Complete FireRed Upgrade



Configuration Options

There are many configurable options in the file **src/config.h**. These options are meant to provide the user with as much versatility as possible. Below is a more detailed description of each option than show in the configuration file:

**Var Options**

|  |  |
| --- | --- |
| *Flag Definition* | *Description* |
| TOTEM\_VAR | This represents are series of vars using for initiating battles with [Totem Pokemon](https://bulbapedia.bulbagarden.net/wiki/Totem_Pok%C3%A9mon). There are four vars in total, each representing a specific Pokemon slot on the field. Adding the following values to the var will indicate which slot that var is for:  0: *Player Pokemon in Singles, Left Player Pokemon in Doubles*  1: *Enemy Pokemon in Singles, Right Enemy Pokemon in Doubles*  2: *Right Player Pokemon in Doubles*  3: *Right Enemy Pokemon in Doubles*  The vars must be set to the addition of two values. Choose one from each of the following sets:  **Stats**:  1: *Attack*  2: *Defense*  3: *Speed*  4: *Special Attack*  5: *Special Defense*  6: *Accuracy*  7: *Evasion*  **Amount**:  0x10: *Increase Stat by 1*  0x20: *Increase Stat by 2*  0x30: *Increase Stat by 3*  0x40: *Increase Stat by 4*  0x50: *Increase Stat by 5*  0x60: *Increase Stat by 6*  0x90: *Decrease Stat by 1*  0xA0: *Decrease Stat by 2*  0xB0: *Decrease Stat by 3*  0xC0: *Decrease Stat by 4*  0xD0: *Decrease Stat by 5*  0xE0: *Decrease Stat by 6*  So, for instance, having the enemy Pokemon start the battle with its *Attack* raised by *2*, you would set the var TOTEM\_VAR + 1 to the value of 0x21 (0x1 + 0x20). |
| NPC\_FOLLOWING\_VAR | If the *Follow Me* feature is used, this var must be set to the *NPC Id* (*Person Id* in *Advance Map*) of the following NPC. If no NPC is following the player, this var should be set to 0. |
| OW\_SPRITE\_SWITCH\_VAR | Setting this var to a value other than 0 will change the picture used for the player’s Overworld sprite. The value should correspond to the *Picture Id* of the NPC. |
| BACKSPRITE\_SWITCH\_VAR | Setting this var to a value other than 0 will change the default back sprite loaded for the player in battle.  See **src/table/Trainer\_Backsprite\_Table.s** for a list of available backsprites. |
| BATTLE\_BG\_VAR | If CUSTOM\_BATTLE\_BACKGROUNDS is defined, Setting this var to a value other than 0 will cause the regular battle background loaded to be replaced by a custom one.  See **/include/battle.h** for a list of options.  Search for BATTLE\_TERRAIN\_GRASS in the file to see them. |

**Flag Options**

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| --- | --- |
| *Flag Definition* | *Description* |
| INVERSE\_FLAG | Setting this flag will enable [Inverse Battles](https://bulbapedia.bulbagarden.net/wiki/Inverse_Battle).  This flag is automatically cleared at the end of each battle. |
| SKY\_BATTLE\_FLAG | Setting this flag will indicate to the engine that a [Sky Battle](https://bulbapedia.bulbagarden.net/wiki/Sky_Battle) is in progress.  This flag is automatically cleared at the end of each battle. |
| NO\_CATCHING\_FLAG | Setting this flag will cause enemy Pokemon to always dodge balls thrown at them.  This flag is automatically cleared at the end of each battle. |
| NO\_RUNNING\_FLAG | Setting this flag prevents the player from running away during wild battles.  This flag is automatically cleared at the end of each battle. |
| NO\_CATCHING\_AND\_RUNNING\_FLAG | This flag acts as a combination of the above two flags.  This flag is automatically cleared at the end of each battle. |
| CATCH\_TRAINERS\_POKEMON\_FLAG | If CATCH\_TRAINERS\_POKEMON is defined, then setting this flag allows the player to capture Pokemon belonging to the opposing trainer. Capturing a Pokemon in this way will automatically end the battle.  This flag is automatically cleared at the end of each battle. |
| EXP\_SHARE\_FLAG | If OLD\_EXP\_SHARE is not defined, then setting this flag activates the Gen 6+ Exp. Share. |
| DOUBLE\_BATTLE\_FLAG | If ACTIVATE\_DOUBLE\_BATTLE\_FROM\_FLAG is defined, then setting this flag will cause battles against trainers to be [Double Battles](https://bulbapedia.bulbagarden.net/wiki/Double_Battle), if possible. |
| TAG\_BATTLE\_FLAG | This flag is set by the engine when the scripting command *trainerbattle 0x10* is used in a script to activate a tag battle. If setting this flag manually, take care to also set PARTNER\_VAR and PARTNER\_BACKSPRITE\_VAR. This flag is automatically cleared at the end of each battle. |
| TWO\_OPPONENT\_FLAG | This flag is set by the engine when the scripting command *trainerbattle 0x11* is used in a script to activate a battle against two opponents. If setting this flag manually, take care to also set SECOND\_OPPONENT\_VAR. This flag is automatically cleared at the end of each battle. |
| ACTIVATE\_TUTORIAL\_FLAG | Setting this flag activates Professor Oak’s tutorial during the next trainer battle. This flag is automatically cleared at the end of each battle. |
| WILD\_CUSTOM\_MOVES\_FLAG | //TODO |
| SMART\_WILD\_FLAG | Setting this flag allows Wild Pokemon to use the basic AI checks used in trainer battles. This flag is automatically cleared at the end of each battle. |
| SCALE\_TRAINER\_LEVELS\_FLAG | Setting this flag causes all Trainer Pokemon to have levels that match the highest level in your party. |

**Battle Tower Options**

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| --- | --- |
| *Definition* | *Description* |
| BATTLE\_TOWER\_FLAG | Setting this flag indicates to the engine that the Player is in the [Battle Tower](https://bulbapedia.bulbagarden.net/wiki/Battle_Tower). This means that:   * Trainer Pokemon will be generated within the restrictions of the tier set in the var defined in BATTLE\_TOWER\_TIER. The amount of Pokemon generated will match the number set in the var defined in BATTLE\_TOWER\_POKE\_LEVEL. * Trainer Pokemon will have Pokemon with the level contained in the var defined in BATTLE\_TOWER\_POKE\_LEVEL. * The battle format will be loaded from the var defined in BATTLE\_TOWER\_BATTLE\_TYPE. * The music in-battle will be played based on what is contained in the var defined in BATTLE\_TOWER\_SONG\_OVERRIDE. |
| BATTLE\_TOWER\_POKE\_NUM | Setting this var to a value between 1 & 6 dictates the quantity of Pokemon the player and trainers can use in the Battle Tower.  Setting it to 0 will default in 1.  Setting it to a number greater than 6 will default in 6. |
| BATTLE\_TOWER\_POKE\_LEVEL | Setting this var to a value between 1 and what is defined in MAX\_LEVEL will set all Pokemon in the Battle Tower to that level.  Setting it to 0 will default in 1.  Setting to a number greater than MAX\_LEVEL will default in MAX\_LEVEL. |
| BATTLE\_TOWER\_BATTLE\_TYPE | Setting this var to one of the below values set the battle format in the Battle Tower:  0: Single Battle  1: Double Battle  2: Multi Battle  3: Link Multi Battle  Any other value defaults in Single Battle. |
| BATTLE\_TOWER\_TIER | Setting this var to one of the below values indicates to the engine which ruleset should be following for battles in the Battle Tower:  0: Regular Battle Tower Rules  1: No Restrictions  2: [Smogon OU](https://www.smogon.com/dex/sm/formats/ou/)  3: [Smogon Uber](https://www.smogon.com/dex/sm/formats/uber/)  4: [Smogon Little Cup](https://www.smogon.com/dex/sm/formats/lc/)  5: Skeli’s Middle Cup |
| BATTLE\_TOWER\_TID | If battles in the Battle Tower are against a trainer with this trainer Id, a random team will automatically be generated for the trainer. |
| BATTLE\_TOWER\_TRAINER\_NAME | This var is automatically set by the engine to hold the index of the random name for the Battle Tower trainer. It is set to 0xFFFF after every battle. Do not set it manually. |
| BATTLE\_TOWER\_SONG\_OVERRIDE | Setting this var to a song Id will cause that song to be played in Battle Tower battles and Link Battles. |
| TOWER\_TRAINER\_ID\_VAR | This var is set by special 0xXX to indicate which trainer class and details is being spawned as the first opponent. |
| TOWER\_TRAINER\_ID\_2\_VAR | This var is set by special 0xXX to indicate which trainer class and details is being spawned as the second opponent in multi battles. |
| TOWER\_TRAINER\_ID\_PARTNER\_VAR | This var is set by special 0xXX to indicate which trainer class and details is being spawned as the player’s partner in multi battles if the partner is chosen to be randomized. |

**Times of Day**

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| *Definition* | *Description* |
| TIME\_MORNING\_START | If TIME\_ENABLED is defined, set this to the hour (in 24 hr system) that morning starts. |
| TIME\_DAY\_START | If TIME\_ENABLED is defined, set this to the hour (in 24 hr system) that day starts. |
| TIME\_AFTERNOON\_START | If TIME\_ENABLED is defined, set this to the hour (in 24 hr system) that afternoon starts. |
| TIME\_NIGHT\_START | If TIME\_ENABLED is defined, set this to the hour (in 24 hr system) that night starts. |

**Other Number Definitions**

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| --- | --- |
| *Definition* | *Description* |
| KANTO\_DEX\_COUNT | Number of Pokemon in the regional Pokedex. |
| NATIONAL\_DEX\_COUNT | Number of Pokemon in the national Pokedex. |
| MAX\_NUM\_POKEMON | Set to the highest Pokemon index + 1. |
| MAX\_LEVEL | The highest possible level for a Pokemon. |
| NUM\_TRAINER\_CLASSES | The number of trainer classes. Vanilla FR has 107. |
| EVOS\_PER\_MON | If you’ve changed the number of evolutions per Pokemon, update this number. |
| DUSK\_BALL\_MULTIPLIER | The catch rate for [Dusk Balls](https://bulbapedia.bulbagarden.net/wiki/Pok%C3%A9_Ball#Dusk_Ball). |
| STANDARD\_IV | The number of IVs for each stat that standard Trainer’s Pokemon are generated with. |

**Badge Obedience**

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| --- | --- |
| *Definition* | *Description* |
| BASE\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have no badges. |
| BADGE\_1\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 1 badge. |
| BADGE\_2\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 2 badges. |
| BADGE\_3\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 3 badges. |
| BADGE\_4\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 4 badges. |
| BADGE\_5\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 5 badges. |
| BADGE\_6\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 6 badges. |
| BADGE\_7\_OBEDIENCE\_LEVEL | The highest level that a traded Pokemon will obey the player at if they have 7 badges. |

**Memory Locations**

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| *Definition* | *Description* |
| SEEN\_DEX\_FLAGS | The memory location of the *Seen* Pokedex flags. If you have not expanded the Pokedex, this should be set to:  gSaveBlock2Ptr->pokedex.seen |
| CAUGHT\_DEX\_FLAGS | The memory location of the *Caught* Pokedex flags. If you have not expanded the Pokedex, this should be set to:  gSaveBlock2Ptr->pokedex.owned |

Putting a // before any of the below features will remove them from the engine.

**Misc Features**

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| --- | --- |
| *Definition* | *Description* |
| INVERSE\_BATTLES | Enables the possibility of having an [Inverse Battle](https://bulbapedia.bulbagarden.net/wiki/Inverse_Battle) if the INVERSE\_FLAG is set. |
| TIME\_ENABLED | Various features are updated to account for the time of day. Removing this feature will always result in *Daytime*. |
| OVERWRITE\_RIVAL | Loads the buffered rival’s name for trainer classes 0x51, 0x59, and 0x5A. |
| TRAINER\_CLASS\_POKE\_BALLS | Creates trainer Pokemon with custom Poke Balls based on trainer class determined by what is set in **src/Tables/** **Class\_Based\_Poke\_Ball\_Table.c**. |
| TRAINERS\_WITH\_EVS | Trainer Pokemon with a custom moveset, custom item, an AI value greater than 1, and an IV value (labeled EVs in most trainer editors) greater than 0 will have custom stats loaded from the spread number indicated by the IV value in **src/Tables/Trainers\_With\_EVs\_Table.c**. For example, setting the IV value to 1 will loaded the spread labeled “1” in the *TrainersWithEvsTable*.  Modifying the required conditions to activate this feature can be done by searching for the line *#ifdef TRAINERS\_WITH\_EVS* in **src/build\_pokemon.c**. |
| CONTINUE\_LOST\_BATTLES | If TUTORIAL\_BATTLES is defined, then if Var 0x8000 is set to 0xFEFE before a battle begins, *trainerbattle 0x9* can be used to continue a lost battle. The result of the battle will then be stored in Var 0x800D (LastResult).  If TUTORIAL\_BATTLES is not defined, then *trainerbattle 0x9* will always allow a lost battle to be continued. |
| CLASS\_BASED\_BALLS\_MULTI\_FIX | In Multi Battles, to avoid graphical bugs, the 2nd opponent and the player’s partner will use the same Poke Ball as the 1st opponent. |
| REALLY\_SMART\_AI | The AI knows everything about the Pokemon on the player’s side (such as which moves it has, its ability, item, etc.) without having seen it first. This does not allow the AI to know what move the player will use before they use it. |
| DISPLAY\_REAL\_MOVE\_TYPE\_ON\_MENU | When choosing a move, the move type the move will become will be displayed (such as Hidden Power, Weather Ball in Weather, etc.). |
| DISPLAY\_REAL\_ACCURACY\_ON\_MENU | When pressing the *L*-button while choosing a move, the "true" move accuracy will be displayed. For example, the move *Psychic* used by a Pokemon with *Compound Eyes* will have its accuracy appear as 130. |
| DISPLAY\_REAL\_POWER\_ON\_MENU | When pressing the *L*-button while choosing a move, the "true" move power will be displayed. For example, moves *like Fury Cutter* will show their correct power. |
| CUSTOM\_BATTLE\_BACKGROUNDS | Setting BATTLE\_BG\_VAR will allow custom backgrounds to be loaded in battles. |
| OVERWRITE\_BG\_FOR\_LEADER\_CHAMPION | Special Battle Background palettes will be loaded in for battles against Gym Leaders and the Champion, using the regular indoor background graphics as a base. |
| BRIDGE\_FIX | The water battle background will only be loaded in battle if the player's surfing sprite is shown. This means that if the player is walking on water, the battle background loaded will be incorrect. |
| MEGA\_EVOLUTION\_FEATURE | Mega Evolutions can be used. |
| TUTORIAL\_BATTLES | Professor Oak’s tutorial will be activated for *trainerbattle 0x9*. |

**Misc Battle Effect Options**

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| --- | --- |
| *Definition* | *Description* |
| OLD\_BURN\_DAMAGE | [Burn](https://bulbapedia.bulbagarden.net/wiki/Burn_(status_condition)) damage takes 1/8 of max health instead of 1/16. |
| OLD\_PARALYSIS\_SPD\_DROP | [Paralysis](https://bulbapedia.bulbagarden.net/wiki/Paralysis_(status_condition)) lower Speeds down to 1/4 instead of ½. |
| OLD\_CONFUSION\_CHANCE | [Confusion](https://bulbapedia.bulbagarden.net/wiki/Status_condition#Confusion) stops attacks 50% of the time instead of 33%. |
| INFINITE\_WEATHER | [Weather abilities](https://bulbapedia.bulbagarden.net/wiki/Category:Abilities_with_effects_on_weather_conditions) make weather last for infinite turns. |
| INFINITE\_TERRAIN | [Terrain abilities](https://bulbapedia.bulbagarden.net/wiki/Category:Abilities_with_effects_on_terrain) make terrain last for infinite turns. |
| NO\_SHEER\_COLD\_NERF | Remove all Gen 7 [Sheer Cold](https://bulbapedia.bulbagarden.net/wiki/Sheer_Cold_(move)) nerfs. |
| OLD\_MOVE\_SPLIT | The [Physical/Special](https://bulbapedia.bulbagarden.net/wiki/Damage_category#Physical.2FSpecial_split) split is based on move types.  Status moves are still set with the split byte, however. |

**Ability Options**

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| *Definition* | *Description* |
| OLD\_GALE\_WINGS | [Gale Wings](https://bulbapedia.bulbagarden.net/wiki/Gale_Wings_(Ability)) activates regardless of the user's HP. |
| OLD\_PRANKSTER | [Prankster](https://bulbapedia.bulbagarden.net/wiki/Prankster_(Ability)) won’t fail against Dark-Types. |

**Damage Calculation Options**

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| *Definition* | *Description* |
| OLD\_CRIT\_DAMAGE | [Critical hits](https://bulbapedia.bulbagarden.net/wiki/Critical_hit) to do 2x damage; 3x with [Sniper](https://bulbapedia.bulbagarden.net/wiki/Sniper_(Ability)). |
| CRIT\_CHANCE\_GEN\_6 | Uses the Gen 6 crit chance. |
| CRIT\_CHANCE\_GEN\_2\_TO\_5 | Uses the Gen 2-5 crit chance. |
| BADGE\_BOOSTS | Having badges gives the Player’s Pokemon [stat boosts](https://bulbapedia.bulbagarden.net/wiki/Badge#Stat_boost). |
| OLD\_ATE\_BOOST | “[Ate](https://bulbapedia.bulbagarden.net/wiki/Category:Abilities_that_can_modify_move_types)” abilities give a 1.3x boost instead of 1.2x. |
| OLD\_GEM\_BOOST | [Gems](https://bulbapedia.bulbagarden.net/wiki/Gem) give a 1.5x boost instead of 1.2x. |
| OLD\_EXPLOSION\_BOOST | [Exploding](https://bulbapedia.bulbagarden.net/wiki/Explosion_(move)) moves halve the target’s Defense. |
| OLD\_HIDDEN\_POWER\_BP | [Hidden Power](https://bulbapedia.bulbagarden.net/wiki/Hidden_Power_(move)) has its Base Power calculated from the attacker’s IVs. |
| PORTAL\_POWER | Enables Hoopa-Unbound’s signature ability in Pokemon Unbound, Portal Power. This reduces the power of non-contact moves by 25%. |
| OLD\_SOUL\_DEW\_EFFECT | [Soul Dew](https://bulbapedia.bulbagarden.net/wiki/Soul_Dew) doubles Latios & Latias' Sp. Atk & Sp. Def. |
| OLD\_PARENTAL\_BOND\_DAMAGE | The second hit of [Parental Bond](https://bulbapedia.bulbagarden.net/wiki/Parental_Bond_(Ability)#Generation_VI) does 50% of the original damage instead of 25%. |

**Capturing Pokemon Options**

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| --- | --- |
| *Definition* | *Description* |
| CATCH\_TRAINERS\_POKEMON | Allows the possibility to capture trainer Pokemon by setting the CATCH\_TRAINERS\_POKEMON\_FLAG. |
| NO\_HARDER\_WILD\_DOUBLES | In Gen 5, Pokemon encountered in wild double battles were [harder to catch](https://bulbapedia.bulbagarden.net/wiki/Catch_rate#Capture_method_.28Generation_V.29) (based on how many species are owned). This feature implements that catch rate decrement. |
| CRITICAL\_CAPTURE | Allows for [Critical Capture](https://bulbapedia.bulbagarden.net/wiki/Catch_rate#Critical_capture) to occur. The odds at which this occurs can be found in the function  *bool8 CriticalCapture(u32 odds)* found in **src/catching.c**. |

**Exp. Gain Options**

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| --- | --- |
| *Definition* | *Description* |
| OLD\_EXP\_SHARE | The [Exp. Share](https://bulbapedia.bulbagarden.net/wiki/Exp._Share) acts like it did before Gen 6. |
| TRAINER\_EXP\_BOOST | Gives an Exp boost for defeating a trainer’s Pokemon. (Pre Gen 7) |
| OLD\_EXP\_SPLIT | Exp. is split amongst all participating Pokemon. (Pre Gen 6) |
| FLAT\_EXP\_FORMULA | Use a Flat Exp. calculation formula. (Gens 2- 4, 6) |

**Other Options**

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| --- | --- |
| *Definition* | *Description* |
| ACTIVATE\_DOUBLE\_BATTLE\_FROM\_FLAG | Allow DOUBLE\_BATTLE\_FLAG to be set to active double battles for trainers if possible. |
| NO\_GHOST\_BATTLES | Disables the [Ghost battle](https://bulbapedia.bulbagarden.net/wiki/Ghost_(literal)) feature from Pokemon Tower in Lavender town. |
| GEN\_4\_PLAYER\_RUNNING\_FIX | Increase the lag between frames as the player OW runs, to simulate a more accurate Gen 4 running effect. |
| GEN4\_PLUS\_SELECTION\_SCREEN | This does not give the [Gen 4+ selection screen](https://www.pokecommunity.com/showthread.php?t=414022), it only adds features that supports it. |
| OBEDIENCE\_CHECK\_FOR\_PLAYER\_ORIGINAL\_POKEMON | Opens up the possibility that the Player's Pokemon can [disobey](https://bulbapedia.bulbagarden.net/wiki/Obedience) them, as opposed to just traded Pokemon. |
| WILD\_ALWAYS\_SMART | All wild Pokemon use AI features meant for trainers. |
| HAIL\_IN\_BATTLE | Enables the [Hail](https://bulbapedia.bulbagarden.net/wiki/Hail_(weather_condition)) weather effect in battle when the OW weather is set to WEATHER\_STEADY\_SNOW (0x7). |
| FOG\_IN\_BATTLE | Enables the [Fog](https://bulbapedia.bulbagarden.net/wiki/Fog) weather effect in battle. Do not enable this feature without first enabling one of the fog features below! |
| FOG\_IN\_BATTLE\_1 | Enables the Fog weather effect when the OW weather is set to WEATHER\_FOG\_1 (0x6). |
| FOG\_IN\_BATTLE\_2 | Enables the Fog weather effect when the OW weather is set to WEATHER\_FOG\_2 (0x9). |
| FOG\_IN\_BATTLE\_3 | Enables the Fog weather effect when the OW weather is set to WEATHER\_FOG\_3 (0xA). |

Credits

**Graphics**:

*Golche* - Attack Particles, Battle Backgrounds, Other Graphics

*Bela* - Poke Balls

*Solo993* - Backsprites

*canstockphoto.ca* - Battle Backgrounds

**Code**:

*Skeli* - A Bunch of Stuff

*Ghoulslash* - Attack Animations, Various Code

*Lixdel* - Attack Animations

*Pret* - PokeRuby, PokeFireRed, PokeEmerald

*Sagari* - Trainer Class Poke Balls, Pickup Update

*DizzyEgg* - Emerald Battle Engine Upgrade V1 & V2