A simple application that can be for online that can allow people to add comments or write journal entries. It can allow comments or not and timestamps all entries. Could also be made into a shout box.

2.11 News Ticker and Game Scores

A program which sits on your desktop and aggregates news and game scores from various sources on the net and scrolls them across the screen on regular intervals.

2.12 Fortune Teller (Horoscope)

A program that checks your horoscope on various astrology sites and puts them together for you each day.

2.13 Vigenere / Vernam / Ceasar Ciphers

Functions for encrypting and decrypting data messages. Then send them to a friend.

2.14 Random Gift Suggestions

Enter various gifts for certain people when you think of them and when its time to give them a gift (xmas, birthday, anniversary) it will randomly pick one and perhaps places you can get it.

2.15 Text to HTML Generator

Converts text files into web HTML files and stylizes them. Great for making online documentation of standard text documentation.

2.16 CD Key Generator

Generates a unique key for your applications to use based on some arbitrary algorithm that you can specify. Great for software developers looking to make shareware that can be activated.

2.17 Regex Query Tool

A tool that allows the user to enter a text string and then in a separate control enter a regex pattern. It will then run the regular expression against the source text and return any matches or flag errors in the regular expression.

3 Networking

3.1 FTP Program

A file transfer program which can transfer files back and forth from a remote web sever.

3.2 Get Atomic Time from Internet Clock

This program will get the true atomic time from an atomic time clock on the internet. There are various clocks across the world. Do a search for a list of them.

3.3 Chat Application (IRC or MSN Style)

Create a chat application that can carry on simple chat rooms like on Internet Relay Chat or a more direct chatting style like MSN. For added complexity,

create your own protocol to facilitate this chatting.

3.4 Fetch Current Weather

Get the current weather for a given zip/postal code.

3.5 P2P File Sharing App

Create a program like LimeWire, FrostWire, Bearshare, or a torrent style application.

3.6 Port Scanner

Enter an IP address and a port range where the program will then attempt to find open ports on the given computer by connecting to each of them. On any successful connections mark the port as open.

3.7 Mail Checker (POP3 / IMAP)

The user enters various account information include web server and IP, protocol type (POP3 or IMAP) and the application will check for email on several accounts at a given interval.

3.8 Packet Sniffer

A utility program that will read packets coming in and out of the machine along with related information like destination and payload size.

3.9 Country from IP Lookup

Enter an IP address and find the country that IP is registered in.

3.10 Whois Search Tool

Enter an IP or host address and have it look it up through whois and return the results to you.

3.11 Zip / Postal Code Lookup

Enter a zip or postal code and have it return which city/ cities that are in that zip code.

3.12 Remote Login

Create a remote desktop style application which can see and control the remote computer (given you have permissions). It may require the use of your own private network and a second computer to test with.

3.13 Site Checker with Time Scheduling

An application that attempts to connect to a website or server every so many minutes or a given time and check if it is up. If it is down, it will notify you by email or by posting a notice on screen.

3.14 Small Web Server

A simple web server that can serve HTML files that contain Javascript and other forms of non-code executing code. Added complexity would be to try and implement streaming video, create a server-side language, or serve up other stream types.

3.15 Web Bot

An automated program which carries out tasks on the web including checking websites, page scraping, and summarization of data or web posting.

4 Classes

4.1 Product Inventory Project

Create an application which manages an inventory of products. Create a product class which has a price, id, and quantity on hand. Then create an inventory class which keeps track of various products and can sum up the inventory value.

4.2 Movie Store

Manage video rentals and controls when videos are checked out, due to return, overdue fees and for added complexity create a summary of those accounts which are overdue for contact.

4.3 Airline / Hotel Reservation System

Create a reservation system which books airline seats or hotel rooms charging various rates for particular sections of the plane or hotel. Example, first class is going to cost more than coach. Hotel rooms have penthouse suites which cost more. Keep track of when rooms will be available and can be scheduled.

4.4 Student Grade Book Application

Keep track of students (with a student class that has their name, average, and scores) in a class and their grades. Assign their scores on tests and assignments to the students and figure out their average and grade for the class. For added complexity put the students on a bell curve.

4.5 Bank Account Manager

Create a class called Account which will be an abstract class for three other classes called CheckingAccount, SavingsAccount and BusinessAccount. Manage credits and debits from these accounts through an ATM style program.

4.6 Library Catalog

Create a book class with a title, page count, ISBN and whether or not it is checked out or not. Manage a collection of various books and allow the user to check out books or return books. For added complexity generate a report of those books overdue and any fees. Also allow users to put books on reserve.

4.7 Patient / Doctor Scheduler

Create a patient class and a doctor class. Have a doctor that can handle multiple patients and setup a scheduling program where a doctor can only handle 16 patients during an 8 hr work day.

4.8 Recipe Creator and Manager

Create a recipe class with ingredients and a put them in a recipe manager program that organizes them into categories like deserts, main courses or by ingredients like chicken, beef, soups, pies etc.

4.9 Image Gallery

Create an image abstract class and then a class that inherits from it for each image type. Put them in a program which displays them in a gallery style format for viewing.

4.10 Class to Handle Large Numbers

We know that the basic data types like integer, long, double, and floats only go so far. Create a class that can manage extremely large numbers like those used in space exploration.

4.11 Chart Making Class / API

Create a class, or a set of classes, that generates bar charts, pie charts, histograms, and scatter plot charts. For added complexity, make this a service where people can connect to a web server, supply information and it returns a chart image for them in gif or jpg format.

4.12 Shape Area and Perimeter Classes

Create an abstract class called Shape and then inherit from it other shapes like diamond, rectangle, circle, triangle etc. Then have each class override the area and perimeter functionality to handle each shape type.

4.13 Matrix Class

A class to manage matrices. Add, subtract and multiple matrices.

4.14 Flower Shop Ordering To Go

Create a flower shop application which deals in flower objects and use those flower objects in a bouquet object which can then be sold. Keep track of the number of objects and when you may need to order more.

4.15 Vending Machine

Create an application which takes money and dispenses various types of candy or other item. The user enters a number and letter sequence, like D9, and have it return an instance of Item which of the proper type. Example when they press D9 it will return a type of candy bar which is an instance of Mr GoodBar.

4.16 Josephus Problem

Create a program which links together various node objects and then every Nth object is removed until you have one object left. This last object is the sole survivor. Look it up on Google under Josephus Algorithm.

4.17 Family Tree Creator

Create a class called Person which will have a name, when they were born and when (and if) they died. Allow the user to create these Person classes and put them into a family tree structure. Print out the tree to the screen.

5 Threading

5.1 Create Progress Bar of Download

Create a progress bar for applications that can keep track of a download in progress. The progress bar will be on a separate thread and will communicate with the main thread using delegates.

5.2 Download Manager

Allow your program to download various files and each one is downloading in the background on a separate thread. The main thread will keep track of the other threads progress and notify the user when downloads are completed.

5.3 Chat Application (remoting style)

Create a chat application which allows you to connect directly to another computer by their IP through the use of remoting and allow your server application handle multiple incoming connections.

5.4 Bulk Thumbnail Creator

Picture processing can take a bit of time for some transformations. Especially if the image is large. Create an image program which can take hundreds of images and convert them to a specified size in the background thread while you do other things. For added complexity, have one thread handling resizing, have another bulk renaming of thumbnails etc.

6 Web

6.1 WYSIWG (What you see is what you get) Editor

Create an editor online which allows people to move around elements, create tables, write text, set colors etc for web pages without having to know HTML. Think Dreamweaver or FrontPage but for online sites. If you need an example check out the DIC page used to create a post.

6.2 Web Browser with Tabs

Create a small web browser that allows you to navigate the web and contains tabs which can be used to navigate to multiple web pages at once. For simplicity dont worry about executing Javascript or other client side code.

6.3 Page Scraper

Create an application which connects to a site and pulls out all links or images and saves them to a list. For added complexity, organize the indexed content and dont allow duplicates. Have it put the results into an easily searchable index file.

6.4 File Downloader

An application which can download various objects on a page including video streams or all files on a page. Great for pages with a lot of download links.

6.5 Telnet Application

Create an application which can telnet into servers across the internet and run basic commands.

6.6 Online White Board

Create an application which allows you and friends to collaborate on a white board online. Draw pictures, write notes and use various colors to flesh out ideas for projects. For added complexity try building in picture tubes.

6.7 Bandwidth Monitor

A small utility program that tracks how much data you have uploaded and downloaded from the net during the course of your current online session. See if you can find out what periods of the day you use more and less and generate a report or graph that shows it.

6.8 Bookmark Collector and Sorter

An application that you can put online for people to upload bookmarks to, have it sort them, remove duplicates and export the entire list as a Firefox/IE/ Safari bookmark file. For added complexity see if you can group the bookmark items into various folders.

6.9 Password Safe

A program which keeps track of passwords for sites or applications and encrypts them with a key so that no one can read them.

6.10 Media Player Widget for iGoogle

Create an iGoogle gadget which can play various song lists from your computer as well as share one song daily. Perhaps let people look up which songs you have listened to lately.

6.11 Text Based Game Like Utopia

Create a simple text based RPG like Utopia where you can create a civilization, gather resources, forge alliances, cast spells and more on a turn based system. See if you can dominate the kingdom.

6.12 Scheduled Auto Login and Action

Make an application which logs into a given site on a schedule and invokes a certain action and then logs out. This can be useful for checking web mail,

posting regular content, or getting info for other applications and saving it to your computer.

6.13 E-Card Generator

Make a site that allows people to generate their own little e-cards and send them to other people. Can use flash or not. Use a picture library and perhaps insightful mottos or quotes.

6.14 Content Management System

Create a content management system (CMS) like Joomla, Drupal, PHP Nuke etc. Start small and allow for the addition of modules/addons later.

6.15 Template Maker

Make a site or application which allows the user to enter in various color codes, elements, dimensions and constructs a template file for a particular application like PHPBB, Invision Board, MySpace, Bebo, etc.

6.16 CAPTCHA Maker

Ever see those images with letters a numbers when you signup for a service and then asks you to enter what you see? It keeps web bots from automatically signing up and spamming. Try creating one yourself for online forms. If you use PHP, take a look at the image functions of GD.

7 Files

7.1 Quiz Maker

Make an application which takes various questions form a file, picked randomly, and puts together a quiz for students. Each quiz can be different and then reads a key to grade the quizzes.

7.2 Quick Launcher

A utility program that allows the user to assign various programs to icons on a toolbar. Then by clicking the buttons they can quickly launch the programs

with parameters etc. Much like Windows quick launch.

7.3 File Explorer

Create your own windows explorer program but with added features, better searching, new icons and other views.

7.4 Sort File Records Utility

Reads a file of records, sorts them, and then writes them back to the file. Allow the user to choose various sort style and sorting based on a particular field.

7.5 Add Transactions In File and Find Averages

Read in a file of financial transactions, group them into accounts, add up fields or find averages or apply credits and debits to each account.

7.6 Create Zip File Maker

The user enters various files from different directories and maybe even another computer on the network and the program transfers them and zips them up into a zip file. For added complexity, apply actual compression to the files.

7.7 PDF Generator

An application which can read in a text file, html file or some other file and generates a PDF file out of it. Great for a web based service where the user uploads the file and the program returns a PDF of the file.

7.8 Bulk Renamer and Organizer

This program will take a series of files and renames them with a specific filename filter entered by the user. For instance if the user enters myimage###.jpg it will rename all files with a minimum of three numbers like myimage001.jpg, myimage145.jpg or even myimage1987.jpg since 1987 has at least three numbers.

7.9 Mp3 Tagger

Modify and add ID3v1 tags to MP3 files. See if you can also add in the album art into the MP3 files header as well as other ID3v2 tags.

7.10 Log File Maker

Make an application which logs various statistics in response to given events. This can be something that logs what an application does, what the system is doing, when something like a file changes etc.

7.11 Excel Spreadsheet Exporter

Create an online application which can read in a file and create an Excel Spreadsheet to export back. This can be through CVS or other file formats. For added complexity, see if you can create formula fields as well.

7.12 RPG Character Stat Creator

Make a program which will randomly create a characters stats based on several rules set forth by the user. Have it generate a class, gender, strength/magic/dexterity points, and extra abilities or trades. Have it save it to a file which can then be printed out by a dungeon master.

7.13 Image Map Generator

Image maps are those images on the web that have multiple hover points that link to different pages. Such images may include maps or splash pages. See if you can make one where the user specifies an image, clicks hotspots in the image and specify links. It will then generate the HTML code to a file that the user can then copy and paste into their website to make the image map.

7.14 File Copy Utility

Create a utility that can do bulk file copying and backups of other files.

7.15 Code Snippet Manager

Another utility program that allows coders to put in functions, classes or other tidbits to save for use later. Organized by the type of snippet or language the

coder can quickly look up code. For extra practice try adding syntax highlighting based on the language.

7.16 Versioning Manager

Create your own versioning system for code files. Users are forced to check out items and lock items during reading and writing so that a group of programmers are not accidentally overwriting code files on one another.

8 Databases

8.1 SQL Query Analyzer

A utility application which a user can enter a query and have it run against a local database and look for ways to make it more efficient.

8.2 Remote SQL Tool

A utility that can execute queries on remote servers from your local computer across the Internet. It should take in a remote host, user name and password, run the query and return the results.

8.3 Baseball / Other Card Collector

Create an online application for keeping track of a collection of cards. Let the user enter all cards in a set, check off which ones they have, which ones they need and generate lists of cards they are looking for. For extra complexity, have it sum up sets and generate reports on how close they are of completing sets or the current value of a set.

8.4 Report Generator

Create a utility that generates a report based on some tables in a database. Generates a sales reports based on the order/order details tables or sums up the days current database activity.

8.5 Database Backup Script Maker

A program which reads a databases objects, relationships, records and stored procedures and creates a .sql file which can then be imported into another

database or kept as a backup file to rebuild the database with.

8.6 Event Scheduler and Calendar

Make an application which allows the user to enter a date and time of an event, event notes and then schedule those events on a calendar. The user can then browse the calendar or search the calendar for specific events. For added complexity, allow the application to create reoccurrence events that reoccur every day, week, month, year etc.

8.7 Budget Tracker

Write an application that keeps track of a households budget. The user can add expenses, income, and recurring costs to find out how much they are saving or losing over a period of time. For added complexity allow the user to specify a date range and see the net flow of money in and out of the house budget for that time period.

8.8 Address Book

Keep track of various contacts, their numbers, emails and little notes about them like a rolodex in the database. For extra complexity, allow the user to connect to a website publish their address book based on specific options the user has set.

8.9 TV Show Tracker

Got a favorite show you dont want to miss? Dont have a PVR or want to be able to find the show to then PVR it later? Make an application which can search various online TV Guide sites, locate the shows/times/channels and add them to a database application. The database/website then can send you email reminders that a show is about to start and which channel it will be on.

8.10 Travel Planner System

Make a system that allows users to put together their own little travel itinerary and keep track of the airline / hotel arrangements, points of interest, budget and schedule.

8.11 Entity Relationship Diagram (ERD) Creator

A program that allows the user to put together ERD diagram and save it or have it generate some basic SQL syntax to give them a jumpstart.

8.12 Database Translation (MySQL ¡-¿ SQL Server)

A simple utility that reads in from one database and constructs SQL compliant with another database. Then saves that to another database. One popular transition would be to and from MySQL server for databases like SQL Server and Oracle.

8.13 Web Board (Forum)

Create a forum for you and your buddies to post, administer and share thoughts and ideas.

9 Graphics and Multimedia

9.1 Slide Show

Make an application that shows various pictures in a slide show format. For extra complexity try adding various effects like fade in/out, star wipe and window blinds transitions.

9.2 Mind Mapper

Allow the user to put down ideas and quickly brainstorm how they are related into a mind map. The goal here is speed so let the user quickly write in an idea and drag it around in a visual map to show relationships.

9.3 Import Picture and Save as Grayscale

A utility that sucks the color right out of an image and saves it. You could add more including adjusting contrast, colorizing and more for added complexity.

9.4 Stream Video from Online

Try to create your own online streaming video player.

9.5 Mp3 Player (and Other Formats)

A simple program for playing your favorite music files. For extra complexity see if you can add in playlists and an equalizer.

9.6 Bulk Picture Manipulator

This program will take in a directory of pictures and apply a certain effect to them whether it be reducing color count, changing its format, or alter file attributes. For something extra try to see if you can also create a system to tag them.

9.7 CD Burning App

Create a utility that simply burns data to a CD.

9.8 YouTube Downloader

A program which can download videos to your hard drive from youtube.com. Save the files in various formats including FLV and AVI.

9.9 Wallpaper Manager

Make a program which keeps track of your favorite wallpapers, changes them regularly automatically and maybe even resizes them for your resolution (aka tiles one and stretches another).

9.10 Screen Capture Program

Make a utility that will simply capture a frame from your web cam. For added complexity see if you can also build in emailing functionality.

9.11 Image Browser

This application is used to view various image files on your computer from PNG, GIF, JPG to BMP, TIFF etc.

9.12 Traffic Light Application

See if you can make your own street light application and then put it into an intersection scenario. Dont let any cars run the lights and crash into one another!

9.13 MP3 to Wav Converter

MP3 is essentially compressed wav format. See if you can translate it back into wav so that some other sound editing programs can work with the wav file itself. Keep in mind that 1 MB of MP3 is relative 10MB wav.

9.14 Signature Maker

Ever seen those web board posts where someone has a generated signature made up? See if you can make a program that allows the user to specify a background, text, colors and alignment to make their own signatures or userbars.

9.15 Screen Saver

Make a screensaver program that will run while your computer sits idle. To make a simple one use some standard pictures and then for added complexity try a 3D object that spins around the screen and bounces off the sides.

9.16 Watermarking Application

Have some pictures you want copyright protected? Add your own logo or text lightly across the background so that no one can simply steal your graphics off your site. Make a program that will add this watermark to the picture.

9.17 Turtle Graphics

This is a common project where you create a floor of 20 x 20 squares and using various commands you tell a turtle to draw a line on the floor. You have move forward, left or right, lift or drop pen etc. For added complexity, allow the program to read in the list of commands from a file. Do a search online for Turtle Graphics for more information.

10 Games

10.1 Chess and Checkers

Simply put a game of chess or checkers. Try to make it playable online and if you can use a graphical user interface that can also undo or redo a step as well as keep a history of moves for replay.

10.2 Hangman

Randomly select a word from a file, have the user guess characters in the word. For each character they guess that is not in the word, have it draw another part of a man hanging in a noose. If the picture is completed before they guess all the characters, they lose.

10.3 Crossword Puzzle

Create a crossword puzzle which links words together on common letters. Provide a list of clues for each word and let the user enter fill in the words until the entire crossword is filled in.

10.4 Frogger

Get your frog across the river and lanes of traffic by either jumping on logs and lily pads rushing by at different speeds or avoid the automobiles which are also moving at various speeds. Based on the old arcade game.

10.5 Pac Man

Another arcade classic, move Pac man around a maze gobbling up pellets and trying to avoid a group of ghosts. Power pellets allow Pac man to eat the ghosts for a limited time.

10.6 Find Way Out of Maze

Develop an algorithm that allows a mouse to navigate through any maze given enough time.

10.7 Guitar Hero Clone

Create your own version of guitar hero where you can incorporate your own music and allow the user to press keys for the various colored notes. Judge their accuracy.

10.8 Breakout

A classic arcade game breakout involves a series of blocks at the top of the screen and using a paddle bounces a steel ball against the blocks to destroy them. Just dont miss the ball or else you will lose.

10.9 Pin Ball

I think we all know how pin ball works. Make a game where the user controls to mini paddles and keeps a ball in play, bouncing off various items and navigating through the course for various points. For added complexity, create a high score list.

10.10 High / Low Number Guessing

Randomly choose a number in a range of numbers and have the user guess. If their guess is too low, tell them too low and if their guess is too high tell them too high. Let them continue to guess until they get the right answer. Keep track of the number of guesses they made before getting it right.

10.11 Poker (plus online component)

Create a poker game where you can have 2 5 players be it real or computer controlled. Allow each player is given two cards face down which they must match against 5 community cards. The flop, the turn and the river to create the best hand possible. Each round they bet or fold.

10.12 Tic Tac Toe with Friend Online

A simple game of tic tac toe. For added complexity allow the application to be played over the internet where another player can against you.

10.13 Magic Eight Ball

Create a file full of random sayings and answers. Then have the magic eight ball pick one at random in response to a users question. Allow the user to enter the question and then show them the randomly picked answer.

10.14 Game of Memory

Make a game where you have 8, 16, 32 or 64 cards which are to be matched in pairs. The user enters which two cards to turn over to see if they are a pair. Show the user the cards they turned over, if they match remove them from the game. If they do not match, flip them back over. For added complexity, impose a time limit or a turn limit.

10.15 Black Jack

Also known as 21 make a game where the goal is to get as close to 21 without going over using a standard 52 card deck. The user plays against a dealer who has to sit on any value 17 or under.

10.16 Battleship

Create two game boards and let each player place a number of war ships. Each player cant see the other persons board. They then take turns firing at one another by guessing one of the board squares. If the square they guess contains part of a ship, it is a hit. Otherwise it is a miss. They sink a ship when all squares containing that particular ship have been uncovered. The player wins when all their opponents ships have been sunk.

10.17 Snake Game

Create a board where you start out with a small snake. The goal is to eat as much food that appears on the board as possible without it running into its own body. Each time it eats food the snake grows longer. How long can you make your snake?

10.18 Slot Machine

Make a slot machine where the user can enter how many coins they are willing to bet and pull the handle. Have one of three wheels land on a random picture. Certain combinations of pictures yield coins. Others might be wild cards. For added complexity, allow the user to play not only the top, center and bottom

row but also diagonals.

10.19 Ice and Dice

Have the user roll three dice. Each face that has a dot in the middle is said to have a hole in the ice. Each dot not in the center is said to be a polar bear. Have the user enter the number of holes and polar bears in a given time period. So for example if you have the side with 1 dot (in the middle) it is 1 hole and no polar bears. The number 2 has no dot in the middle but two dots in the corners so it has no holes and 2 polar bears. The number 3 has one dot in the middle and two dots in the corners so it has 1 hole and 2 polar bears. The number 4 has no holes and 4 polar bears. Five has 1 hole and 4 polar bears etc.