Andrew Clos
CS-162 - 400
Final Project Design, Test Table, and Reflection of Cave Explorer

Instructions to the Player:

-Start by choosing a room to explore and when in that room, use your shovels to dig at dig-sites for gems or look around the room to explore and discover objects to interact with. Each room has a different number of digsites, with differing levels of difficulty per site and a different cost of shovels per dig. Generally, the higher the dig price and the lower its probability of success, the more potential valuable its gems are.
-Note: Interacting with an object in the room can produce a gem bonus, do nothing, or cause a loss of some of your shovels. Also, digging to a new region costs 10 shovels and the game ends when you run out of shovels or have visited all rooms. You cannot re-enter a room after you leave.
-Your player has an inventory limit of: 200 and starts with 200 shovels. It costs 10 shovels to dig to a new room.
-Costs 10 shovels to dig to a new room.
-The game will look better if the console window is taller than standard or full screened, however it will function fine if typical console sizes are used (the user will just have to scroll more).

Initial Design:

Cave Explorer will consist of a map (array) hidden rooms. The rooms will be oriented in a circular or grid pattern and therefore linked to each other (their neighbors). The player will spend shovels to dig through the earth to look for these hidden rooms and upon finding them will gain points, discover magical items that can be used to uncover portions of the map.

The goal will be to find all of the magic items from each room while achieving the highest score. **this was changed, see section below!

The board/map will be dynamically allocated in case future design implementations require this flexibility. Although it would have been simpler to have a non-dynamic array and just handle more of the map's operation through printing rather than meticulous tracking of its regions, this would potentially represent greater utility to a new revision that allows for more interactivity with the map.

Linking Structure: There will be eight spaces aligned in a square orientation with each space being aware of two of its neighbors. Depending on the location of "this" space, its neighbors could be to the top, bottom, left or right. Its two non-neighbor sides will be 'nullptr.'

Changes in Design:

Instead of spending points to dig, the user spends its shovels and the digging happens automatically. Originally, I was going to have the user press arrow keys to move their player manually around the map to "look" for a space, but this become too tricky for the scope of this project (different compilers/environments). See reflection for more discussion.

I also decided to have the user primarily 'dig' in a room to find gems and optionally take a look around to see "artwork" and choose to investigate a mysterious item. There are no magic items that the user can discover and take with them – just gems.

The menu functions ended up being somewhat split between the Menu, Player and Space classes. Not necessarily by intention, but running the entire game from Menu seemed tedious or "forced" so different Menus appear from the classes they are called in. It seemed to make the program flow better, but may make it slightly less organized.

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CS-162 - 400
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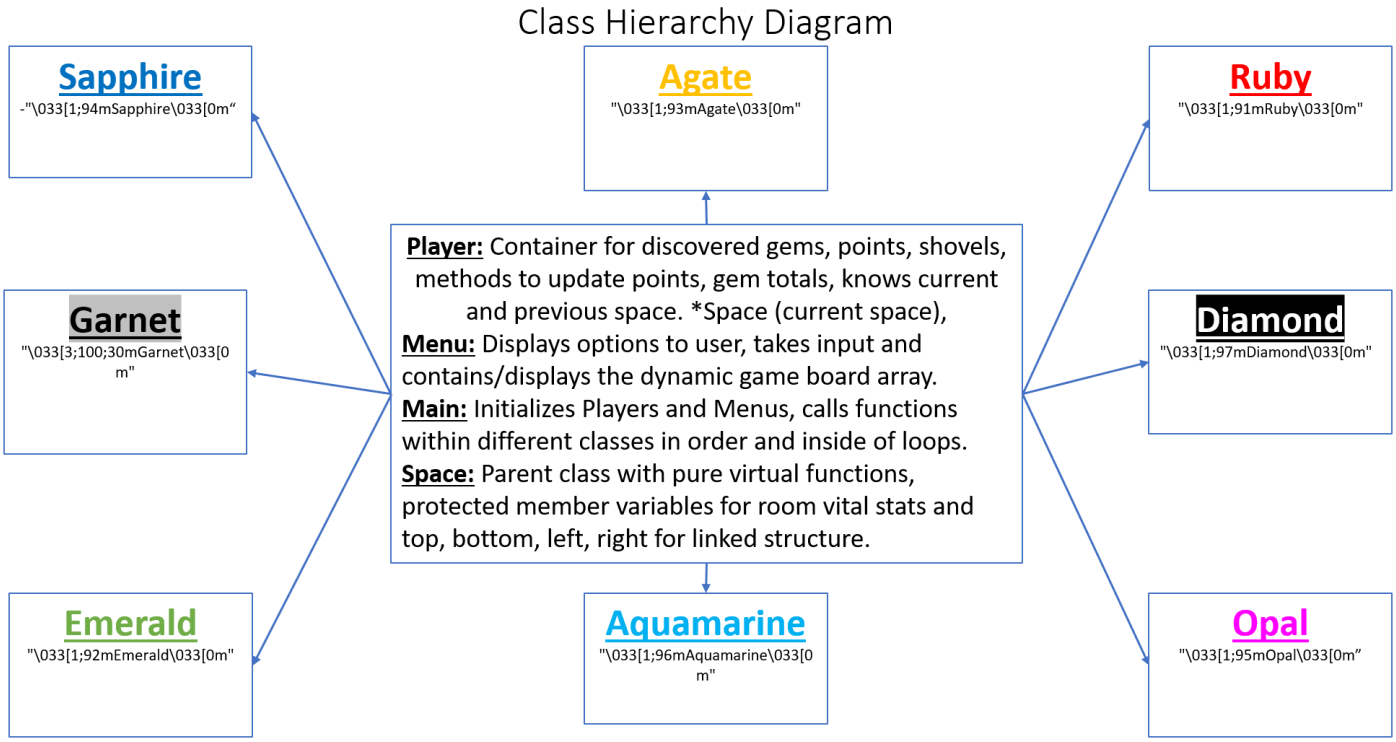
Game "Stats"

	Sapphire	Agate	Ruby	Garnet	Diamond	Emerald	Aquamarine	Opal
Dig Sites	32	28	24	20	12	16	8	4
Cost/dig	1	1	1	2	2	2	4	8
Odds	75	95	75	85	65	45	99	60
Pts/Gem	18	10	20	10	35	115	25	75
Min gems	2	4	1	8	3	1	6	6
Max Gems	5	7	6	12	6	3	10	11
avg gems	3.5	5.5	3.5	10	4.5	2	8	8.5
Potential/avg pts per visit	**1512**	**1463**	**1260**	**1700**	**1228.5**	**1656**	**1584**	**1530**
Potential Shovels / visit	**32**	**28**	**24**	**40**	**24**	**32**	**32**	**32**



Major Classes / Methods:

Menu: Presents menu options to the user and calls for input validation. It also operates the map, which is a dynamically allocated 2d array of characters. This added some complication to the design and necessitated memory management, but I wanted to be able to resize the map more easily if required by the game and potentially allow for more free-form movement of the player around the map to have them manually loop for spaces.

Space: This is the parent class for the spaces which defines many protected member variables, get/set methods, and establishes the backbone of the linked structure (where each spaces knows what its two nearest neighbors are).

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CS-162 - 400
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Sapphire/Agate/Ruby/Diamond/Garnet/Opal/Aquamarine/Emerald: Derived classes of the Space parent class that contain unique text and artwork for the user to encounter. These Spaces also have their own values for many of the member variables so that each space has different numbers of dig sites, odds for successful digs, points per gem, etc.

Main: Runs the game using while loops and making calls to the Game function for menus, and stats printing.

Test Plan:

Test Category	Description of Test	Expected Results / Handling
User quits right away	Dynamically allocated objects are properly destroyed	-Not always from a destructor, NO SEG FAULTS or memory leaks. -program exits normally.
User quits without entering any spaces.	Dynamically allocated objects are properly destroyed	- Not always from a destructor, NO SEG FAULTS or memory leaks. -program exits normally.
Quitting after some amount of playing	Destructor and "removeSpaces" function test.	-Program exits normally (immediately) -No seg faults or memory leaks
Input validation	-No new implementations for this project, no additional testing needed. -String testing	-Correct handling of spaces, invalid characters, etc. -Can't exceed specified max string length. Handles a zero string length (just won't print the name.)
Character moves testing	1. Move to each room and back, quit at different times.	-no seg faults for stepping outside of the array.
Running out of shovels	1. Not allowed to have negative shovels. 2. Can't move to new with fewer than 10 shovels	-Shovels never display as a negative number. -Won't allow user to dig to new space if shovels are <10.
Display of map and artwork	-Adjust to various console sizes.	-no crashes, no unexpected behavior. -clearly very small consoles won't display things sensibly -test in full screen mode -test in windows and linix (FLIP)/putty environment.
Run out of spaces to explore	User cannot return to a space once they've visited.	-reject user from trying to move to a space they've already been in. Remain in loop without crashes, prompt for a new choice.

Andrew Clos
CS-162 - 400
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Memory Leaks	1. Valgrind with -v options. 2. Test case of quitting right away	-No errors or memory leaks from various quit states.

Reflection:

-Dealing with eight classes of spaces, all with different story elements made for a lot of copy and pasting and rewriting. In hindsight, I would have attempted to move more of the lookAround and playerEnters functionality to that of the base class, but I wanted to write lots of text and provide artwork that was unique to each room. By the time I thought about redesigning some of these elements, I decided that it would not be worth the effort.

-I didn't set out with a clear enough program design, which is what led to the menu options being spread between the Menu, main and Space classes. If I could do this one again, I would make sure that every single time a user is presented with options of any kind, it would be handled by the Menu class and not the Space derived class.

-Use of array of strings for gem names in Player class. I wanted to experiment with enumerated data types for easier labeling of a space within utility functions and loops, but ended up settling on an array of strings containing each name in order, instead. I feel this was not ideal and should have experimented more with enums.

-For a time significant expansion was considered when making the game board (map) dynamically allocated. During the first phase of implementation, the player was going to be able to dig their way around the map using the arrow keys to discover rooms around the map. Therefore the player's position on the map is tracked in great detail. It was discovered, however, that taking keyboard input for player movement may have been cumbersome to implement on a Linux environment (like the FLIP server). I had investigated the use of "curses.h" for taking keyboard input, but I am not sure if this is a library that is available on the school's server or an allowed library.

-Future work/more time allowed: add text file to store and sort high scores.

Miscellaneous:

The website https://manytools.org/hacker-tools/convert-images-to-ascii-art/go was used with stock images of gemstones to output ASCII artwork with a max column width of 50. The "code" text was then manually appended to each line of the artwork to make it syntactically valid for C++.

```
std::cout << "\033[1;94m                                        /%@@@@@@@/@(&@@%/.                                        \033[0m" << std::endl;
std::cout << "\033[1;94m                                  *(*...  .@@@@@@@@@@@@&@@@@@@@&&&(                               \033[0m" << std::endl;
std::cout << "\033[1;94m                              (&&&%/&%.......@@& @@@@@@@@@*@@@@&&&&&&&@,/                        \033[0m" << std::endl;
std::cout << "\033[1;94m                          .%%%%%@/ #@......     @@@@@@@   &@&&&&&&&%*#%@@&,                     \033[0m" << std::endl;
std::cout << "\033[1;94m                       *((%%%#(((@%&  .*,,.*       @@@@%      (&&&&&*/%%@@&%&&&(                \033[0m" << std::endl;
std::cout << "\033[1;94m                    ,@%#((#%###%%&@@&.* ((      /@@@@(      */&&&*(@%#@&&%%%&&.                \033[0m" << std::endl;
std::cout << "\033[1;94m                  %@@@@@%##%%%%%%(@@@&%(  ,/     @@@@@@     ,*&&&@@@@%%&&&&&%%(                \033[0m" << std::endl;
std::cout << "\033[1;94m               ,/@@@@@@       %%&&@@%(,@&%%/    (@@@@@@     &&%%&&&&&**(&&&(#%   .&@@&          \033[0m" << std::endl;
std::cout << "\033[1;94m             %@&. @@@@@( .     &&&@@##@@@@@@&/  @@@@@@@,  %&@@@@%%@&&(*%&&       &@@@@@          \033[0m" << std::endl;
std::cout << "\033[1;94m           &@@@   %@@@@,  .  ..&@@@%##@@@@@@@@*(@@@@@&%  &@@@#@@@&&*&%       %@&&&. @@.          \033[0m" << std::endl;
std::cout << "\033[1;94m         /###@@&*  *@@@@@@.....@@@@@##&@@@@@@@&/, @(##*  .@@%%#@@@@@&%/      .@&&&&   @@&.          \033[0m" << std::endl;
std::cout << "\033[1;94m       &&%##((@@@@@@@@@@@@@%..&@@@@(##@@@@@@@@@ #@@ @@@/ @%%#@@@@@@&%    #@@@&&&%   *&,,..          \033[0m" << std::endl;
std::cout << "\033[1;94m     .&&&&&&&&@@@@@@@@@@@@@@@@@@@@@@@@&&/@@@@@@@ @@@ @@@@@@@&@@@@@@@@( (@@@@@@&&@@@@@@@,,,,,(,     \033[0m" << std::endl;
std::cout << "\033[1;94m   *&&&&&&&@@@@@@@@@@@@@@@&.,@@@&&&&&&.@@@@@# @@@ &@@@@@@@(,,/%@@@(&@@@@@@@&@@@@&@@@@@@@@@@/   \033[0m" << std::endl;
```

Andrew Clos

CS-162 - 400

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```
std::cout << "\033[1;94m     %@@@&%%&&&*  .@@@@@@*%@@@#/ .#@@&&&& @@@@ #@@@,#@@@@@@@.,,,,..*/ #@@@@@@@@@@@@@&@@@@@@@@@@*     \033[0m" << std::endl;
std::cout << "\033[1;94m    *(&&&&&&&@@@@@@@@@&..*@@@&(((,,/@&&&&&. @@@ @@@@%/@@@@@@/,,,,,./**/%@&@&(&&@@@@@@&%#@@@@@@@&((,    \033[0m" << std::endl;
std::cout << "\033[1;94m    @@@#&&%@@@@#(&@@@@@@@...&@@@(((***@&&&@.(@& @@@@@.@@*@@&,,,****&&&&@&%    &&&&@@@@@@@&&&&&&&&&&  \033[0m" << std::endl;
std::cout << "\033[1;94m  //(%@@%%@@@@@%///*/%@@@.#@@@@@#////*,.@@@@((/#@@@@@ (,*@@,****%&&&&@@@,   &&@@@@@@&&@@@&&@&&&&@@@  \033[0m" << std::endl;
std::cout << "\033[1;94m  *,,,*/////(@@@@@@&/////%@@@@@@@@@******,*%@#( @@@@@@ ,.@@**/%&&&&&&@@@@& ,&%#####(%&@@@@&&@@@@@@* \033[0m" << std::endl;
std::cout << "\033[1;94m **,,,,*/&&@/%@@@@@@&&@@%@@&&&&&&@@/*,,,*,**@/@@@@@@@&,@,*%%%&&&%%&&&&%###(###%%%&&&@@@@&&&&&&@&%&& \033[0m" << std::endl;
std::cout << "\033[1;94m /**,,*#&&&&&&(@@@@@@@@&&&&&&&@@@&%@@&,,,,,,&@@@@@@@&/.@@@&%%%%%%@@(***,/%@@&&&&%%&&@@@@@@@@&&@&&&%&.\033[0m" << std::endl;
std::cout << "\033[1;94m,***/    .... ..&@@@@@@@%%%%&&&&&%/.,,# ..,#@&&&@@@@@@%&&@@%%%#%     #@@@@@@@@&%&@@@@@@@@@@@@@@@&%%%\033[0m" << std::endl;
std::cout << "\033[1;94m &&&.        .. ....&%@@@&&&%%%%%&&@@@@@(,/*/&&&&&@@@@@#%%%%###%. ,@@@@@@@&&&&&&&&&&&&@@&((///////(%#%%% \033[0m" << std::endl;
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std::cout << "\033[1;94m                     &//**,,....,.,,..@@@@@@@@@@@&&@(#(%%%%%%&@@@#**/%&&&&&&&&&&&&@@&,    .. .****.   *@\033[0m" << std::endl;
std::cout << "\033[1;94m @*                  &@/..,.,,.........,@@@@@@@@@@/%&%%%%%%%%%%&@(***********/#&&@.       .          ... \033[0m" << std::endl;
std::cout << "\033[1;94m @@@* .             &@@@@@@@@@@@@@%(,.../@@@@#***///@@&&&&%%%%%*************,&@&.    ..        .*///& \033[0m" << std::endl;
std::cout << "\033[1;94m @@@@@.            &@@@@@@@@@@@@@@@@@@@@@@%#//*///,@@@&&&&&&&&&&@@@@@@@@@@@@@@@@@@@@@@@&          /((/@@@\033[0m" << std::endl;
std::cout << "\033[1;94m #%%%%%%        .&@@@@@@@@@@@@@@@@@@@@@@@@@@/*///,@@@@@&&&&&&&*/%%#&@@@@@@@@@@@@@@@@@%            @@@@%\033[0m" << std::endl;
std::cout << "\033[1;94m %%%&&&&%,(&&&%@@@@@@@@@@@@@@@@@@@@@@@&//#&&///,@@@@@@@&&&&&*(%&@///*%@@@@@@@@@@@@@@         &@@@@@.\033[0m" << std::endl;
std::cout << "\033[1;94m &&&&&&&&%%&&%@@@@@@@@@@@@@@@@@@@@@@@(//////@@ *@@@@@@@&@@@@@@@@@@@%%@@@@@@@@@@@@@@@@@@%//.       *&@@ \033[0m" << std::endl;
std::cout << "\033[1;94m *&&&&&&&@@%*&@@&&&&&&@@@@@@@@@@@@&////////..,(&&@&* , &@@@@@@@@@@@@@@@@@@(((//@@@@@@%(/.          \033[0m" << std::endl;
std::cout << "\033[1;94m  &&&%@@@&@@@@@@@@@&&&&@@@@@@@@@@@///(//#@@,,.,,@@@@@@&  &@@@@@@@@@@@@@@@@..//(((((/(@%@@&@          \033[0m" << std::endl;
std::cout << "\033[1;94m   @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@////,@@@@/*.,.@@@@@@@@   @@@@@@@@@@@@@@@.   @@@@%&@@@@@@@.%@%       \033[0m" << std::endl;
std::cout << "\033[1;94m   *@@@@@@@@@@@@@@@&&&&@@&&@&@///*@@@@@@@,*,.@@@@@@@@@@ ..@@@@@@@@@@@@@@# *%@@@@@@@@@@@@@@@@@@@@@*  \033[0m" << std::endl;
std::cout << "\033[1;94m    &@@@@@@@@@@@@@@@@@&*..**/@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@%&&@@@@&@@@@@@@@@@@&%##&*  \033[0m" << std::endl;
std::cout << "\033[1;94m     /@@@&&&&@&&@@@@@@.....**,@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@#,&@@@@@@@@@@@@@@@@@@@@@@@@/    \033[0m" << std::endl;
std::cout << "\033[1;94m      ,@@@@&&@@@@@@@/,,....,*&,@@@/*&&&&@@@@@@@@@@@@@@@@@@@@@@,,,*@@@@&.@@@@@@@@@@@@@@@@@@@@@@@,    \033[0m" << std::endl;
std::cout << "\033[1;94m        @@&(/@@@@@,,,,,,..,////%&//(&&&@@@@@@@@@@@@@@@%.  ,&&%,,*/@@@%/#@@@@@@@@@@@@@@@@@@@@@      \033[0m" << std::endl;
std::cout << "\033[1;94m         /(((@@@/,,,...///**//#%#//&&&@@@&@@@@@ /@@(,.   @&&&%,*,@@(#//###@@@@@@@@@@@@&&&@@%      \033[0m" << std::endl;
std::cout << "\033[1;94m          .@@....  .&@////////%(#((&&@@@@@@@&&%/,@@@@(/  #@@&&&,,,%#(%//#(##(@@@@@&%@@@&&&.       \033[0m" << std::endl;
std::cout << "\033[1;94m            %..(&&&//////*#&/*/&&@@@@&&&&@@,@@@@@@#@@@@@@&&&..(((%/(######%@@@@@@##@@%         \033[0m" << std::endl;
std::cout << "\033[1;94m              (@@@@@@@%&&&&&&&@@@@&&&&&&&@@@@@@@@@@@@@@@@@@@@@@@&&&&&/((&&((#####((@@@@@@((         \033[0m" << std::endl;
std::cout << "\033[1;94m                %@@@(#%&&&&&&&&@@@@@@&&@&@@@@@@@@@@@@@@@@@@@@&(&@@@@@@@@@@@@@@@@@@@@@@@&&%           \033[0m" << std::endl;
std::cout << "\033[1;94m                   //#%%%&&&&@&@@@@@&&&&@@@@@@@@@@@@@@@@@@@@@&%@@@@@@@@@@@@@@@@@@@@&&.             \033[0m" << std::endl;
std::cout << "\033[1;94m                     /%###&&&@&@@@@@@@&&@@@@@@@@@@@@@@@@@@@@@@&%%%%@%&@@@@@@@@@@@@@#               \033[0m" << std::endl;
std::cout << "\033[1;94m                        .##%@@@@&@@&&&&&%@@@@@@@@@@@@@@@@&%%##(##@&&@@@@@@@@@@,                    \033[0m" << std::endl;
std::cout << "\033[1;94m                            *@&@@&&&&&&&&&@@@@@@@@@@@@@@@@@@@@%%#####&@@&@@@&*                      \033[0m" << std::endl;
std::cout << "\033[1;94m                                (&&@@@@@@@@@@@@@@@@@@@@@@@@%%%%%#(@#                                \033[0m" << std::endl;
```

//agate

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std::cout << "\033[1;93m                                #(%#(###%%###%%%%%%%%%&&%%##%#####%#(/****,                         \033[0m" << std::endl;
std::cout << "\033[1;93m                               *(#((##%%%##########(((######(((((((((##((///*                        \033[0m" << std::endl;
std::cout << "\033[1;93m                              //#*(##((##/(#%&%%%########((#%%%%######((/***,                        \033[0m" << std::endl;
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std::cout << "\033[1;93m                            ,**((#%##/###(/,.  ..,,,,,,,,,,....,,..,........,., .                     \033[0m" << std::endl;
std::cout << "\033[1;93m                           ***(((##/#/.,.,,,,,,.............. ... .,, .  ., ,,,**/                    \033[0m" << std::endl;
std::cout << "\033[1;93m                          ,///(#%(#/.,,,,.. ..  ...,.,,,,,,,,,,.....,***,,,,*.*..,*////               \033[0m" << std::endl;
std::cout << "\033[1;93m                         ,*(/#%((/***..,/ .,**,,,,,,,,.....     ./#%%%%%%%..**.,,(((/**               \033[0m" << std::endl;
std::cout << "\033[1;93m                        *(((%%(.,**,,,.** ,#%%%%%%############(((/////#%% /.,./((((///            \033[0m" << std::endl;
std::cout << "\033[1;93m                       /(#(%%(/*/..* /..%%%#(((///////******,,.....,*,. *(#&/.*,.,((/(//(((         \033[0m" << std::endl;
std::cout << "\033[1;93m                      */((#%(//**/*,* (%%#(/,..    ...,*/((((((((/////((,.*(%&*,,*,,*(*//(((*        \033[0m" << std::endl;
std::cout << "\033[1;93m                     /#/#%(//*/(*./ #%%#/* ,((//////////********/((((/*/(#/ */#&% /,*,,,*///*(.       \033[0m" << std::endl;
std::cout << "\033[1;93m                    /(/##(///((./ (%%#/, ((//*********/(///**,,//////*/(*//#/ */#%&* /,*,,*/(//(      \033[0m" << std::endl;
std::cout << "\033[1;93m                  //(/##(/(*,.** #%%#/, /(/**//******,*/////**#########*/*/(,*/((../#%&/.,/.*,*/#/(    \033[0m" << std::endl;
std::cout << "\033[1;93m                 ((/(###/**//* .#%%#/, /(/**//,*///////(################*/**/,,*/(,./% /./,*,(%((     \033[0m" << std::endl;
std::cout << "\033[1;93m               #(*##///**.. / %%%(* .((/**//,/*/(########################//*((**((* (&&/,.,*/*#(///  \033[0m" << std::endl;
std::cout << "\033[1;93m              (/*###*,,,,/ * ,&%#/ *(/*,*//,///############(//*******//(##*/*(//(((/../% (./,*.%/*/(   \033[0m" << std::endl;
std::cout << "\033[1;93m            (//(##(,*..*.* (%%#(* //*,,/*,//(########*////***/////(////****(//(#(..(%&&%/ *,***,/%/(//  \033[0m" << std::endl;
std::cout << "\033[1;93m          ,**###(,,*.. * *&%#/* *(*,,/,,*//#####/*//*/((/*////////////*//**/(#( /#%&%* ./.*,***////(/,  \033[0m" << std::endl;
std::cout << "\033[1;93m         .(*##.*,..,*.* %%#(, /(*,,/*,,*//(((((*,*//,*/(/((((((/////((((##(#(.*#&&/,/,,.....,,*#((#(/(*  \033[0m" << std::endl;
std::cout << "\033[1;93m         /(/#*.,,., * *&%#/..//,.,/////(////////,**/((/..*(((###%%%%###((/*.(#%&% *,,((****((##%#%%((/  \033[0m" << std::endl;
std::cout << "\033[1;93m       *((##,,.,. ( (%%%#. .,//////***/////////*//. *(#%%&&&&&%%%%%%&&&&&&&& (,,.,*#######%%&&&%##   \033[0m" << std::endl;
std::cout << "\033[1;93m  /(###*.*,,(,, */(#%&%#....,,***//*,,,,,,,. *(%%&&%* ,//////**//((, ,(* ( ,.,.,/##(%&&&&&&%%%#/   \033[0m" << std::endl;
std::cout << "\033[1;93m  //(#/,.***,(*.*/ .,*(#%&&&%#(##(##%%%%%%%%%%%&&/ /* ,*.*,,.,,,,,,,*,/...***,,./#((#%%&&&&%&%%%#   \033[0m" << std::endl;
```

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CS-162 - 400

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```
std::cout << "\033[1;93m  /(#*/,///,*,*,,,.*, .*/((####%%%%&&%%%%%%&&%( ,/ /..,**/****///*,/,**/*,**,,.%(/#%%%&&&%%%%#%.  \033[0m" << std::endl;
std::cout << "\033[1;93m  (##(,(,,,,,,.,,. .,. .**//((*...,*(#(((((((/*.,...,,,* *//((((//*../****../((###%#%%&&&%&%%%(  \033[0m" << std::endl;
std::cout << "\033[1;93m  %%/*#&%%%### ,**.*,..**//*,/(/(#(**((//(((/*,*.,*, /#####&%#%###(%%%#########%%%##%%&&%%%%%#  \033[0m" << std::endl;
std::cout << "\033[1;93m  (&%%%%%%%#%%% *,,**,.,,*//*///(((*(/****//(**,**.(%#(%#%%&%#%%%%%&%#%%#%%%%%&&%&%&&&&%%%%(  \033[0m" << std::endl;
std::cout << "\033[1;93m   #%%%%%%%%%%%%%%#((* .,,. *(//(#(* ,((((/,..((#%%#%#%%&&%&&&%%&&&%%%##&%&&&&&&&&&&%%%%%#  \033[0m" << std::endl;
std::cout << "\033[1;93m    #%%%%&&&&&&&&&&&%%%%%%&%%%%&%&&%&%#%###%%%%%#%&%#(#%&&%%%#&&&%&&&&&%&%%%%&&&&%%%%%%%%%%%,  \033[0m" << std::endl;
```

```
 //ruby
std::cout << "\033[1;91m                                                 ./(##########,   //,\033[0m" << std::endl;
std::cout << "\033[1;91m                                          .(###################### ,//////*\033[0m" << std::endl;
std::cout << "\033[1;91m                                     ,############################### ////////////*\033[0m" << std::endl;
std::cout << "\033[1;91m                                 (###################################* //////////(#%%%%#\033[0m" << std::endl;
std::cout << "\033[1;91m                             .#######################################/  *#%%%%%%%%%%%%%%%%%(\033[0m" << std::endl;
std::cout << "\033[1;91m                          (##########################################  (##%%%%%%%%%%%%%%%%%%#\033[0m" << std::endl;
std::cout << "\033[1;91m                       .############################################, #####%%%%%%%%%%%%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m                    ##############################################,,######%%%%%%%%%%%%%%%%%%%*\033[0m" << std::endl;
std::cout << "\033[1;91m                  .############################################### ###########%%%%%%%%%%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m                ###############################################, #############%%%%%%%%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m              ###############################################/ *###############%%%%%%%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m            ,##############################################*  ###################%%%%%%%%%%%%.\033[0m" << std::endl;
std::cout << "\033[1;91m           ##############################################    #####################%%%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m          (###########################################/    /#######################%%%%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m        . #########################################/   (###%%%%%%%%%#################%%%%%%\033[0m" << std::endl;
std::cout << "\033[1;91m       /,/######################################   ########%%%%%%%%%%%%%%%%%##########%%%%,\033[0m" << std::endl;
std::cout << "\033[1;91m      //*.##################################,  (###########%%%%%%%%%%%%%%%%%%%%%%%%%###%#\033[0m" << std::endl;
std::cout << "\033[1;91m     ///* .############################/  .################%%%%%%%%%%%%%%%%%%%%%%%%%%%%##\033[0m" << std::endl;
std::cout << "\033[1;91m    ,////   .####################,   .####################%%%%%%%%%%%%%%%%%%%%%%%%%%%##\033[0m" << std::endl;
std::cout << "\033[1;91m    /////          ....          *########################%%%%%%%%%%%%%%%%%%%%%%%%%###\033[0m" << std::endl;
std::cout << "\033[1;91m   ////%%/////////////////////###########################%%%%%%%%%%%%%%%%%%%%%%%%####/\033[0m" << std::endl;
std::cout << "\033[1;91m  *//%%%%///////////////////%%%%%########################%%%%%%%%%%%%%%%%%%%%%%######\033[0m" << std::endl;
std::cout << "\033[1;91m  /%%%%%%//////////////////%%%%%%%%%#####################%%%%%%%%%%%%%%%%%%%%#######\033[0m" << std::endl;
std::cout << "\033[1;91m %%%%%%%%#///////////////#%%%%%%%%%%%%%##################%%%%%%%%%%%%%%%%%%########\033[0m" << std::endl;
std::cout << "\033[1;91m.%%%%%%%%%//////////////%%%%%%%%%%%%%%%%%%###############%%%%%%%%%%%%%%%%%%#######.\033[0m" << std::endl;
std::cout << "\033[1;91m%%%%%%%%%%/////////////%%%%%%%%%%%%%%%%%%%%%#############%%%%%%%%%%%%%%%%%#######(\033[0m" << std::endl;
std::cout << "\033[1;91m%%%%%%%%%%///////////#%%%%%%%%%%%%%%%%%%%%%%%%%##########%%%%%%%%%%%%%%%%%#######\033[0m" << std::endl;
std::cout << "\033[1;91m%%%%%%%%%%//////////%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%######%%%%%%%%%%%%%%%%%%######\033[0m" << std::endl;
std::cout << "\033[1;91m%%%%%%%%%%(////////%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%###%%%%%%%%%%%%%%%%%%#####.\033[0m" << std::endl;
std::cout << "\033[1;91m*%%%%%%%%%#//////%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%#####/\033[0m" << std::endl;
std::cout << "\033[1;91m *%%%%%%%%%/////%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%#///%%%%%%%%%%%%%%%%#####\033[0m" << std::endl;
std::cout << "\033[1;91m   %%%%%%%%///(%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%/////////%%%%%%%%%%%%%%%####\033[0m" << std::endl;
std::cout << "\033[1;91m     (%%%%%//%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%#///////////////(%%%%%%%%%%%%####\033[0m" << std::endl;
std::cout << "\033[1;91m        #%/%%%%%%%%%%%%%%%%%%%%%%%%(////////////////////////%%%%%%%%%%%###,\033[0m" << std::endl;
std::cout << "\033[1;91m               ,#%%%%%%%%%%%%%%%%%%%%%#///////////////////////%%%%%%%%%%##(\033[0m" << std::endl;
std::cout << "\033[1;91m                       .#%%%%%%%%%%%%%%%%%#///////////////////%%%%%%%%###\033[0m" << std::endl;
std::cout << "\033[1;91m                               ,#%%%%%%%%%%%%%#///////////////(%%%%%%##\033[0m" << std::endl;
std::cout << "\033[1;91m                                       .(%%%%%%%%%%#////////////%%%%%#\033[0m" << std::endl;
std::cout << "\033[1;91m                                               .(%%%%%%#////////%%%%*\033[0m" << std::endl;
std::cout << "\033[1;91m                                                       ./%%%#////%%#\033[0m" << std::endl;
std::cout << "\033[1;91m                                                               ./(\033[0m" << std::endl;
```

//garnet

```
std::cout << "\033[3;100;30m              ..                                 \033[0m" << std::endl;
std::cout << "\033[3;100;30m           .%&&%%%#((                            \033[0m" << std::endl;
std::cout << "\033[3;100;30m          .#&&%%&&&%&&%#                         \033[0m" << std::endl;
std::cout << "\033[3;100;30m         .(&&&&&&&%(&&&&&&%(#,                   \033[0m" << std::endl;
std::cout << "\033[3;100;30m        ,,&&@&&&&&&&@@@&&&&&&&%((                \033[0m" << std::endl;
std::cout << "\033[3;100;30m       ,%(/%&&&@&&&@&&&&&&&&&&///                \033[0m" << std::endl;
std::cout << "\033[3;100;30m   .  .,,*(/(#((%&@@@@&&&&&%(&&%%%#(/%/          \033[0m" << std::endl;
std::cout << "\033[3;100;30m  .  .*/**/((/////((((((&&%%(&%&%%#/ %&%,        \033[0m" << std::endl;
std::cout << "\033[3;100;30m   .,(***/*/**////#(#&%#(//. **..(// *&&&%       \033[0m" << std::endl;
std::cout << "\033[3;100;30m..,,*********////(#####(///*/*/*////#//%&&&&(    \033[0m" << std::endl;
```

Andrew Clos
CS-162 - 400
Final Project Design, Test Table, and Reflection of Cave Explorer

```
std::cout << "\033[3;100;30m                    ../#/********(///(%%#(%#(/**///*/////(#(/(((&@@&,                    \033[0m" << std::endl;
std::cout << "\033[3;100;30m                  . ,##&&*****/(#(#&&(((//*/*/////////////(((((/(((/%&&                  \033[0m" << std::endl;
std::cout << "\033[3;100;30m                 . .(.#@@(***(**/#%&%(/%/(/(((((///*/////////(###(#%(((%&%%*              \033[0m" << std::endl;
std::cout << "\033[3;100;30m               ,..*,,*((*******/(#&%(*//////(((//(//////(((%#((((#((*#%#/,(              \033[0m" << std::endl;
std::cout << "\033[3;100;30m              *.*/,***/****//*///%&&&&&&/////////////////#(((((((%%#####///(#((.          \033[0m" << std::endl;
std::cout << "\033[3;100;30m            /*.(##,************/(%&@&@%(/////////////////(///(((/((#((/(/(////##((         \033[0m" << std::endl;
std::cout << "\033[3;100;30m           (/.(((,,,**********/(&&&&&&(/////////////////((/(((((((((((((((/**//*###((       \033[0m" << std::endl;
std::cout << "\033[3;100;30m         *#(**((,,,,**/*,,**/##%%&%#/////////////////(((((/(((((((####(/////((#((((       \033[0m" << std::endl;
std::cout << "\033[3;100;30m        (%((/((/*,,,,*******(##&%&(////////////////////((((((((((((((((%(((***/**((((/*     \033[0m" << std::endl;
std::cout << "\033[3;100;30m        (%#(((//(/,,*//*/*/*(###%%%%(/////////////////////(/(//(((((((((((((((******/////   \033[0m" << std::endl;
std::cout << "\033[3;100;30m        (#(((/*#,,*/**/****(((##(#(*****/////////////////((/(((((((((((((((((*/(/#(#%%&%%/,   \033[0m" << std::endl;
std::cout << "\033[3;100;30m        /%((#/**,*#*******/////////((****/////////////////(((((((((((((((((((##//#%&#(#(((//    \033[0m" << std::endl;
std::cout << "\033[3;100;30m        (%%(/*(,*((**,**////***//##(/**/((#(((//(((((/*//(//(((((((((((((((####%#(##%%&(((/.   \033[0m" << std::endl;
std::cout << "\033[3;100;30m        ##///*(/*,,,**/*/////////#%#%%#////(///////(((/((#((((((((((((((((((%//#(##%%%*(*     \033[0m" << std::endl;
std::cout << "\033[3;100;30m        %#/#/*/******%*/*//***//(##%%%%(#(#//((((((((((#((###(((((((((((((//(&%/#((#,***     \033[0m" << std::endl;
std::cout << "\033[3;100;30m      . .*,/%/(/*/*(((/////*//((%%&&&%%#((/(####################((((((#%%%%&&@&@&((*,,#*     \033[0m" << std::endl;
std::cout << "\033[3;100;30m      ..,///##(*((///**/*/////((%(&%(#%%%%(##(%%%#%%%%%%%%%%%%%####((#@@@&&&%###%%#.,,,,,     \033[0m" << std::endl;
std::cout << "\033[3;100;30m      ..*////(%/(//(((//(//#%&&%%#/#//#@###%%#%&&&&&&%%&&&&&&&%&&&&&%%&@@@@&%&####..,(       \033[0m" << std::endl;
std::cout << "\033[3;100;30m      ,.,*****(#(***/*/%(#%####%%&(@%%&&&%######%%&&&&%%%&&&&&&&&&&@@#&&@@&%%%%%(#.,(*      \033[0m" << std::endl;
std::cout << "\033[3;100;30m       ,#//**,**(,,**/*((##%#%%&%&&&&&&&&%%#######(&&%%%%%##%&&%(&&&&&&@&@@%&&&&&%#*,,,*     \033[0m" << std::endl;
std::cout << "\033[3;100;30m         .%%(//(/((,*/#((###(###&%%,%%&&&%###((##%##%%&&&&%#(/(//(%&%&&&&&&&&&&&&%%/*,*/     \033[0m" << std::endl;
std::cout << "\033[3;100;30m            #%//(/####(((%((#%#%%##%%&&%%#/###%##(#(##(((((((((/#%%&&@@@&&%%%%#%%&%/*#&(      \033[0m" << std::endl;
std::cout << "\033[3;100;30m               %#/(##%###((#((%#%%%&&&&&&%%%%%#/(//((((/.  /#%%&&%%%%&&&&&&&&%####          \033[0m" << std::endl;
std::cout << "\033[3;100;30m                  (%%%%%%######%%%%%%&&@@@&&&&&&%((#((/. .,((#%%%%&&&&&%%#(((/*            \033[0m" << std::endl;
std::cout << "\033[3;100;30m                          ..((#######%%&@@&&%&&&&&%%%&&&&&&%#%%#*.                          \033[0m" << std::endl;
std::cout << "\033[3;100;30m                                                  ///////***,***                         \033[0m" << std::endl;

std::cout << "\033[1;97m                       ****/////////////////////(#(///////////////#%#//////,       \033[0m" << std::endl;
std::cout << "\033[1;97m                  .(   *(.     ,        ,/,        ./*         /      ,(*. /*                  \033[0m" << std::endl;
std::cout << "\033[1;97m                (**/.           /  .(*                  ./*  *.            .//(*                 \033[0m" << std::endl;
std::cout << "\033[1;97m             //               */(**                     /*(/,               ##.               \033[0m" << std::endl;
std::cout << "\033[1;97m          (#  .            /*   /    **               /,    /   ,/.          /  //*              \033[0m" << std::endl;
std::cout << "\033[1;97m       *//    .        ,(      /        **          /,        /      ,/.       /    *./,         \033[0m" << std::endl;
std::cout << "\033[1;97m     /.,*      ,    **         /            **     /,           *          */.  /      ./ ,/      \033[0m" << std::endl;
std::cout << "\033[1;97m   ** *,        **/.           /.              *(*              *(.           ./%,       *%,.%    \033[0m" << std::endl;
std::cout << "\033[1;97m #*//,*////*/, * *.,,***,, ,  *  ,.******,.. ,  *  . .  .  , .    * . ..,,,,.* , . .,//*(/*/*(#   \033[0m" << std::endl;
std::cout << "\033[1;97m *, .(        ,%.           .,%,               .#.               *.             */        /  (     \033[0m" << std::endl;
std::cout << "\033[1;97m   .*  /.       /(             /                (               ,            .%.       /  /       \033[0m" << std::endl;
std::cout << "\033[1;97m     ./  /        #/            .              .*              /           .(/       / ./        \033[0m" << std::endl;
std::cout << "\033[1;97m       ,/ *,      .**          ,,             / *            /           (/      ./ *.          \033[0m" << std::endl;
std::cout << "\033[1;97m         ,/ ,*      /,*         ,.            ( /            /          /./      / /.           \033[0m" << std::endl;
std::cout << "\033[1;97m            /.*,     /.*,        *.           * *           *         *..*     /./              \033[0m" << std::endl;
std::cout << "\033[1;97m              ,*./     / *,       ,,         ,.  ,         *        ,* /    ,***               \033[0m" << std::endl;
std::cout << "\033[1;97m                 /.(    ,  /.      ,         /   (         .      ./  ,   .*/.                \033[0m" << std::endl;
std::cout << "\033[1;97m                   .,/.   /  ,*     /        /   *        /     ,*  /   **/                  \033[0m" << std::endl;
std::cout << "\033[1;97m                     .//,  *,  /.    /      .,   .,      (     /  .*  */*                    \033[0m" << std::endl;
std::cout << "\033[1;97m                        /(.  /   /    (     *     /     /    /.  /. ,(,                      \033[0m" << std::endl;
std::cout << "\033[1;97m                          ,(/ ..   /   /    /     /    /   /    , (#                        \033[0m" << std::endl;
std::cout << "\033[1;97m                             (( /    /  /   /     ,,  /  ,*   ,,((                          \033[0m" << std::endl;
std::cout << "\033[1;97m                               (/*.   ./ / ..      * *../    //(                           \033[0m" << std::endl;
std::cout << "\033[1;97m                                 .%#     //*       / **    *%.                             \033[0m" << std::endl;
std::cout << "\033[1;97m                                    %.    ,%       ,%     (                               \033[0m" << std::endl;
std::cout << "\033[1;97m                                      *,   .*      /   ./                                  \033[0m" << std::endl;
std::cout << "\033[1;97m                                         /   /    /  /.                                    \033[0m" << std::endl;
std::cout << "\033[1;97m                                           /. /  ( /,                                     \033[0m" << std::endl;
std::cout << "\033[1;97m                                             ,/.((        \033[0m" << std::endl;
```

//emerald

```
std::cout << "\033[1;92m          .*///((((((#((((((((((((############(####(######################%#%%%%####%(          \033[0m" << std::endl;
std::cout << "\033[1;92m         ./(%#%%%%&&%&&%%&%%%&%%%&&&&&&&&&&&&&&%%%&%&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&%&&%(%%#   \033[0m" << std::endl;
```

Andrew Clos

CS-162 - 400

Final Project Design, Test Table, and Reflection of Cave Explorer

```
std::cout << "\033[1;92m         .((##(/###%%%%%%%%%%%%%%%&&&&&&&&&&&&&&&&&&&%&%&&&&&&&&&&&&&&&&&%&&&&&&%&&&&%#%&&&%#          \033[0m" << std::endl;
std::cout << "\033[1;92m        (((######%##%%%%%%%%%%%%%%%&&&&&&%&&&&%%&%%&%&%%&&&&&%&%&&&&&&&&%%%%%%&%%&&&%%&%%%%%&&%(        \033[0m" << std::endl;
std::cout << "\033[1;92m      (((#%%%#%%%%###%%%%#####%%%%%%%&&&%%%%%%%%%%%%%%%%%%%%%%&%&&%&&%&&%&%%%%%%####%%%%%%%%%%#%%/      \033[0m" << std::endl;
std::cout << "\033[1;92m   /%#(%%%%######(##(%%%%####%%%%%%%%%%%%%#%%%%%%%%%%%%%%%%%%%%%%%%%%&%%&%%%%%%###%%%####%&%%%%%%##(((.    \033[0m" << std::endl;
std::cout << "\033[1;92m   (####%##(#(/(#((((((%%%%%%%##%%##%%%%%#%%%%%%#%%%%%%%%%%%%%%%%%%%%%%%%%%#/*(/(/####%#%#%####* #,    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#%###(((#//((/(//%%###(#(/(((/(((##((####(######################(####((/,*/(((#%##((((      (,    \033[0m" << std::endl;
std::cout << "\033[1;92m   /###((/##((//////##%#((((///(///(/((###########(##(####((#(######((#(((/((#(/((((/*          (,    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#####(((/(//,,((###((/((((////((((((((###(%######(((##((##(((#####((###(%%%##((             *.    \033[0m" << std::endl;
std::cout << "\033[1;92m   /###%#/((//**,*//(###(////*/*//(/(((((((#(##%%#########((##(#(######((/((((#(/,*             (.    \033[0m" << std::endl;
std::cout << "\033[1;92m   /(#%##(((*/,,,*/((##((//*//**//(*((((((###########((##(#(###(####(/(/(////(((((             #.    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#####/(///*,.*/(###((*////*////*/////(((#####(###((#(#######(((((//((/////(((((             #.    \033[0m" << std::endl;
std::cout << "\033[1;92m   /##%####((*/,.//(##(//*/*///**/*(/////((((/((((((((((((((((((((((/(////*//(((((#             (.    \033[0m" << std::endl;
std::cout << "\033[1;92m   (#######((/,,./((##((////*//(**////////(/(((((#(#(((((((((##((//((/(/*////(/(((#             (.    \033[0m" << std::endl;
std::cout << "\033[1;92m   (#######/,/,,.((((((/**//*/***/**/(/((((((((((##((((((((((//////////////((((((((.            #.    \033[0m" << std::endl;
std::cout << "\033[1;92m   /####%#(**,,,,/((((((*//*/////*///((/((((((((((((((((((((((((///(((//////////((((((             (.    \033[0m" << std::endl;
std::cout << "\033[1;92m   (%##(##/*/,*,,/(((/((*///////(/*/////((//((((((((((((((((((((((((/(/////////((/(((            .(    \033[0m" << std::endl;
std::cout << "\033[1;92m   /%##(##//(*,./((((/(((/*/*(/(((/(////(//////(/((((((#((((((((((//////////((((((/ .       .   #    \033[0m" << std::endl;
std::cout << "\033[1;92m   (%##((%/*/*,,,(#((///******/(/(////((//((///(/((/((((((((/((((((//////////((((((/    ..      *    \033[0m" << std::endl;
std::cout << "\033[1;92m   (#(((*#//*,*,,##((///**/(//((/(////((///(*((//(///(/(((((((((((((/(/////((((((((/     ..     #    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#(/,,(((,/,,,####///**//((((////((((((//////////(/(((((((((////////(/((///(((((/    ..  .  .#    \033[0m" << std::endl;
std::cout << "\033[1;92m   /##/**///,*,,,((##(/////**/*///((/((((((/*///////(/(#(((((////////(/(/(///(((((/             #    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#((/#//***,..(#(#(#/**///((///////(#(////*//////((((((((//////////////////////(((*            .#    \033[0m" << std::endl;
std::cout << "\033[1;92m   /###(#(//*,.,,(((((//**//(///**(/////(//////////(/((((((/(/////(/////((/(/(((((*             #    \033[0m" << std::endl;
std::cout << "\033[1;92m   (####((//*,,,,((((*****//(((///(/((*///(//*///////((////(///(///(//(/(((((((((*             #    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#%###/*,*,,,,(/*/(*/***/(/*/(//((//////////*////(((#(((/((///////((((((((((((((,             (    \033[0m" << std::endl;
std::cout << "\033[1;92m   (###(/(*,/,,.,/*,*/*/*****//////////((////(/*//////(/((//(/((/((((######(((//,             #    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#(#(****....**,,*/********//*******///////*/(//////(//((/((((((((###(/((#(//.             #    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#((((/*.,*,.,(//**,/****//***,**//***/*//**/*///(///((//(((((((/((((((((((##(/.            .#    \033[0m" << std::endl;
std::cout << "\033[1;92m   /#/(#(/*,...,((((.,,,*****/******///**/////////(/#(////((##(#####%#((((###(////.             (    \033[0m" << std::endl;
std::cout << "\033[1;92m   (#(###/*,,,,*(((*,**/**/*/////*//**/***///(////(/(/*(**/(########(((((/(//*//****,.           /    \033[0m" << std::endl;
std::cout << "\033[1;92m   /###((//(%(*#*(/*,,*(/**/(**(((/*****/*////**//*/*****(##(###%####(((//**/,,,,,,,*,((/.      *    \033[0m" << std::endl;
std::cout << "\033[1;92m   /%#(%(%%%%%/((,/*,,/*/*/(///(#((/(/////////////(//(///(/((%#%%%##(((/(/////*.....,*#%%##((, *(    \033[0m" << std::endl;
std::cout << "\033[1;92m    #%&&&&%%%##%((((#(/*,((((/(//#(((#(////(/////(//((((//###%#(#((#((/((////////(((#%%%%##%%%&%/    \033[0m" << std::endl;
std::cout << "\033[1;92m      .#&&&&&%%######((#%%#%%%%%%%%%%%#(#(#%%%&%%%%%%%&%%%%%%%%%%%#%%#%%%%%#%%%#%#%#%##%(&&%%(       \033[0m" << std::endl;
std::cout << "\033[1;92m        .%%&&&%%%#####%%%%%%%%%%%%%%%%##%&%%%%%%%%%%%&%%%%%%%%%%%%%%%%%%%%%%#%%%%#%%%%&&&&%#         \033[0m" << std::endl;
std::cout << "\033[1;92m           ,%&&%&%%%%%%&%%%%%%%%%%%%%%%%%%%%%&%%%%%%&&&&%%%%%%%%%%%%%%%%%%%%%%%%%%%%&%%%%%%%&.           \033[0m" << std::endl;
std::cout << "\033[1;92m             /&%&%&&&%&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&%%%%&&&&&&&&&&&&&%#%&%%&&%&&&&%%#.           \033[0m" << std::endl;
```

//aquamarine

```
std::cout << "\033[1;96m                                         ,*/**/////*                                            \033[0m" << std::endl;
std::cout << "\033[1;96m                                      ,**////////,,*/                                  **.        \033[0m" << std::endl;
std::cout << "\033[1;96m                                  ,(*///(/((/(/*.,,((*.////***,   ,,                 ******        \033[0m" << std::endl;
std::cout << "\033[1;96m                                *(/((//(/((((**,,,((##(///////*..  ,*,              ,,,*,****       \033[0m" << std::endl;
std::cout << "\033[1;96m                              *(/////////((******/(((////(/////**/*,                .,,**,,***.      \033[0m" << std::endl;
std::cout << "\033[1;96m                             */((//////((**.,,,*,../(((///////////,(.            ..,,*,.,*,**      \033[0m" << std::endl;
std::cout << "\033[1;96m               .             ,/((####(###((**,*,.,,..,,//(//////////,((/           ..,,.....,,,,*    \033[0m" << std::endl;
std::cout << "\033[1;96m             ****          ./(/////####((,,(*****.,*,,.***/***////,*///((/.      .,,,,.......,,,*    \033[0m" << std::endl;
std::cout << "\033[1;96m            .***,*.       ((((/######(((*,,,*******,*,,.,,...,**,**/*///////,  ,,,**  ....,,*,    \033[0m" << std::endl;
std::cout << "\033[1;96m             ,**,,/     /(((((**/###(((***,,,*,////**.,,,...**********///////*,****      .,,,*    \033[0m" << std::endl;
std::cout << "\033[1;96m         ,**   /((((* *####((/*,,,*/((#,*****/***/***,,*,*...,,.**,*,**///*******,  ...,,.*,    \033[0m" << std::endl;
std::cout << "\033[1;96m         , ,**///////#####/(((*/,,****/(,*////////**,..,,,.,,,,*..,*...///****//**  .  ..,*,    \033[0m" << std::endl;
std::cout << "\033[1;96m         ....,,**//((/(##///(/****,***.,**,***///*/*,,*,,***/*/*****/*,///*****/*.   . ,,*,    \033[0m" << std::endl;
std::cout << "\033[1;96m         .**,,*,,,*/*///(/////****/***,**//**///(/*******,,********///*//***,***,    ....**    \033[0m" << std::endl;
std::cout << "\033[1;96m         *//*.,.***,**//(((/((/*///***,*/// .*//////***/... ,..////***/*,,**.***   .*****,***    \033[0m" << std::endl;
std::cout << "\033[1;96m        (///*/,****/,,,./((((///*/////**////.**//**,//*/**,.*///,*/*/****,//////**********,**,    \033[0m" << std::endl;
std::cout << "\033[1;96m      .(((///////*** *. ., ./((/(//////**///,**///*..,,/*,,,///////*,,***.,*//////***********,    \033[0m" << std::endl;
std::cout << "\033[1;96m    .((#(((////(//*.        //((////////*.//...,**//**(//((//////((**..,,,,,..,*,***********.    \033[0m" << std::endl;
std::cout << "\033[1;96m    /((((((((/(((/// ,.      .,.//(//*////*(//**//*/(((((((////////,,,,,**,,.,,*,,,,*,,,**,    \033[0m" << std::endl;
std::cout << "\033[1;96m    .(((((((((//((((*.,    ...../,///////(((((*****// ,/(//(((/**,,....,....,,.,*********    \033[0m" << std::endl;
std::cout << "\033[1;96m  .(,*/((((##/(((((/((* *.....,,,.*////(((/(////*...******,////**,,,,****/****,/*******,    \033[0m" << std::endl;
std::cout << "\033[1;96m (((**((//(**((((((/(//, ....,.,.,,//((((,,,**/((//***,,...,/////,/**///////*/*,******    \033[0m" << std::endl;
```

Andrew Clos
CS-162 - 400
Final Project Design, Test Table, and Reflection of Cave Explorer

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std::cout << "\033[1;96m  /(((((/*(((/////(((((((((//*.,,...,.,((((//,,*(/(((/*,   ,..,,,,.,///*/**/*//*//**//*****  \033[0m" << std::endl;
std::cout << "\033[1;96m   .*/((((**////**((((((((((///.  .*,.*((((((/((((//,,...,,,,,,**//////////**//******,**,  \033[0m" << std::endl;
std::cout << "\033[1;96m      *(((////*,////*////(/(((/*. ./,,,(*//(((((//***.,*//,*///*///..,,,,,******,  \033[0m" << std::endl;
std::cout << "\033[1;96m        /*(/*/(/,,.,*/*///(((((/./((((//**.,,*/////******/***,////.,,***,*,*,,  \033[0m" << std::endl;
std::cout << "\033[1;96m          .,//(,*.,,.,*//////(((####///*,* ...,,,//**/*,*,**/*,,**.,***,,*,,,  \033[0m" << std::endl;
std::cout << "\033[1;96m               ,*/,,,**/,/////(/(((((((/,*,//*,,*///****,,,,***,,,**** \033[0m" << std::endl;
std::cout << "\033[1;96m                       .**/(*(((((//(((((////*,.,,,//*.,.,***,,,,** \033[0m" << std::endl;
std::cout << "\033[1;96m                            ./((((((((((((///*,.,,,.,*,,.,,,*,*,*. \033[0m" << std::endl;
std::cout << "\033[1;96m                                  .*(((//(((//**,,,,,,,*,,.-,,,* \033[0m" << std::endl;
std::cout << "\033[1;96m                                        ,(/**,..,,,,*****,, \033[0m" << std::endl;
std::cout << "\033[1;96m                                          .**,,,,,,,,,,*, \033[0m" << std::endl;
std::cout << "\033[1;96m                                            .,,*,,,**. \033[0m" << std::endl;
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//opal

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std::cout << "\033[1;95m                                  .,,*/////*,.                                                  \033[0m" << std::endl;
std::cout << "\033[1;95m                             *(((/////////////((((////(((,                                      \033[0m" << std::endl;
std::cout << "\033[1;95m                         ,(///*********//*****/////////(((((,                                   \033[0m" << std::endl;
std::cout << "\033[1;95m                      .//*//****..,,**//////////////////////////((.                             \033[0m" << std::endl;
std::cout << "\033[1;95m                    *((/////*,*****/////////////////////**///////////(*                        \033[0m" << std::endl;
std::cout << "\033[1;95m                  *((//////****/*.*/////////////////////**/*//**///////////,                   \033[0m" << std::endl;
std::cout << "\033[1;95m                 /((////////*,**/////////////////*//((/*////**,,****////***//,*               \033[0m" << std::endl;
std::cout << "\033[1;95m               .(((/////////////////////////////((///((///,.,*****/**,**,///,/(              \033[0m" << std::endl;
std::cout << "\033[1;95m              ,(((/////////**/////////***/////////////////**,***///////*//////(/((,            \033[0m" << std::endl;
std::cout << "\033[1;95m             .((//////////***********/*/**/*,/////,..,*///*/**///,////*////*//(((((((.         \033[0m" << std::endl;
std::cout << "\033[1;95m             .((/////////*****,**//***//**/////,,...,/**/////*///***/////////(((/(((.          \033[0m" << std::endl;
std::cout << "\033[1;95m              ((//***********,,****///*/****///**,,**////*/////////*///(////////(((((/          \033[0m" << std::endl;
std::cout << "\033[1;95m             .(//*********,**,*,****///*//**/**..*//,*******//////*,,,*/////////////(((,        \033[0m" << std::endl;
std::cout << "\033[1;95m             /(//**********,,,,,,,******//*/*****/.*///*/****///,...,**//*/////////////(        \033[0m" << std::endl;
std::cout << "\033[1;95m             ((/////*//****,.,...,,**///////////////**///////*//***,,//**./////////*///////((,  \033[0m" << std::endl;
std::cout << "\033[1;95m            ,((////***,.....       ...***,*,***/*,*///*////..,**,******//*///**/*/////////((/  \033[0m" << std::endl;
std::cout << "\033[1;95m            *(/////***,,....        .,.. ,.,.,.//**.*//***,/..*/****//**///****/**//////(((((  \033[0m" << std::endl;
std::cout << "\033[1;95m            */////*/*//**,,,,.       .***,****,,***.**//////**,**/*,//////*,.**//**////////((((  \033[0m" << std::endl;
std::cout << "\033[1;95m            ,////,,**/////****       .,***,**,*..*,,*******/*,,*,*//******////*/*/*/**,*/////(((,  \033[0m" << std::endl;
std::cout << "\033[1;95m             ///////////////*,.        ,*,,,//*,***,,*******,*,***/,.,**//*,//*/,**//****/////(((/  \033[0m" << std::endl;
std::cout << "\033[1;95m             ////////////******,.      .****/*,//*,,****..,,..,****,,*///.*///*,.,,,,*,***//////*(,  \033[0m" << std::endl;
std::cout << "\033[1;95m            ,(//////////////**//*/**  .,,******,********,*,*,,***///***///*///**,,****///*//*///*,(*  \033[0m" << std::endl;
std::cout << "\033[1;95m             (((/////((//////*//**///*.,////,*/,,*****,*********/*/*,,///****,,.*,**//////////*/,  \033[0m" << std::endl;
std::cout << "\033[1;95m             *((//**/((((//*//,**///***,***/**,**//*********,..****/*//,*/////**.,,*/*/////////*///((  \033[0m" << std::endl;
std::cout << "\033[1;95m              ((/(//////////*.*//*////***,/***,*///*//****,***,,///*///////*/**,./////////////////(((  \033[0m" << std::endl;
std::cout << "\033[1;95m               ((((//////////////////**//////**/*///*,*///****///**////////*/////*///////,///////////(,  \033[0m" << std::endl;
std::cout << "\033[1;95m               .(((((/////((/((//*/*...*///((//*,./*,,*/******/*//////////////***//////////////////(((  \033[0m" << std::endl;
std::cout << "\033[1;95m                *((((((///,./**/****,.,*****/******,***//******//*/*********/**,////**//*////((/////((*  \033[0m" << std::endl;
std::cout << "\033[1;95m                 /(((((((((((((((**///*,,,***//*/////*,***,**/////*/////////*///*/////((//(////////(((  \033[0m" << std::endl;
std::cout << "\033[1;95m                  *((((((((((///,///////,********///////*,*/*/////////////((////*/(((/(((((//*/////(((((  \033[0m" << std::endl;
std::cout << "\033[1;95m                  *(((((((((((((((//*///*,,*,*/*//////*////////*/////*//,,,/////((((/(((((((((/////(((((  \033[0m" << std::endl;
std::cout << "\033[1;95m                   ,(((((((((((((((((//,,,,*,.**//////*,****///////**//,/.*//////(((((*/////////(((((((  \033[0m" << std::endl;
std::cout << "\033[1;95m                    (#((((*/(((((((//(/**,.,****/////,*/*//////////////////////*/,*/*/*/////*////(((((((.  \033[0m" << std::endl;
std::cout << "\033[1;95m                     ##(((*./.,/(((((((***,**,**/////////////**,*////,,,*//////*/(*/////,////(((((((.  \033[0m" << std::endl;
std::cout << "\033[1;95m                      /##(((//.*/(((((((((((((/////////////*,/**////////*/((///(/////////////(((((((  \033[0m" << std::endl;
std::cout << "\033[1;95m                       ,###(((,*////./((((((////**////((/(//////////////////////,/////////////((/(((#  \033[0m" << std::endl;
std::cout << "\033[1;95m                         (##((((((**((((((((((//**/////*,*/./////*///////((((((/,,//////////(((((((((  \033[0m" << std::endl;
std::cout << "\033[1;95m                          ,###(/*(((((((((((((((///////..*...*,,*///****//(((((((/////////////////(((((((/  \033[0m" << std::endl;
std::cout << "\033[1;95m                            *##(((((((((((((((///////*///*./,*//*/****/////(((((((((//*//////((((((##  \033[0m" << std::endl;
std::cout << "\033[1;95m                              ####(/((((((((////*//.**/*,////********////((((((((((((//*//////((((((#,  \033[0m" << std::endl;
std::cout << "\033[1;95m                               .####(((((((/,,*//,*///**////*,*/**/////(((((//(((((((////,,*/////////(*  \033[0m" << std::endl;
std::cout << "\033[1;95m                                 .####((((/*,.///,*/.,*///**,**.*,,,*////**/(**/*,,,,.,,,*((((((#/  \033[0m" << std::endl;
std::cout << "\033[1;95m                                   .###(((**,,,,///,*/********,.,**/////**//((((//***,,...*/((((#*  \033[0m" << std::endl;
std::cout << "\033[1;95m                                      (###((////,,,,..**...*,***/////**///(((((((///***..../(((#  \033[0m" << std::endl;
std::cout << "\033[1;95m                                        *######(((//***,*,,,***/*/*//((((((((((//*,.....,//(((((.  \033[0m" << std::endl;
std::cout << "\033[1;95m                                          .######(((/////////////////(((((((((//*,...,////(((#,  \033[0m" << std::endl;
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CS-162 - 400
Final Project Design, Test Table, and Reflection of Cave Explorer

```
std::cout << "\033[1;95m                    .######((((((((((((((///(((((///*,..,**/(((##(                    \033[0m" << std::endl;
std::cout << "\033[1;95m                       /########((((((((((((((((//*,.,*/(((##(.                       \033[0m" << std::endl;
std::cout << "\033[1;95m                           ./((((((((///(((((((((((####(((/                           \033[0m" << std::endl;
std::cout << "\033[1;95m                                  .*/((((((((((###/,                                  \033[0m" << std::endl;
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