

Alchemy Quest



DESIGN DOC V 0.7

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1 Introduction

1.1 What is Alchemy Quest?

Alchemy Quest is a simple puzzle game where players combine alchemic elements to create exotic combinations and score points. It is an adaption of a set of rules of play for a falling blocks game originally conceived by Motion Twin, titled NaturalChimie. This game was replicated under the libre software project OpenAlchemy by developers Guillaume Delhumeau and Antoine Morineau. Alchemy Quest utilizes the same codebase as OpenAlchemy, but it aims to expand the concept further beyond the single game mode limitations of NaturalChimie/OpenAlchemy by adding new and unique one-player and two-player experiences, along with a new visual aesthetic inspired by retro NES puzzle games.

1.2 Motivation and Goals

The idea to make this project a reality sprouted from an alternate tileset reimagining OpenAlchemist as an NES-styled game, uploaded on OpenGameArt by pixel artist usr_share. OpenAlchemist had ceased regular development since several years ago, so this graphics package was never implemented into the core game. Alchemy Quest aims to retake and improve the old OpenAlchemy codebase and merge it with this previously unused tileset. As such the main goals for the course of this project are as follows:

- **Short project, high return:** having a simple, yet engaging and fully-featured puzzle game created in a relatively short time span will act as a proof-of-concept for a new development methodology for libre projects that focuses on clear, attainable goals, and maximizing quality from readily available resources.
- **Quality Libre development:** the project aims to create a 100% libre game that will be developed in an open environment, so anyone can share their opinions and feedback. The same transparent environment will also be used to incentivize and invite more users to try out the game and test the codebase, increasing overall robustness and quality of the final product.
- **Re-using code and assets:** Alchemy Quest aims to prove that contrary to running perceptions, quality projects do not depend of 100% original ideas and concepts, and that there is precisely great power and creativity in refactoring libre resources. This is an argument not only against the proprietary nature of most code and assets

in the video games industry, but also as a call to all libre developers to look into readily available materials as means to seek inspiration and rethink their own ideas and development processes.

- **Keeping it simple:** the project will follow a bottom-to-top approach to game design. Starting with limited number of goals that can be achieved quickly, so that room for enhancements is made for on a solid foundation that steers the project from that point.
- **Retro flair:** Alchemy Quest will feature retro-inspired visuals as its main graphical theme, and render them in authentic NES style palette and resolution. This will grant the game a certain timeless aesthetic that is appealing to older and younger generations alike.
- **Lightweight and portable:** the project aims towards creating a game that is easy to run on and port to both modern and legacy devices alike.

2 The Game

2.1 Story

A storm roars violently outside, thunder echoing through the walls and corridors of an aging medieval keep. Locked inside a room in one of the towers, a young alchemist paces to and fro, manipulating vials, consulting books, and blending mysterious elements together.

They all ridiculed the pupil's ambitions back at alchemy school, but they were in for a lesson they wouldn't forget. Working day and night, the apprentice was determined to surpass them all, to become the greatest master alchemist the world had ever seen, and perhaps, even one day, discover the secret to transmuting metals into gold or maybe even find a way to cheat death.

There is still much work ahead. Taking the role of the Apprentice, you have to learn the elements and how to combine them, avoid reactions that could ruin hours of laboratory work, and most of all, best all your rival students in alchemy duels that will make your reputation last should you be victorious.

2.2 Gameplay

Players are given pieces consisting of two elements out of a pool of twelve different ones to stack on a 6x7 grid (7 being the default height, but it can be changed to either 8 or 9). At a starting level only three elements are selected from the pool, with the remaining nine having to be unlocked.

A combination of three units or more of the same element will generate one unit of an upper level element while eliminating all of the pieces of the combined element. The first time a player transmutes a combination of elements into a new one, that element will become unlocked at the pool and appear as part of falling the pieces in the queue.

The goal of the game is to score as many points as possible while attempting not to let the stack of pieces grow beyond its vertical limit, which results in a game over. Difficulty is created by the growing complexity of different elements making it difficult to manage the stack.

Unlike Tetris, the pieces will only fall whenever the player chooses to place them, and the player has no control of the pieces mid air. The player is able to preview the next piece aside from the one he is currently controlling.

(PROPOSED FOR 2P) **Philosopher's Stone.** A unique rare one-element piece. It removes all elements of the type it touches underneath when landing. The Philosopher's Stone concedes no points for the removed elements themselves, and doing so does not transmute to the next level either. Any scoring or combos resulting from the chain reaction, however, will award points to the player as usual.

2.3 Game Modes

Different game modes alter some of the rules while presenting unique challenges:

- **Standard mode:** The default mode of play. The player attempts to reach the highest possible score while preventing the stack of pieces from crossing the imposed vertical limit. Before the game starts the player has the option to alter the vertical limit and change the starting level to increase/decrease difficulty.
- **Puzzle mode (PROPOSED):** The player must clear a preset stack of elements through a series of levels of increased difficulty. The player has a limited amount of moves (number of pieces that can be played) to complete the puzzle which change according to level composition and difficulty.

- **Versus mode:** A two player mode where players face each other in a competition by amassing points and combos. The screen is split in two with an individual player stack on both left and right sides, controlled independently. Currently the “competing” mechanic is still under consideration. These can be one or more the following:
 - *Meter filling:* Similar to a game of tug-of-war. Each player is given the opposing end of a meter at the bottom of the screen, divided in two colors, corresponding to their specific stack. Scoring points and amassing combos in a short sequence would push the meter to the opposing player’s side. Combos made with higher elements as well as sequences that unlock new elements add more weight to the meter. Once the meter is filled by a single color, the corresponding player wins. A player can also lose the round if his stack overcomes the vertical limit.
 - *Combo massing:* Similar to Puyo Puyo. Players compete to make each other’s stack overcome the vertical limit. This is made by either scoring sequences or combos. A marker is added on top of the stack every time a player scores a combo. If one or more markers are still present after three seconds, a corresponding number of rows random elements (within the current unlocked element level range) is added to the bottom of the opponents stack, forcing is upwards. If players both have combo markers, they will cancel each other out respectively; for instance, if Player X has two combo markers and Player Y and one combo marker, after the three second countdown, one row of elements will be added to the bottom of Player Y’s stack. If Player X has one combo marker and Player Y also has one combo marker, after the three second timer hits, no row will be added to either player’s stack.
 - *Screen cleaning:* Similar to Dr. Mario. Players are given identical stacks of preset elements that must be cleansed as quickly as possible. The first player to cleanse the stack wins.
 - *Hurdle dropping:* Similar to Columns 2. Like in combo massing, players compete to make each other’s stack to overcome the vertical limit through filling a meter by scoring points and combos. Each player has an individual meter that can be filled up to three times. Once the meter is filled, the player can press a combination of B + directionals performing the following effects:
 - B + right – the player spawns one obstacle at the bottom of the enemy stack. A solid gold bar that takes one row. The bar cannot be removed by conventional transmuting of elements.
 - B + left – the player removes one obstacle from his own stack.
 - B + down – the player can destroy the current element in play by the opponent.
- **Campaign mode (PROPOSED):** This mode would be the equivalent of a story mode where the main protagonist (the Apprentice) would face a different AI

controlled opponent in a 1 round versus battle. After each opponent is defeated a victory screen would show, and the next round with a more difficult opponent would be loaded. Total score for all rounds is kept and summed up either when the player reaches game over or completes the campaign, with time bonuses being awarded on top for each round. Once all ten opponents are beat, a final congratulatory screen is shown to the player for having completed campaign mode.

2.4 Network Support

Alchemy Quest will support network multiplayer via simple direct IP connection. Ironically, this decision comes primarily out of convenience for testing and polishing the two-player experience more easily through remote testers.

2.5 Graphics and Interface

Alchemy Quest aims to be a true homage to classic NES puzzle games. This means the game will limit itself to the console's graphical specifications and interface design philosophies such as:

- 256x240 pixel sprite resolution
- 64 colors
- 9 color palette

By default the game will render the screen at 2x the size of it's original resolution (256x240) in windowed mode, but the players will also have the option to render the screen at 1x, or use Full Screen mode. The game will also include an option to add a Scanlines filter to the graphics.

2.5.1 Intro

The intro sequence will initially display the Free Gamer logo splash. It will be followed by a simple sequence of 2 or 3 images showcasing the game's story accompanied by short text descriptions.

2.5.2 Splash Screen and Main Menu

The Splash Screen and Main Menu will primarily follow the designs created by the tileset author usr_share. The Splash Screen will have an added 2 or 3 frame animation applied to the Alchemy Quest logo and the “PRESS START BUTTON” text will flicker intermittently every second.

The Main Menu will be split in five choices: Solo, Campaign, Versus, Instructions and Options.

2.5.3 Instructions mode

Selecting this option will initiate a small demo mode which will briefly explain the player the controls and mechanics of the game.

2.5.4 Options Menu

The Options menu will allow the player to customize the following settings: Language, Controls, Music Volume, Sound Volume, Window Size, and Scanlines.

2.5.5 One and Two Player interfaces

When selecting a mode of play, a secondary menu will be shown to players which will allow them to customize the following:



- Elements set – the graphical set of elements being displayed.
- Starting level – the starting unlocked elemental level (1 to 9).
- High scores – shows the high scores board in a new screen.

After the players customize the game's settings and hit the Go button, the round will begin. The interface will be organized differently depending if the game is single or multiplayer.

Singleplayer interface – A single stack will be rendered on screen, either on the center or close to the left edge (TO BE DECIDED). Score indicators showing the top and current scores will be shown, along with a preview on the following piece.

Multipayer interface – Two stacks will be displayed on-screen, one for each player. Current player score for the level will be shown at the top or bottom of each stack (to be decided). A preview of the following pieces for each player will be displayed in the center in between both stacks. Depending on how the Multipayer mode will turn out, some form of meter or character portraits might be displayed on screen as well.

2.5.6 Pause Menu

When pausing the game, a pause menu will show up. It is a simple black screen with the selection choices written in the default big font displaying the following options:

- Resume – resumes the game.
- Restart – restarts the round currently being played.
- Options – opens the options screen, allowing the player to alter settings during gameplay.
- Give Up – return to the Splash Screen.
- Quit – close application.

2.5.7 End of Round Statistics Window

Once a round is over, the stack(s) will be cleared and a corresponding message of Victory or Defeat will be shown. After a few seconds or if the player presses Fire, an overlay will be displayed over the stack showing round statistics. Some proposed statistics are:

- Score
- Bonus (if applicable)
- Total score
- Number of sequences
- Number of chain combos
- Max chain combo performed.

2.6 Music and Sound

Music and sound will be rendered within the limitations of the NES sound chip. The music and effects will either be sourced from OpenGameArt or commissioned independently.

In two player mode, the music will react to context during the game. If a player's stack is close to reaching the top limit, the music will speed up to create a stressing sensation.

3 Development cycle

Alchemy Quest prevents a max of four months from official project inception for the core standard and multiplayer versus mode, including testing and bug tracking. Two additional months are added for exploring new features and game modes, as well as improving stability and increasing the amount of ports.

3.1 Phases of Development

Phase 1 (1 month)

Programming tasks: Analyze the original OpenAlchemy codebase and adapt it to the new sprite sheet. Possibly replace Clanlib dependency with SDL in order to make the codebase compatible with porting to mobile devices.

Management tasks: Announce project and gather public attention. Recruit additional programmers. Create code repository and project timeline.

Graphical tasks: Format the tileset for usage with the adapted codebase.

Phase 2 (1 month)

Programming tasks: Finish standard single player and configuring options. Begin implementation of versus mode.

Management tasks: Recruit testers and initiate first round of tests for single player. Start creation of official website.

Graphical tasks: Create intro graphics and tweak menu graphics adequately.

Phase 3 (1 month)

Programming tasks: Finish versus mode. Setup autobuilders for packaging. First main release.

Management tasks: Create manual, finish website and wrap up testing feedback.

Graphical tasks: Create manual and cover art.

Phase 4 (1 month)

Programming tasks: Begin creation of campaign and/or puzzle mode.

Management tasks: Gather feedback from initial main release. Further promote the game.

Graphical tasks: Create additional graphics for campaign mode.

Phase 5 (15 days)

Programming tasks: Finish creation of campaign and/or puzzle mode.

Management tasks: Initiate second round of testing. Expand manual.

Phase 6 (15 days)

Programming tasks: Finish second main release, expand amount of ports.

Management tasks: Write post-mortem.

3.2 Ports

Initial version of the game will see the official packages released for GNU/Linux (Universal AppImage) Windows, and OSX. Other operating systems and mobile platforms will not be officially supported, but anyone will be able to fork the source code and create ports for this purpose.

3.3 Resources

Sprite sheet structuring: Ideally all sprites will be divided into two sprite sheet files in PNG format, one for game tiles and another one for fonts.

Music and sound format: All music and in game sounds will be converted to .ogg format.

3.4 Licensing

All code for Alchemy Quest will be licensed under the GNU General Public License V3 (GPLv3).

Original codebase for OpenAlchemist written by Guillaume Delhumeau is made available on Sourceforge under the GNU General Public License 2 (GPLv2) [here](#).

Original OpenAlchemist 8-bit tileset created by usr_share, inspired on original artwork by Antoine Morineau is made available under CC-BY-SA 3.0 [here](#).

All additional assets for Alchemy Quest will be licensed under CC-BY-SA 4.0.

The manual and all additional literature for the game (including this document) are licensed under CC-BY-SA 4.0.

4 Conclusion

Although Alchemy Quest is an unambitious project, its completion will mark the beginning of a new standard for libre development: one that no longer focuses on a pure exploratory hobby programmer approach, and that values presentation and graphics as much as quality code.

Alchemy Quest wants to prove there is power and appeal in small projects, and be the first in line for more projects of the same type in the future, while openly disseminating the message of Free Software and Creative Commons.

5 Team and Credits

Alchemy Quest contributors (listed alphabetically):

Alex Gleason (Web Designer)

Fabio (Programmer)

Dulsi (Programmer)

Hythlodæus (Project Coordinator)

Sasalami (Programmer)

Syltocin (2D Artist)

Alchemy Quest is based on NaturalChimie, a game created by Motion Twin, and OpenAlchemist, a libre software adaptation created by Guillaume Delhumeau and Antoine Morineau.

6 Change Log

01/08/2019 – v0.5 released – Initial release

04/08/2019 – v0.6 released

- Add new sections on Chapter 2: 2.2 Gameplay, 2.4 Network Support, 2.5 Graphics and Interface, and 2.6 Music and Sound.
- Add new section on Chapter 3: 3.2 Ports. Rewrote section 3.3 Resources.
- Add Chapter 5 Team Credits.
- Add Chapter 6 Changelog.

04/09/2019 – v0.7 released

- Added info about proposed Philosopher's Stone element in section 2.2 Gameplay.
- Added proposed 2P game mode "Hurdle dropping" to section 2.3 Game Modes.
- Detailed description for pause screen in sections 2.5.6 Pause Menu.
- Included screenshots of Wario's Woods (under fair use) for illustrating level and graphics pack selection tools under section 2.5.5 One and Two Player Interfaces