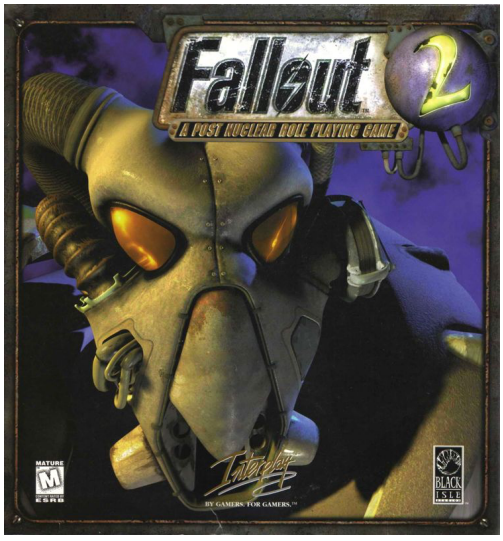
MacOS Fallout Character Editor

1. Company Background

Dr. Owen Hildreth is an Assistant Professor in the Department of Mechanical Engineering at the Colorado School of Mines. His primary research is on nanometer to centimeter-scale additive manufacturing technologies. He has written numerous MacOS applications for custom data-collection and visualization as part of his research.

2. Project Description

War. War Never Changes. But operating systems do. Numerous Fallout 1 and 2 Character Editors exist, but none of them run natively on macOS anymore. The goal of this project is to write a native macOS program to edit the Character States of a Saved Games for Fallout 1 and Fallout 2.



The saved game is a directory with numerous .SAV files that record player progress along with a SAVE.DAT file that records player state. This project focuses on editing the SAVE.DAT file only so that users can edit their character stats (*i.e.,* cheat a little). Ideally, the character editor would have similar functionality as the F12se.exe program available on Windows (https://github.com/nousrnam/F12se/releases). This includes adjusting S.P.E.C.A.I.L. stats, Player Info (name, age, etc..), Health (hit points), Traits, Skills, Perks, and Inventory.

This project is an excellent opportunity for a student to directly contribute to an open-source project with a fun application. It will expose students writing code in Swift and using modern APIs (such as SwiftUI). Students will be able to use this as a concrete demonstration of their skills when applying to future jobs or internships.

2.1 Deliverables

1. Final design report (mandatory for all teams)
2. Working prototype Fallout Character Editor macOS writing in Swift and using native macOS APIs.

2.2 Proposed Process

1. Write a command line tool or Swift Playground to parse the SAVE.DAT Fallout 1 and Fallout 2 files into native Swift Values and Structures (Int, Double, String, Enum, Struct, etc.)
    a. Note Fallout 1 and Fallout 2 have similar, but different file structures.

2. Write a command line tool or Swift Playground to save the Swift Values and Structures into a proper SAVE.DAT file that Fallout 1 and Fallout 2 can open
    a. Note Fallout 1 and Fallout 2 have similar, but different file structures.
3. Write a full macOS application and GUI to import existing saved files, edit character values, and save the file.

3. Resources

- https://fallout.wiki/wiki/SAVE.DAT_File_Format
- https://fallout.wiki/wiki/DAT_file#DAT1
- https://swiftpackageindex.com/mattcox/Pack

3.1 Fallout 2 - Community Edition

- https://github.com/alexbatalov/fallout2-ce
- Enables Fallout 2 from Good Old Games to run on MacOS

3.2 Extractor

- https://www.macsourceports.com/utilities
- Required to put Good Old Game files into a format that the Community Edition can access/run

3.3 Example Editor – Windows Version

- https://github.com/nousrnam/F12se/releases
- Combined Fallout 1 and Fallout 2 Character Editor that works on Windows (can be run using WINE or Crossover)

3.4 Example Editor – Typescript Version

- https://github.com/efossvold/fallout2-save-editor
- More Modern TypeScript Fallout 2 Save Game Editor.
- It doesn't save properly had has some errors, but might show some example parsing.

3.5 Swift Pack

- https://swiftpackageindex.com/mattcox/Pack
- Modern Swift Package to unpack binaries into native Swift values

3.6 Fallout File Structure Sources

- https://fallout.wiki/wiki/DAT_file#DAT1
- https://falloutmods.fandom.com/wiki/Fallout_2_File_Structure
- https://fallout.wiki/wiki/SAVE.DAT_File_Format
- https://fallout.wiki/wiki/Category:Game_Files

4. Desired Skill Set

Curious, self-motivated, interested in making a fun application for a fun game.

5. Preferred Team Size

3-4 students

6. Internship Opportunity

Lab research opportunities to work on macOS research applications within the Hildreth Research Group.

7. Location for Work

Off-site and on-site at Colorado School of Mines.