

# Manuale di Galois 0.7

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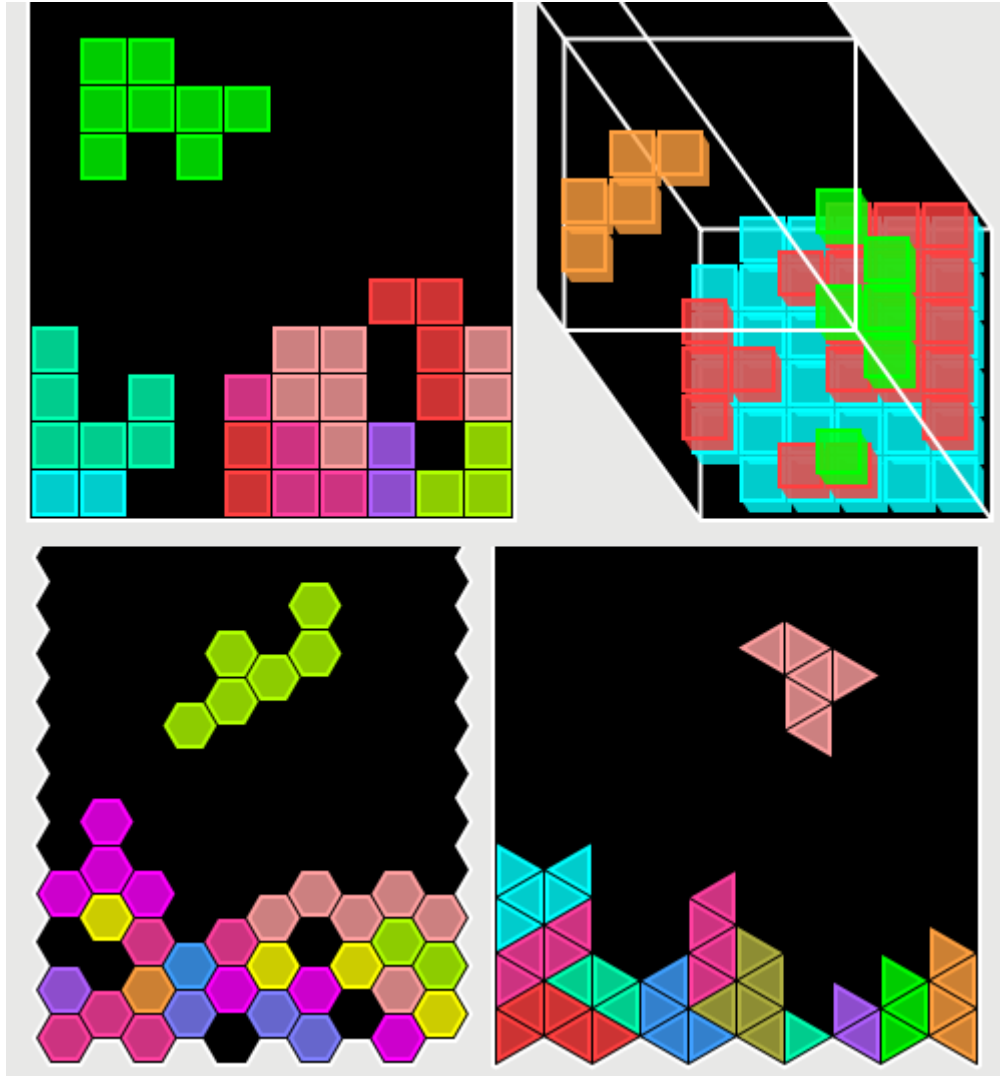
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# 1 Introduzione

Galois è un videogioco del tipo con i "blocchi che cadono", ma con caratteristiche uniche. Diversamente dalla maggior parte degli altri giochi di questo tipo, non è limitato a blocchi fatti da quattro mattoncini quadrati bidimensionali: potete scegliere tra varie diverse forme di mattoncini, blocchi composti da più o meno mattoncini, e persino tra partite bi e tridimensionali.



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## 1.1 Nome del gioco

Évariste Galois era un matematico francese, uno dei fondatori della "teoria dei gruppi", una struttura che attraversa quasi tutti i campi della matematica moderna. Questo gioco fa uso internamente di gruppi di un tipo specifico, i gruppi di simmetria. Poiché il primo gioco con i blocchi che cadono (che sfortunatamente era un programma proprietario) aveva un nome che terminava con "is", ho pensato che chiamare il mio Galois sarebbe stato un bell'omaggio a entrambi. E come bonus aggiuntivo, comincia con G, come Gtk+ e GNOME.

## 1.2 Note legali

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A copy of the license is included in Appendice [A](#).

## 2 Come installare

La versione più recente di Galois si può scaricare dal sito web di Galois: <http://www.nongnu.org/galois/>

Il modo più semplice è installare un binario precompilato, se è disponibile per la vostra piattaforma (vedi Sezione [2.3](#)). Altrimenti, dovrete scaricare il codice sorgente e compilarlo (vedi Sezione [2.4](#)).

Se state aggiornando da una versione più vecchia, vi può interessare leggere le note per l'aggiornamento (vedi Sezione [2.6](#)).

### 2.1 Piattaforme supportate

Galois dovrebbe funzionare su qualunque sistema sul quale le librerie software da cui dipende siano disponibili (vedi Sezione [2.5](#)). Questo comprende (ma non è limitato a) GNU/Linux, BSD, Microsoft Windows, e Mac OS X.

È stato effettivamente testato sui seguenti sistemi:

- Debian GNU/Linux stabile, architetture i386 e amd64 (cioè PC a 32 e a 64 bit). Il secondo è il mio computer, quindi è e resterà la piattaforma meglio supportata nel futuro prevedibile.
- Microsoft Windows XP, 7 e 10.

Se lo provate su un altro sistema, sia che riusciate o che falliate, per favore fatemi sapere.

### 2.2 Requisiti hardware

Essendo un gioco che non richiede un'animazione veloce né grafica sofisticata, Galois ha requisiti molto ridotti. Dovrebbe funzionare bene anche su computer molto vecchi ed economici e senza accelerazione hardware.

### 2.3 Pacchetti binari

In questo momento, binari precompilati di Galois sono disponibili per le seguenti piattaforme:

- Debian GNU/Linux: a partire da Debian 10 (Buster) Galois fa parte del rilascio stabile ufficiale di Debian. Questo significa che potete installarlo tramite gli strumenti standard di gestione dei pacchetti di Debian, cioè **apt-get** o **aptitude** sulla riga di comando, o un package manager grafico come **synaptic**. Il nome del pacchetto è `galois`. Per esempio, se siete autorizzati ad usare **sudo**, potete eseguire:

```
sudo apt-get install galois
```

Il pacchetto è disponibile per tutte le architetture rilasciate. Ho verificato che funziona su i386 e amd64; si suppone che funzioni anche sulle altre architetture, ma non so se qualcuno abbia effettivamente provato. Se provate, per favore fatemi sapere.

La versione in Debian 10 è Galois 0.6. Se volete una versione più recente, potete scaricare un pacchetto binario compilato per stabile dal sito web di Galois e installarlo con **dpkg**. Questo è disponibile per le architetture i386 e amd64.

Il pacchetto Debian potrebbe funzionare anche su distribuzioni derivate da Debian, come Ubuntu e altre. Se provate, per favore fatemi sapere.

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- Microsoft Windows: c'è un binario di Galois che potete scaricare ed eseguire, ma non c'è un pacchetto di installazione completo che installi anche i file di documentazione e faccia comparire Galois nel menù dei programmi. La documentazione è comunque disponibile sul sito web di Galois.

Il binario è stato compilato su Debian GNU/Linux usando l'ambiente di cross-compilazione [MXE](#).

Per le altre piattaforme, Galois deve essere compilato da sorgente (vedi Sezione [2.4](#)). Sono disponibile a fornire pacchetti binari se qualcuno si offre volontario per compilarli e mantenerli.

## 2.4 Installazione da sorgente

Per installare Galois da sorgente, per prima cosa dovete controllare che tutte le sue dipendenze siano installate sul vostro sistema, e installare tutte quelle mancanti (vedi Sezione [2.5](#)). Quando avete fatto questo, estraete il file archivio compresso `galois-0.7.tar.gz` in una directory a vostra scelta. Poi aprite una shell di comando (console o terminale), spostatevi nella directory base dell'albero dei sorgenti estratto, `galois-0.7`, e scrivete i seguenti comandi:

```
./configure
make
make install
```

`configure` ha molte opzioni da riga di comando con cui potete specificare dove installare, dove trovare le dipendenze (questo vi servirà se sono installate in posizioni non standard), quali flag di compilazione usare, e così via. Eseguite `./configure --help` per una lista completa.

Per il passo **make install**, dovete avere il permesso di scrittura sulla directory di installazione. Su GNU/Linux e altri sistemi Unix-compatibili, se state installando nella posizione standard (cioè sotto `/usr/local`), ciò vuol dire che dovete eseguire questo comando come root (usate **su** o **sudo**).

## 2.5 Dipendenze

Per poter compilare Galois, i seguenti pacchetti devono essere installati sul vostro sistema:

- Un ambiente Unix di base, compreso il programma `make`
- `g++` o un altro compilatore C++ che supporti almeno lo standard C++11
- `gtkmm`
- `libxml++`

Per tutte le principali versioni di GNU/Linux, versioni precompilate di questi pacchetti sono disponibili. Le librerie precompilate sono solitamente suddivise in un pacchetto "base" e uno "di sviluppo" (il secondo ha un nome che termina con `-dev` o `-devel`). Per compilare Galois, dovete installare entrambi; mentre per eseguire il programma compilato, sono richiesti solo i pacchetti base. Se volete anche poter ricompilare le versioni HTML e PDF della documentazione, vi serviranno anche questi:

- `xmlto`
- `dblatex` (per la versione PDF)

Nomi dei pacchetti per Debian 10 (Buster):

- pacchetti base: `libgtkmm-3.0-1v5`, `libxml++2.6-2v5`.
- compilatore e pacchetti di sviluppo: `make`, `g++`, `libgtkmm-3.0-dev`, `libxml++2.6-dev`.
- strumenti per compilare la documentazione: `xmlto`, `dblatex`, `texlive-lang-italian` (per la versione italiana).

I pacchetti per altre distribuzioni di GNU/Linux dovrebbero avere nomi simili, in particolare per le distribuzioni derivate da Debian.

Se state installando un pacchetto binario precompilato (vedi Sezione [2.3](#)), normalmente non vi dovete preoccupare di avere le necessarie dipendenze installate perché il sistema di gestione dei pacchetti se ne occupa automaticamente.

## 2.6 Note per l'aggiornamento

In Galois 0.3, i percorsi dove sono conservati i file di dati degli utenti sono stati cambiati per essere più coerenti con le convenzioni comunemente usate. Se state aggiornando da una release più vecchia, i file esistenti *non* verranno spostati automaticamente nei nuovi percorsi: se non volete perdere le vostre impostazioni e i punteggi, dovete spostarli manualmente *prima* di lanciare la nuova versione.

Il nuovo percorso per il file delle impostazioni è `config_dir/galois/galois.conf`, dove `config_dir` è il percorso restituito dalla funzione di glibmm `get_user_config_dir()` sul vostro computer (tipicamente `$HOME/.config` nei sistemi GNU/Linux). Il vecchio percorso era `config_dir/galois.conf` (senza la sottodirectory `galois`). Dovete creare la sottodirectory e spostarvi il file.

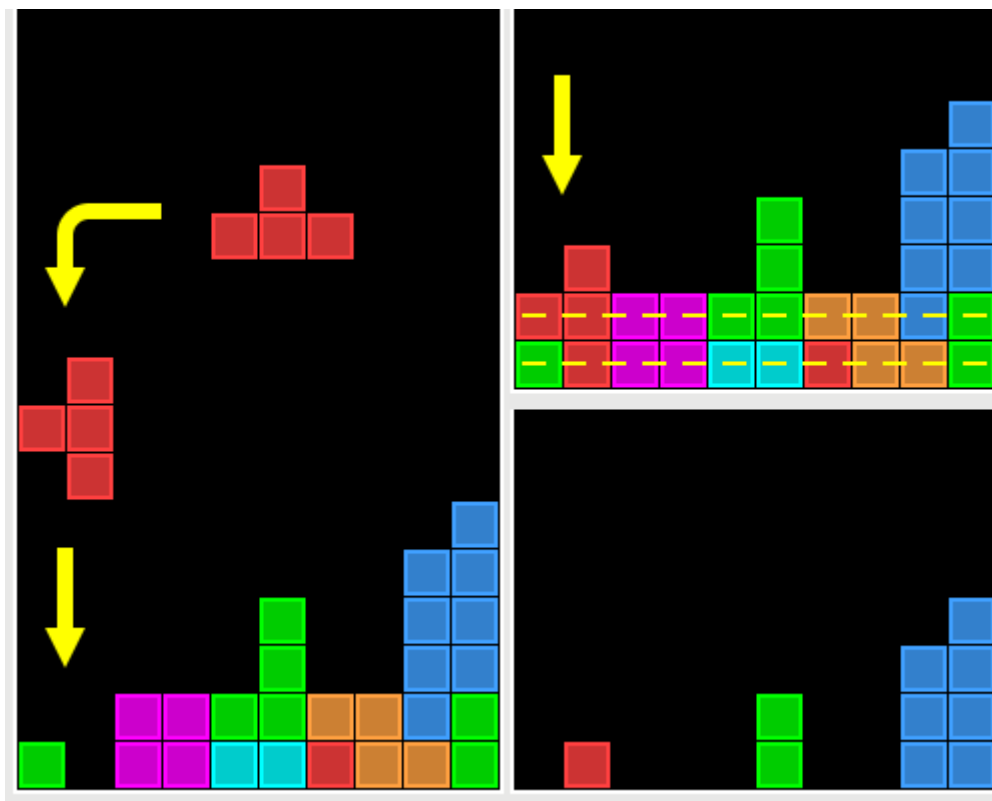
Il nuovo percorso per il file dei punteggi è `data_dir/galois/galois.res`, dove `data_dir` è il percorso restituito dalla funzione di glibmm `get_user_data_dir()` sul vostro computer (tipicamente `$HOME/.local/share` nei sistemi GNU/Linux). Il vecchio percorso era `data_dir/galois.res` (senza la sottodirectory `galois`). Dovete creare la sottodirectory e spostarvi il file.

## 3 Come giocare

Le partite di Galois si giocano su un tabellone fatto di celle quadrate, esagonali, triangolari o cubiche, dove blocchi fatti di "mattoncini" attaccati insieme, ciascuno dei quali occupa una cella, cadono a passo costante, uno per volta, finché si posano sul fondo del tabellone o sopra altri blocchi.

Mentre cadono, potete muoverli orizzontalmente, ruotarli e (se questa opzione è abilitata) rifletterli, in modo che quando si posano, si incastrino con gli altri blocchi, lasciando meno celle vuote possibile. Quando una linea orizzontale (o, nelle partite 3D, un piano) è occupata completamente da mattoncini, viene rimossa dal tabellone, e tutti i mattoncini che stavano al di sopra di essa cadono giù di una cella. (Potete anche rimuovere più linee in una volta sola se le completate con lo stesso blocco.)

L'obiettivo è rimuovere le linee (o i piani) abbastanza in fretta da evitare che i mattoncini si impilino fino alla cima del tabellone: quando non c'è più spazio per collocare un nuovo blocco che cade, la partita è finita. Questo diventa sempre più difficile man mano che la partita procede, perché, a seconda della modalità di gioco selezionata, o la velocità con cui i blocchi cadono, o il numero di mattoncini che compongono i blocchi, aumenta man mano che più linee vengono completate.



### 3.1 Lanciare Galois

Se state utilizzando un ambiente grafico che supporta la specificazione dei menù XDG (per esempio GNOME o KDE), vedrete una voce per Galois nei menù di sistema (sotto Applications → Games in Gnome 2) o nella funzionalità equivalente fornita dal vostro ambiente (panoramica delle applicazioni in Gnome 3), e potete lanciarlo cliccando su di essa. Altrimenti, potete creare un collegamento al file eseguibile `galois` sul vostro desktop (se il vostro ambiente permette i collegamenti sul desktop), o aprire un file manager e navigare nella directory dove esso è stato installato (tipicamente `/usr/games` o `/usr/local/games` nei sistemi GNU/Linux), o eseguirlo dalla riga di comando.

Per iniziare una nuova partita, scegliete New Game dal menù dell'applicazione (se il vostro ambiente lo supporta), o Game → New dalla barra dei menù, o premete Ctrl-N. Questo comando è disattivato quando una partita è già attiva (in corso o in pausa).

Per mettere in pausa una partita, o far ripartire una partita in pausa, premete il tasto assegnato all'azione Pause: di regola è **Esc**.

Per fermare definitivamente una partita in corso o in pausa, scegliete Stop Game dal menù dell'applicazione, o Game → Stop dalla barra dei menù. Se non c'è al momento una partita attiva, questo comando è disattivato.

Per aprire la finestra delle preferenze, scegliete Preferences dal menù dell'applicazione, o Game → Preferences dalla barra dei menù. Questo comando è disattivato quando c'è una partita attiva.

Per aprire la finestra dei punteggi, scegliete Scores dal menù dell'applicazione, o Game → Scores dalla barra dei menù. Questo comando è disattivato quando c'è una partita attiva. La finestra dei punteggi si aprirà anche alla fine della partita ogni volta che realizzate un punteggio che si collochi tra i primi 10 per le impostazioni correnti, e vi permetterà di inserire il vostro nome in quella riga.

Per avere aiuto su Galois, scegliete Help dal menù dell'applicazione, o Help → Contents dalla barra dei menù, o premete **F1**. Il Manuale di Galois (cioè questo documento) verrà visualizzato. Se non state utilizzando GNOME, questo potrebbe non funzionare; in ogni caso una versione HTML del manuale è distribuita con l'archivio dei sorgenti, e le versioni HTML e PDF possono essere scaricate dal sito web di Galois.

Per avere informazioni di base su Galois, scegliete About dal menù dell'applicazione, o Help → About dalla barra dei menù.

Per uscire da Galois, scegliete Quit dal menù dell'applicazione, o Game → Quit dalla barra dei menù, o premete Ctrl-Q.

### 3.2 Interfaccia del gioco

La finestra di Galois contiene i seguenti elementi:

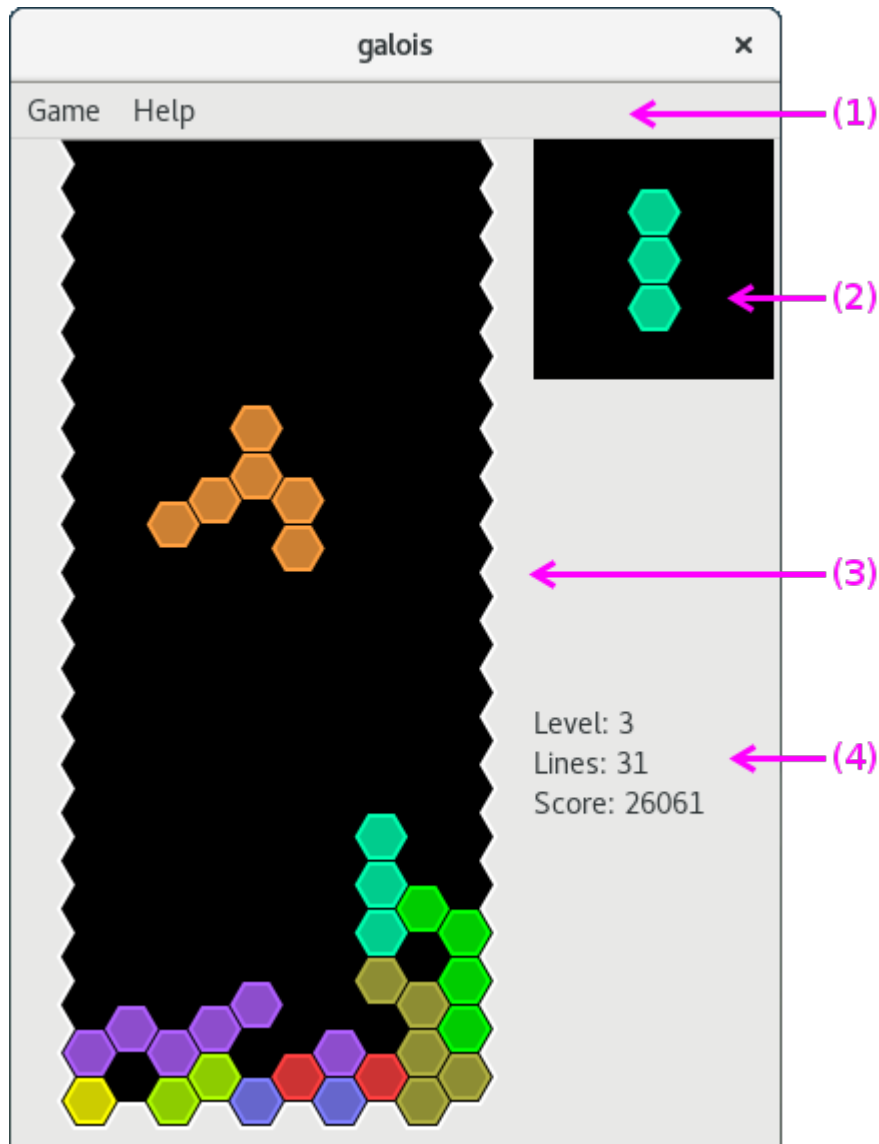
**Barra dei menù (1)** In cima alla finestra. Contiene le voci del menù per iniziare una nuova partita; fermare la partita in corso; aprire le finestre delle preferenze e dei punteggi; ottenere aiuto e informazioni su Galois; e uscire dal programma.

**Anteprima del prossimo blocco (2)** Nell'angolo in alto a destra della finestra.

**Tabellone del gioco (3)** Sulla sinistra della finestra. Questo è l'elemento principale dell'interfaccia del gioco: qui è dove cadono i blocchi.

**Visualizzazione del punteggio (4)** Sulla destra della finestra. Mostra il punteggio attuale, il livello, e il numero di linee completate.





### 3.3 Controlli del gioco

Mentre i blocchi cadono, potete compiere le seguenti azioni su di essi:

- Muoverli a destra o a sinistra, e nelle partite 3D in alto e in basso.
- Ruotarli: nelle partite 2D c'è un solo modo di rotazione (in senso antiorario), nelle partite 3D ce ne sono tre (intorno agli assi X, Y, e Z).
- Rifletterli: questa azione può essere attivata o disattivata nella finestra delle preferenze. Inizialmente è disattivata.
- Farli cadere: il blocco cade giù molto velocemente.

Potete eseguire ciascuna di queste azioni premendo il tasto corrispondente sulla tastiera. La mappatura tra azioni e tasti è mostrata nella finestra delle preferenze (scheda Controls) e può essere cambiata dall'utente. La mappatura di partenza è come segue:

- Per le partite 2D: ← e → per muovere il blocco, ↑ per ruotarlo, ↓ per rifletterlo (se permesso) e **spazio** per far cadere il blocco.
- Per le partite 3D: ←, →, ↑ e ↓ per muovere nelle quattro direzioni, **1**, **2** e **3** per ruotare, **4** per riflettere (se permesso) e **spazio** per far cadere il blocco.

Ho impostato diversi gruppi di controlli per le partite 2D e 3D perché in 2D,  $\uparrow$  per ruotare è la norma nei giochi con i blocchi che cadono e permette di giocare comodamente con una sola mano; ma in 3D è naturale usare i quattro tasti freccia per muovere nelle quattro direzioni.

### 3.4 Preferenze

La finestra delle preferenze ha due schede:

**Game** Impostazioni sulla geometria e le modalità di gioco:

- Scegliete la geometria tra: quadrata, esagonale, triangolare (tutte queste 2D), e cubica (3D), con o senza riflessione dei blocchi.
- Scegliete la larghezza del tabellone e (per le partite in 3D) la profondità.
- Scegliete cosa fare ai cambi di livello (ogni 10 linee completate): aumentare la velocità del gioco, la dimensione massima dei blocchi, o la dimensione dei superblocchi. Se scegliete la dimensione massima dei blocchi, potete anche scegliere se aumentare, tenere fissa o diminuire la dimensione minima. I superblocchi sono blocchi più grandi del massimo: sono abilitati solo se scegliete la dimensione dei superblocchi.
- Scegliete il livello di velocità iniziale e la dimensione massima e minima dei blocchi.
- Scegliete se rimuovere le linee anche quando non sono completamente piene: si possono permettere fino a 2 mattoncini mancanti.
- Scegliete se visualizzare il prossimo blocco.
- Scegliete se visualizzare dove si poserà il blocco.

**Controls** Impostazioni sui tasti di controllo: per cambiarne uno, fate doppio clic sul nome del tasto corrente (o selezionatelo con la tastiera e premete **Invio**) e quando viene evidenziato, premete il tasto con cui lo volete sostituire.

Le impostazioni sono salvate nel file `config_dir/galois/galois.conf`, dove `config_dir` è il percorso restituito dalla funzione di `glibmm get_user_config_dir()` sul vostro computer (tipicamente `$HOME/.config` nei sistemi GNU/Linux). Potete ripristinare le impostazioni iniziali cancellando questo file.

### 3.5 Punteggi

Galois registra i punteggi delle migliori partite insieme alle rispettive impostazioni. La finestra dei punteggi mostra i migliori 10 punteggi per le impostazioni correnti.

I punteggi possono essere filtrati secondo vari criteri, per esempio potete scegliere se vedere solo le partite giocate con uno specifico intervallo di dimensioni iniziali, o tutte le partite giocate con mattoncini quadrati, o persino con qualunque forma di mattoncini. I filtri possono essere cambiati usando i pulsanti e i campi in cima alla finestra dei punteggi.

Ho cercato di calibrare i punteggi proporzionalmente alla difficoltà del gioco, in modo che partite giocate con impostazioni differenti possano essere confrontate; ma è molto arduo dare una valutazione oggettiva di quanto sia difficile una data modalità di gioco.

I punteggi sono salvati nel file `data_dir/galois/galois.res`, dove `data_dir` è il path restituito dalla funzione di `glibmm get_user_data_dir()` sul vostro computer (tipicamente `$HOME/.local/share` nei sistemi GNU/Linux).

## 4 Come contribuire

"Gratuitamente avete ricevuto, gratuitamente date." (Matteo 10,8)

Se desiderate aiutare a migliorare Galois, siete invitati a contattarmi (vedi Sezione 5). Dovete accettare di rilasciare i vostri contributi come software libero sotto la licenza con cui Galois è rilasciato (la GNU General Public License, versione 3 o successiva).

## 5 Informazioni per contatti

Il sito web di Galois è su <http://www.nongnu.org/galois/>

La pagina del progetto su Savannah è <https://savannah.nongnu.org/projects/galois>

Per qualsiasi richiesta su Galois, mandate una email a [galois-list@nongnu.org](mailto:galois-list@nongnu.org)

Per iscrivervi alla mailing list, o consultare i suoi archivi, andate su <https://lists.nongnu.org/mailman/listinfo/galois-list>

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Version 3, 29 June 2007

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### 1. Source Code.

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