

Full Programming List (of outside-of-class projects), each listed by significance/difficulty for those who might be interested in what I may have been programming during your class:

TI-84+CE Graphing Calculator

- Grav - a test platformer game with a level editor that runs in ICE, a faster but more difficult language (No negatives or fractions are the main hassle)
- Lava Graph - an updated version of lava that is printed on the graph screen to allow for larger levels
- Lava - platformer with a map editor that has the player jump on platforms to reach the end of the level without being drowned in lava
- AMU - calculates the molar mass of any compound excluding Tungsten (W). Accepts compounds in the format CaCl_2 , but cannot take parenthesis, so $\text{Ca}_3(\text{PO}_4)_2$ becomes $\text{Ca}_3\text{P}_2\text{O}_8$.
- Ice Maze - A version of Maze X where the player does not stop moving
- Maze X - a simple game where the player has to get to the end of the maze, has the capacity for levels and includes a level editor
- Sequence Calculator - Calculates the equation from a given sequence
- P Tri - Runs Pascal's Pyramid on the expression $(AX+BY)^C$ where A, B, and C are variables.
- MatF and MatS - Performs matrix operations step by step and then runs through all the steps for checking matrix solutions to systems of equations
- Bin Test - A program that outputs all solutions to the conditional expression up to 8 bits
- Data - A Base Converter
- Divis - A program that calculates all numbers that a given number is divisible by.
- Mem and Rand - A tool for memorizing 26 character strings created randomly by rand (breaks strings into smaller chunks).
- Hex - An encryptor that uses a custom code based on hexadecimal
- Code0CP - An encryption program that uses the format we developed in AP Computer Science Principles for a communication activity
- Draw - A programming utility that makes it easy to draw screens of characters and then convert them to strings.

Ti-83/Ti-84+

- Lava - Import
- Maze X - Import
- Many of the math utilities work on this calculator as well
- While I started my programming on the TI-83 I do not have any backups of my first programs

Ti-92

- Maze X - A maze game with an upper and lower map.
- Hex - encrypts and decrypts strings into a hexadecimal-based code and back.

Ti-nSpire CX II CAS

- Maze (unfinished) - a simple maze game on a much larger screen
- Java (VS Code)

- Gmail Sorter - Sorts Inbox into labels by author name. This uses a saved author list for one of three labels and new authors can be added by labeling them as programming/label.

Java (JGrasp)

- Command Syntax (JSON Tester) - Determines if a given line matches the syntax described by the given .json file. The .json file contains a list of parts and valid paths through those parts.
- Spanish Decryption - Lists possible descrambles of Spanish words by rearranging all the letters and replacing letters with accents then making a query to wordreference.com, but it also grabs similar words.
- Increment - Takes a string and then asks for strings that change in the string. Those are then incremented in one of three ways, by number, by string list, or part of both. An iterator string of “*1” that starts at 0 and goes to 9 by 2s will produce 6 strings with the max number being 10. An iterator string of “*2” with a string list of {“hi”, “hello”} will produce 2 strings, one of each string. If an input contains both “*1” and “*2” defined the same as here, the end value of the number iterator will not be used. The smallest length iterator will be used which is “*2” with a length of two. So an input of “*1:*2” will make {“0:hi”, “2:hello”}.

Java (repl.it)

- Command Syntax 1.23 - determines if a command is valid based on .txt files with the correct pathways for each part of the command. This is unoptimized and runs very slowly.
- Elecluse Numbers - Converts a number from 1243 into an elecluse version such as Xi Xi'Zedex Phi'dex Xere'd Ceu or Xi Phi Xere Ceu.

Minecraft (datapacks)

- Calculator_Enthusiast - An improved version of Modified 3rd life with the 3rd life elements removed and better particles.
 - New items include a flower gun which can remove and place a custom flower called the hyacinth and the gravity gun which teleports selected entities around.
 - There was also a pope stick which signified who was the leader of the llama faction, it allowed the leader to determine if someone had recently killed a llama.
 - There are two special blocks for the plant and dwarf class that reduce some of their negatives, these are the sun and moon lanterns.
 - Deprecated functions include: custom crafting for enchanted golden apples (the largest programming thing I accomplished in MCFunction), spawn protection, and a villager contract system whereby you would need to have a signed contract with a villager in order to trade with them. This prevented players from using each other's villager trading centers.

In addition to all this, there are several classes that players could be:

- Plant -
 - Gains max health, health regeneration, mining speed, and night vision in the sunlight.

- Gains slowness in the darkness unless being chased by a mob.
- Gains slowness 2, reduced attack power, and loses extra health when in cramped spaces.
- Dwarf -
 - Has knockback resistance.
 - Moves quickly on stone and in small spaces.
 - Gains strength when holding an axe.
 - Gains slowness and nausea when sprinting.
 - Gains extra health and resistance when deep enough underground.
 - Gains increased mining speed when holding a pickaxe.
- Flamecaster -
 - Ability to combust on command (this causes death, but the items persist).
 - Has immunity to fire damage.
 - Gains strength and speed 2 in the nether dimension.
 - Floats up and down above lava unless sneaking.
 - Gradually gains worse and worse status effects when in overworld dimension (slowness, reduced attack power, reduced mining speed, nausea, and glowing).
 - Takes damage in water.
 - Fireballs stop in front of them and wait for a new direction to fly.
 - Nearby piglin brutes glow and have reduced attack power.
 - Piglins do not attack.
 - Nearby hoglins gain slowness.
- Djinni (restricted to more trustworthy players due to destructive capabilities) -

When not manifesting:

 - Hunger and weakness if health is less than 13 hearts
 - Reduced mining speed if health is less than 13.5 hearts.
 - Weakness if health is less than 5 hearts.
 - Cannot wear armor.

When manifesting:

 - Reduced attack power (more if health is less than 5 hearts) if in overworld.
 - Slowly generate saturation (faster outside of the overworld dimension).
 - Max life increased to 20 hearts.
 - When at max health gain knockback resistance, speed, and glowing.
 - When above 10 hearts gain strength and invisibility (meant for use on servers where the invisibility is only partial).
 - When below 8 hearts gain resistance.
 - Take damage in return for slow falling.
 - Regenerate health in fire.
 - access to and djinni abilities:
 - Hide (Teleport slightly underground and gain x-ray vision).
 - Unmanifest (lose health benefits and access to abilities, but name no longer appears red).

- Combustion (shoot an arrow which shoots fireballs down at high speed).
 - Detonation (summon a controllable fireball which rains fireballs downwards).
 - Warp (teleport up 5 blocks and air becomes a barrier for standing temporarily).
 - All abilities cost health. Warping and manifesting have particles.
- Yeoman - A data pack that ties together a bunch of Origins Addons into an advancement system where players have to complete various tasks to gain more origin layers. The advancement system worked as follows:
 - the player begins with debuffs and is unable to sleep for the first in-game Minecraft day. After that, the debuffs are removed.
 - After sleeping the player is given a choice of class in Origins layer 1.
 - After the player trades, mines diamonds, and mines obsidian, they are given a choice of a weak origin from layer 2.
 - After killing a ghast, charming a piglin, and brewing an awkward potion they are given a choice between 3 different pools of origins, if they fail to get the desired one, they get one re-roll.
 - After entering the end after the dragon has been killed the player is granted access to some item origins.
 - After mining ancient debris and then having at least 30 levels of experience gain access to more item origins.
 - After curing a zombie villager, holding a wither skull, and killing the warden they are given the ability to choose their origins after crafting the right item.
 - All item origins refer to layer 3 and 4 origins that I judged to be “strong” such as the vampire or ogre and can be obtained through crafting or random events. When item origins are used, the equipped origin becomes an item.
 - This data pack went unused because there was a bug with the second level up during launch and the server owner was unhappy.
- Modified 3rd Life ([original 3rd life](#)) -
 - Added a “give life” function to the 3rd life data pack that transformed one of the player’s lives into an item that they could hold for abilities or gift to another player to use as their own.
 - The other modification was a grace period triggered by server admins where all players can die as many times as they want.
 - A function that freezes mobs for a short time when they start chasing the player for some of the less skilled players.
 - For the server admin, there was a personal waypoint trigger and a troll item that allowed them to summon creepers while being invisible.
 - For the players, there were several items to mess with including a knockback slimeball, a sharp hoe, a book of levitation, and a bow of flight.
 - There was also a particle trigger that would display simple, but cool effects around the player.

- As part of the server's end, there was a deathmatch mode setup that would cause the world border to constrict after the players spend their lives in a shop until they are left with only one; the last one standing wins.
- Rule Enforce Pack - A data pack created for Daniel Slater's MMC (his take on a Minecraft Championship) that was meant to enforce the rules of the minigames and help manage players.
 - Admins are given a book with utilities for loading game modes, moving players, toggling visible spectators, and loading new minigames.
 - They also have a book with all of the relevant functions for a given minigame.
 - The minigames are as follows: Spleef, Parkour, Battle Arena, Skybed Wars, Assassins, Steal The Lights, Lava Bath, and Ice Boat Race.
 - The most notable functions of the minigames are the resetting of the Battle Arena with its starter kits, randomizing player spawns and teams and towering prevention in Skybed Wars, the tracking of players in Assassins, points calculation and map reset in Steal The Lights, and walls and lava control in Lava Bath.
- Nonymin -
 - Creates items for the origins mod that allow the player to steal other players' origins or gain bonuses to their own. Origins are like classes that modify a player's abilities.
 - the stealing uses a player's experience as a timer for the effect.
 - It also added an item for the merling origin called the kappa hat which allows them to be out of water for a certain amount of time before taking damage.
- Whoopsie - Adds functionality to the requiem mod used with the origins mod.
 - Adds easier ways to recover your original body
 - Special orbs that provide various abilities such as speed and health
 - A few of the origins are modified to make them more fun or easier to play. This goes for the feline and the vampire.
 - Also adds a way to craft the orb of origin for changing a player's requiem status, origin, and class.
- Elecluse Test - A simple demonstration of delayed acceleration where a block would move to a point a certain distance away from the player based on where they were looking with a delay on when it should move. When it moves it calculates the correct velocity it should have to make it to the spot in the correct amount of time.

Notable Scripts

origins.ps1 (Powershell) - downloads MultiMC and pre-made MultiMC instance that has the correct Java to run 1.19.2 Minecraft with the correct mods to connect to the "rat in a deep fryer" server. This essentially set everything up except the linking of a Microsoft account to make it easier for me to get people on the Minecraft server.