Zelda Classic and ZQuest

v2.53 API Specification

Rev. 1.2

Baseline

The 2.53 API is based entirely on the specification of ZC and ZQuest v2.50.2. All of the core components of 2.50.2 (Final) are the criteria for the base of the 2.53 specification; and all of the following represent changes to that specification, in the form of new features, or feature modifications.

Compatibility

As with prior versions of Zelda Classic and ZQuest, version 2.53.0 strives to permit the user to open older quests either in ZQuest, to edit and save them; or to play them in the ZC player.

The present specification supports quests made in the following ZC versions:

1.90

1.92 (various)

2.10

2.10.1

2.10.2

2.50.0

2.50.1

2.50.2

2.53.0

Like the various 2.50.x builds, and version 2.53.0, quests <u>created</u> in 2.53.0 will run in ZC builds 24, 28, and 29 (2.50.0, 2.50.1, and 2.50.2, respectively), and older version of ZQuest can open the quest files saved by 2.53; however, this may result in bugs when using quests generated by 2.53 in older versions of ZC and ZQuest, and we simply cannot do anything to prevent *that…*

All future ZC and ZQuest versions will cease this never-ending problem of permitting back-porting: All support for back-loading (e.g., loading a quest *made in 2.50.2*, in 2.50.0) quests to *earlier* builds is dead, after this release.

Support for forward-loading will be maintained indefinitely. Future versions of ZC in the 2.xx series will continue to support 1.90 and higher quest formats, and we may be able to add 1.84 to this specification with some work; or possibly 1.50 with additional work, as the source for 1.50 is available.

Quests made by 2.10 and earlier will have the *Correct Offset Enemy Collision Detection* NES Compatibility rule <u>enabled by default</u> from this point onward (*i.e. the '*half tile' trick will be <u>disabled</u>); as this rule did not exist in those builds, and any other behaviour creates potential bugs (e.g. mirror shield puzzles break). Future API specifications may allow toggling it in Zelda Classic (quest player).

Libraries

ZC and ZQuest v2.53 shall use updated version of the Allegro 4 game library, migrating from Allegro 4.2, to Allegro 4.4.3. This allows us to take advantage of many bugfixes in the Allegro API, and to use some of its enhancements.

Despite this, we still have our own modifications, related to a change in how Allegro stores the packfile_password, as it is no longer set to an empty string when read. We now do that manually, using a wrapper function.

We have also corrected some bugs in Allegro 4.4.3, which may or may not have been integrated into the main Allegro 4.4 repository on GitHub. We maintain these changes in our own fork of Allegro on GitHub at:

https://github.com/ArmageddonGames/allegro5/tree/4.4-ZCFixes

2.53.0 uses all of the typical Allegro dependencies (JPGALLEG v2.5, loadpng (1212?), libdumb, almp3, and alogg), and ZLIB 123.

For chiptune music, 2.53 uses GME version 0.6.

GME should be probably be updated to the current version in the future. The other libs seem to be satisfactory for the present working environments under which we deploy our software.

Control and Input

Controller Mapping

The controller mapping has been expanded, to include mapping of the directional buttons on a game pad, plus the inclusion of a Boolean tick box 'Use Analogue Stick Instead of Buttons'. This latter flag uses an analogue stick on a controller pad if one exists, rather than the directional (DPad) buttons.

The user must now configure these buttons, rather than allowing ZC determine what is best.

Cheats Menu

The keypresses for the Cheats System now have *lower priority* than keys mapped to ZC 'buttons'. Thus, if the user binds key Q to 'Button Ex1' (the system default), the Quick Walk function will not work by pressing the Q key. Instead, pressing Q will emulate the Ex1 controller button.

This was implemented to prevent accidentally using cheat options with controls that are being used to control the game itself.

Feature Additions

ZScript Parser

The specification for the ZScript parser now ensures that variables declared inside a scpe within a script, are destroyed when that scope exits. This helps to prevent stack overflows from repetitive variable declarations.

ZScript Instructions

The API spec now includes the following internal ZScript instructions (sorted by pointer type):

Global Instructions

```
int Version;
```
This is a *silent inclusion* f a variable, that should not be used by the user unless some issue arises that requires it. A header exists to determine the differences between 2.50.0, 2.50.1, and 2.50.2, and at present, the behavioural changes in 2.53.0 are not known to the extent that that header can detect this specific version of ZC. Thus, this integer containing the present version of Zelda Classic (when running a script in a quest), to report it to scripts. It reports in a manner as follows: 25000 (2.50.0), 25001 (2.50.1), 25002 (2.50.2), 25300 (2.53.0).

At present, this would report 0 or -1 for version of ZQuest that do not support this data.

ZScript Behaviour

<u>Global Slots</u>

In prior versions , the global script *OnExit* slot did not run properly. This has been resolved, and quests that have a script assigned to this slot, will now run the script when the player dies, when the player presses F6 or otherwise ends a game.

<u>Constants</u>

In prior versions, negative constants were incorrectly reading the sign in their string as a place digit. This artificially truncated negative constants in unusual ways. The issue is now resolved, and negative constants behave as expected.

NPC Behaviour

The behavior of flying and teleporting enemies has been **changed** as follows:

- It is no longer possible (nor supported) to spawn Wizzrobe (or similar) enemy types on solid combos, or walls.

- Flying enemies cannot enter doorways on NES Dungeon Screens.

Sprite Editor

The weapon sprite editor now displays the ID of the sprite that is selected.

Item Editor

Fonts

The planned 2.54 specification expands the number of internal fonts by a whopping 44 new entries, mainly based on old system fonts that are effectively in the public domain. All of the samples were gathered from sources that are posted under a creative commons license, with no special restrictions on deploying them in a product.

While this does nto affect the 2.53 API, the code to support these fonts is already in place, and is wrapped in #ifdef preprocessor statements, tied to the definition MOREFONTS_VERSION.

If MOREFONTS_VERSION is defined as 0, then these new sections are discarded. If MOREFONTS_VERSION is defined as 1, then the sections of code related to it become active, and the new fonts are available.

The fonts.dat file has likewise been updated, and a new header is in place for it.

Datafiles

The qst.dat file has been updated, and has a new header of 2.53, Build 30. This now matches the version, and the build, of ZQuest; thus, when a user creates a new quest, if they have timed saving, or timed backups enabled, these features work even if they have not manually saved their quest.

In 2.50.2 and earlier, rather than auto-saving, ZQuest would report 'This quest was created in an older version of ZQuest and cannot be autosaved'. This was due to inappropriate qst.dat information, and that bug has been resolved.

ZQuest UI

The ZQuest UI 'Favourite Commands' list has been expanded, adding the Quest Reports:

- Combo Locations

- Combo Type Locations

- Enemy Locations

- Integrity Check

- Item Locations

- Script Locations

- What Links Here

Zelda Classic UI

The Zelda Classic UI now has the following new features, and improvements:

<u>Controller Input Options</u>

The controller input code has been refactored slightly (by Saffith), and there is a new option to set the buttons for directional input on joysticks/joypads; and a flag to use an analogue stick over directional buttons.

<u>Allegro Console</u>

The user may now toggle the Allegro Console via the ZC menus, under Etc->Show Debug Console.

Item Behaviour

This specification corrects some item behavior.

Lens of Truth

Under 2.50.2 and earlier, the Lens of Truth item class could 'steal' the script used by another item. if the player is actively using the lens, and simultaneously uses another item that has an action script, the lens would then use that script once per frame, until the player stopped using the lens.

This bug has been corrected.

Stone of Agony

In prior ZC versions, the sensitivity for the Stone of Agony was not correct, and the item seemed to do nothing. This issue has been fixed, and quests that used the 'Stone of Agony' item, or item class as a dummy item, may now see it causing Link to vibrate when he is near a secret.

Bitmaps

In prior versions of ZC, bitmaps persisted across quests loaded into memory. This meant that if a player loaded a quest that drew to one of the available internal memory bitmaps, and then loaded another quest that read from that bitmap <u>without first clearing it</u>, that junk data would persist from the prior game session.

This has been corrected, and when exiting a quest, the bitmaps are now cleared.

Furthermore, in ZC versions 2.50.0, and 2.50.1, a bug existed where the subscreen offset would not be properly factored into script draws for blitting bitmaps. This bug was fixed in 2.50.2, however the fix created a new bug, in that quests made in earlier versions now (incorrectly) offset their Y position by -56 pixels.

Version 2.53.0 corrects both issues, by manually offsetting bitmaps for quests made using 2.50.0, or 2.50.1, whereas 2.50.2 (and later) quests use the correct bitmap placement as intended.

Script Drawing

In prior versions, the functions DrawCharacter(), and DrawInteger() did not properly respect their own scale arguments. This has been fixed, however old scripts that improperly set these values may see font scaling where none had previously existed. (Perhaps we should add a guard against this? That falls into COMBOSDM territory.)

ZScript Standard Headers

The ZScript standard headers, std.zh, and string.zh have been reorganized, and some slight changes have been made to how the headers operate.

All header child files are now in a sub-directory, ./std_zh/*

The base header, std.zh now imports its children from the sub-directory, and it imports string.zh by default. This has been guarded, by making the base string.zh file a dummy file, and adding string_functions.zh, and string_constants.zh to the ./std_zh path.

A small assortment of functions have been added to std_functions.zh, and to string_functions.zh.

The std_constants.zh file has been updated, with additional useful definitions.

The standard header now imports one base array by default. This is handled through std_vars.zh, and it is intended to prevent questmakers from running into issues where adding new global variables is not possible when updating a quest.

There is a new configuration file for some std.zh settings, std.cgf.

The most common headers used with ZScript code, are now included in the main ZC distribution. These include:

- ghost.zh : Used for scripted enemies.

- ffscript.zh : A base dependency for many headers, including ghost.zh.

- tango.zh : A tilefont and string utility for generating fancy dialogue.

- stdweapons.zh : Used for scripted weapons.

- particles.zh : A dependency for particle effects.

- laser.zh : A common dependency for enemy scripts.

- stdExtra.zh : A common dependency for many community scripts.

- ZVersion.zh : A utility header for determining the ZC version on which a script is running.

Bug Fixes and Improvements

The 2.53 spec includes the following bugfixes, and improvements, since 2.50.2 (Final):

Updated qst.dat. Now, new quests will autosave, if you have timed save, or quest backup enabled. The error 'This quest was created in an olver version of ZQuest' will no longer appear on new quests. ZoriaRPG, 1st September, 2017)

Applied a fix for numerous packfil_password() related problems.

Fixed PNG saving in ZQuest. (ZoriaRPG, 1st September, 2017)

Re-added New favourite commands, for Quest Reports (Combo Locations, Combo Type Locations, Enemy Locations, Integrity Check, Item Locations, Script Locations, and What Links Here) to the Favourite Commands list. THis was in 2.future, but never ported to orthodox ZQuest. (ZoriaRPG, 1st September, 2017)

Fixed file selection dialogues in Zelda Classic. After selecting a quest in the Load Quest dialogue, the default button is now 'OK', rather than browse, so hitting the enter key after selecting a file does not put you into a file select loop.

This was likewise something that I did before, but it was somehow lost in various commits. (ZoriaRPG, 1st September, 2017)

Unfixed buggy wizzrobe compat issue. Proper fix is still pending... (Gleeok, 28th August, 2017)

Initial update of ZLaunch, to add a ROMView launch button.

Fixed a bug where the Tile Editor refused to load image files on the first attempt. (ZoriaRPG, 27th August 2017)

Fixed a crash when loading corrupt 2.50.2 (and earlier) quest data; and recompiling scripts. (DarkDragon, 25th August, 2017)

Fixed crash when viewing Compatibility Quest Rules. (ZoriaRPG, 20th August, 2017)

Fixed a bug where the lens of truth stole the script of the last item used, and ran it every frame. (ZoriaRPG, 20th August, 2017)

New Allegro libraries using Allegro 4.4.3, with some patches.

Fixed issues with the infinite wallet.

Fixed Link's attack not being cancelled when he is frozen.

Fixed the race condition issue with keyboard input in Allegro 4.4.3. (DarkDragon, 13th August, 2017)

Fixed an issue with scrolling between land and water. (DarkDragon, 11th August, 2017)

Fixed an issue where the subscreen did not always update, by checking item validity when changing dmaps. (DarkDragon, 10th August, 2017)

Reverted the quest rule for COMBOSDM. We'll come back to this, later. (DarkDragon)

Added compatibility rule for old quests that rely on screen item pickup disabling hunger, for old quests. (DarkDragon, 21st July, 2017)

Added a few functions to std.zh. (ZoriaRPG, July 2017)

Fixed a bug in ZQuest that was corrupting ag.cfg. (DarkDragon; and ZoriaRPG, July, 2017)

Fixed a bug where MIDI files could not be loaded in ZQuest. (DarkDragon, July 2017)

Updated std.zh to 2.50.3 version, plus some rearranging in a std_zh path.

Updated all included headers to their current versions.

Pruned some files.

Unlocked 1st.qst and 2nd.qst. (ZoriaRPG, 11th July, 2017)

Fixed improper error return values on some ffscript functions.

Seem to have fixed reported bug of ZC crashing if the user shiftws focus when assigning joypad buttons.

In any case, I can not replicate it in this build, and I did change a read_button function that was a bit bonkers. (ZoriaRPG, 2nd July, 2017)

ZC and ZQuest now use Allegro 4.4. (DarkDragon, 2nd July, 2017)

Fixed 3rd quest with zero deaths not going to 5th quest. (ZoriaRPG, 20th June, 2017)

Reverted COMBOSDM change made by Saffith, as it caused different bugs with older players.

This is properly fixed in 2.51+. (ZoriaRPG, 20th June 2017)

Fixed long-standing bug where setting Link->Item every frame causes lag. (ZoriaRPG, May 2017)

Fixed lweapon->Behind not working. (ZoriaRPG, May 2017)

Fixed ffc->Link being unable to be cleared, or otherwise set to 0 (ZoriaRPG, May 2017)

Fixed scale args for DrawChar() and DrawInteger(): Both of these now scale per zscript.txt documentation. (ZoriaRPG, Jan 2017)

Zelda Classic Menus: Added Etc->Show Debug Console. This opens the Allegro debug console or closes it if it is open. (ZoriaRPG, Jan 2017)

ZScript Variables in scope are destroyed when their scope exits. (DarkDragon, Jan 2017)

Fixed long-standing keyboard issues with alt_tab, and hopfully) issues with the keyboard losing focus. (DD/Z, Dec 2016-Jan 2017)

Added a checkbox to disable analog stick movement.

Changed joystick config dialogues to match keyboard config dialogues.

Added more joystick options to ag.cfg.

Small fixes to joystick input.

Fixed minor issues in key config dialogues. (Saffith, 18-Dec-2016)

Additional fixes with Link exiting water. (Saffith, 15-Dec-2016)

Fixed an invalid read in draw_wavy(). (Saffith, 14-Dec-2016)

Fixed Link's position being offset improperly on continue when quakeclk > 0.

Ensure overscan rectangle is black while the screen is shaking.

Fixed an issue with Link exiting water.

Fixed Stone of Agony sensitivity. (Saffith, 11-Dec-2016)

Fixed an issue where bitmaps may be drawn improperly based on ZQuest version.

Fixed incorrect screen calculation and possible crash in warp with combos that carry over. (Saffith, 6-Dec-2016)

Global script OnExit now works. In prior versions, this script did not run.

Fixed a crash when loading a sfx file with more than 35 chars or without any extension. (Gleeok, 2015-12-30 01:05:05)

Fixed negative constants being read incorrectly.

Fixed incorrect screen calculation and possible crash in Game->SetComboSolid(). (Saffith, 2015-12-19 19:41:38)

Fixed a crash when importing combos. (Saffith, 2015-11-27 09:30:31)

Replaced the built-in MIDIs with versions edited by zaphod77 to sound more like the NES game. (Saffith, 2015-10-14 10:41:20)