

# Tetris

***Tetris*** (Russian: Тетрис [ˈtɛtrʲɪs]) is a tile-matching puzzle video game, originally designed and programmed by Russian game designer Alexey Pajitnov.<sup>[1]</sup> The first playable version was completed on June 6, 1984,<sup>[2]</sup> while he was working for the Dorodnitsyn Computing Centre of the Academy of Science of the Soviet Unionin Moscow.<sup>[3]</sup> He derived its name from the Greek numerical prefix *tetra-* (all of the game's pieces contain four segments) and tennis, Pajitnov's favorite sport.<sup>[4][5]</sup>

*Tetris* was the first entertainment software to be exported from the Soviet Union to the US, where it was published by Spectrum HoloByte for Commodore 64 and IBM PC. *Tetris* is a popular use of tetrominoes, the four-element special case of polyominoes. Polyominoes have been used in popular puzzles since at least 1907, and the name was given by the mathematician Solomon W. Golomb in 1953.

The game, or one of its many variants, is available for nearly every video game console and computer operating system, as well as on devices such as graphing calculators, mobile phones, portable media players, PDAs, Network music players and as an Easter egg on non-media products like oscilloscopes.<sup>[6]</sup> It has inspired *Tetris* serving dishes<sup>[7]</sup> and been played on the sides of various buildings.<sup>[8]</sup>

While versions of *Tetris* were sold for a range of 1980s home computer platforms as well as arcades, it was the successful handheld version for the Game Boy launched in 1989 that established the game as one of the most popular. *Electronic Gaming Monthly*'s 100th issue had *Tetris* in first place as "Greatest Game of All Time". In 2007, *Tetris* came in second place in IGN's "100 Greatest Video Games of All Time". In January 2010, it was announced that the *Tetris* franchise had sold more than 170 million copies, approximately 70 million physical copies and over 100 million copies for cell phones, making it the best selling paid-downloaded game of all time

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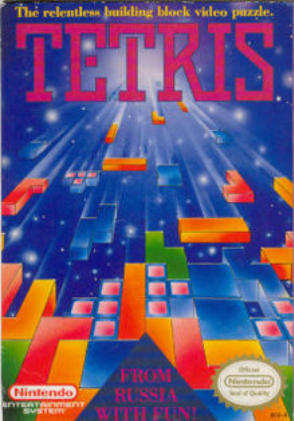
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## Gameplay

Tetriminos are game pieces shaped like tetrominoes, geometric shapes composed of four square blocks each. A random sequence of Tetriminos fall down the playing field (a rectangular vertical shaft, called the "well" or "matrix"). The objective of the game is to manipulate these Tetriminos, by moving each one sideways (if the player feels the need) and rotating it by 90 degree units, with the aim of creating a horizontal line of ten units without gaps. When such a line is created, it gets destroyed, and any block above the deleted line will fall. When a certain number of lines are cleared, the game enters a new level. As the game progresses, each level causes the Tetriminos to fall faster, and the game ends when the stack of Tetriminos reaches the top of the playing field and no new Tetriminos are able to enter. Some games also end after a finite number of levels or lines.

All of the Tetriminos are capable of single and double clears. *I*, *J*, and *L* are able to clear triples. Only the *I* Tetrimino has the capacity to clear four lines simultaneously, and this is referred to as a "tetris". (This may vary depending on the rotation and compensation rules of each specific *Tetris* implementation. For instance, in the Super Rotation System used in most recent implementations,<sup>[9]</sup> certain situations allow *T*, *S*, and *Z* to 'snap' into tight spots and clear triples.)<sup>[10]</sup>














































































#### Tetromino colors

<i>Tetris</i>	
	
North American NES cover art	
Developer(s)	Various
Publisher(s)	Various
Designer(s)	Alexey Pajitnov Vladimir Pokhilko
Platform(s)	Various
Release	June 6, 1984
Genre(s)	Puzzle
Mode(s)	Single-player, multiplayer



Extract of a game of an open-source *Tetris* clone

Pajitnov's original version for the Elektronika 60 computer used green brackets to represent blocks.<sup>[5]</sup> Versions of *Tetris* on the original Game Boy/Game Boy Color and on most dedicated handheld games use monochrome or grayscale graphics, but most popular versions use a separate color for each distinct shape. Prior to The Tetris Company's standardization in the early 2000s, those colors varied widely from implementation to implementation.

Colors of Tetriminos in various <i>Tetris</i> games											
Tetrimino/ Piece	Vadim Gerasimov's <i>Tetris</i> 3.12	<i>Microsoft Tetris</i>	Sega (Formerly)Arika (TGM series)	<i>The New Tetris and Kids Tetris</i>	The Tetris Company standardization (beginning with <i>Tetris Worlds</i> ) <i>Tetris Party</i>	Atari/ Arcade	TETRAIS The Soviet Mind Game	<i>Tetris DX</i> (Game Boy Color)	<i>Super Tetris 3</i> (Super Famicom)	<i>Tetris Plus</i>	<i>The Tetris Game</i>
I											
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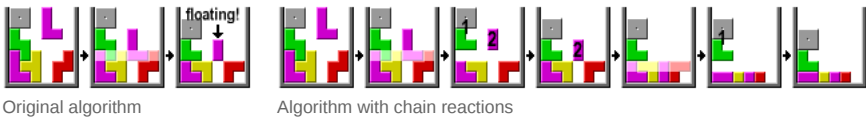
Scoring

The scoring formula for the majority of *Tetris* products is built on the idea that more difficult line clears should be awarded more points. For example, a single line clear in *Tetris Zone* is worth 100 points, clearing four lines at once (known as a *Tetris*) is worth 800, while each subsequent back-to-back *Tetris* is worth 1,200.<sup>[11]</sup> In conjunction, players can be awarded combos that exist in certain games which reward multiple line clears in quick succession. The exact conditions for triggering combos, and the amount of importance assigned to them, vary from game to game.

Nearly all *Tetris* games allow the player to press a button to increase the speed of the current piece's descent or cause the piece to drop and lock into place immediately, known as a "soft drop" and a "hard drop", respectively. While performing a soft drop, the player can also stop the pieces increased speed before the piece reaches the floor by letting go of the button. Some games only allow either soft drop or hard drop; others have separate buttons for both. Many games award a number of points based on the height that the piece fell before locking, so using the hard drop generally awards more points.

Gravity

Traditional versions of *Tetris* move the stacks of blocks down by a distance exactly equal to the height of the cleared rows below them. Contrary to the laws of gravity, blocks may be left floating above gaps. Implementing a different algorithm that uses a flood fill<sup>[12]</sup> to segment the playfield into connected regions will make each region fall individually, in parallel, until it touches the region at the bottom of the playfield. This opens up additional "chain-reaction" tactics involving blocks cascading to fill additional lines, which may be awarded as more valuable clears.



Easy spin dispute

Although not the first *Tetris* game to feature a new kind of *Tetris*, "easy spin" (see *The Next Tetris*), also called "infinite spin" by critics,<sup>[13]</sup> *Tetris Worlds* was the first game to fall under major criticisms for it. Easy spin refers to the property of a Tetrimino to stop falling for a moment after left or right movement or rotation, effectively allowing someone to suspend the Tetrimino while thinking on where to place it. This feature has been implemented into The Tetris Company's official guideline.<sup>[9]</sup> This type of play differs from traditional *Tetris* because it takes away the pressure of higher level speed. Some reviewers<sup>[14]</sup> went so far as to say that this mechanism broke the game. The goal if *Tetris Worlds*, however, is to complete a certain number of lines as fast as possible, so the ability to hold off a piece's placement will not make achieving that goal any faster. Later, GameSpot received "easy spin" more openly, saying that "the infinite spin issue honestly really affects only a few of the single-player gameplay modes in *Tetris DS*, because any competitive mode requires you to lay down pieces as quickly as humanly possible."<sup>[15]</sup> In response to the issue, Henk Rogers stated in an interview that infinite spin was an intentional part of the game design, allowing novice players to expend some of their available scoring time to decide on the best placement of a piece. Rogers observed that "gratuitous spinning" does not occur in competitive play, as expert players do not require much time to think about where a piece should be placed<sup>[9]</sup>.



The first version of *Tetris*, completed in 1984, run on an emulator of the Soviet DVK-2 computer

History

*Tetris* was created in June 1984 by Alexey Pajitnov, an artificial intelligence researcher working for the Soviet Academy of Sciences at Computer Center in Moscow.<sup>[16]</sup> Tasked with testing the capabilities of new hardware, Pajitnov would do so by writing simple games for them. He initially considered creating a game around pentominoes, which featured in puzzle games that he had enjoyed as a child, but felt that it might have been too complicated with twelve different shape variations, so the concept switched to tetriminoes, of which there are seven variants.<sup>[16]</sup> The Elektronika 60 on which he was working had only a text-based display, so the tetriminoes were formed of letter characters.<sup>[16]</sup> Realizing that completed lines resulted in the screen filling up quickly Pajitnov decided to delete them, creating a key part of *tetris* gameplay.<sup>[16]</sup>

Pajitnov's game proved popular with his colleagues.<sup>[16]</sup> Academy of Sciences co-workers Dmitry Pavlovsky and Vadim Gerasimov ported the game to the IBM PC. Gerasimov reports that Pajitnov chose the name *Tetris* as "a combination of tetrimino" and 'tennis'". From there, the PC game became popular and began spreading around Moscow.<sup>[5]</sup> Gerasimov removed his 1988 version of the game from his website in October 2003, in response to a demand from counsel for The Tetris Company.<sup>[17][18]</sup> He resumed making it available in August 2006.<sup>[19]</sup>



Screenshot of the 1986 IBM PC version released by Andromeda

The PC version made its way to Budapest, Hungary, where it was ported to various platforms and was "discovered" by British software house Andromeda. They attempted to contact Pajitnov to secure the rights for the PC version, but before the deal was firmly settled, they had already sold the rights to Spectrum HoloByte. After failing to settle the deal with Pajitnov, Andromeda attempted to license it from the Hungarian programmers instead.

Meanwhile, before any legal rights were settled, the Spectrum HoloByte IBM PC version of *Tetris*, which contained background graphics featuring Russian scenes, was released in the United States in 1987. The game's popularity was tremendous Computer Gaming World called the game "deceptively simple and insidiously addictive".<sup>[20]</sup>

The details of the licensing issues were uncertain by this point, but in 1987 Andromeda managed to obtain copyright licensing for the IBM PC version and any other home computer system. Their Commodore 64 release in 1988 was notable for having a 26-minute (relatively long for the time) soundtrack composed by game musician Wally Beben.

For Amiga and Atari ST, two different versions by Mirrorsoft (1987) and Spectrum Holobyte (1988) became available. The Mirrorsoft version did not feature any background graphics, while Spectrum Holobyte's version was similar to their PC version and contained the similar images (it was also distributed by Infogrames in some regions). The games were sold as budget titles due to the game's simplicity. Spectrum's Apple II package contained three diskettes with three different versions of the game, for the Apple II+ and Apple IIe on separate DOS 3.3 and ProDOS 5.25 in (133 mm) diskettes, and for the Apple IIgs on a 3.5 in (89 mm) diskette, none of which was copy-protected: the included documentation specifically chaged the purchaser on their honorto not give away or copy the extra diskettes.

Unsure of how to publish his game and fearful of the response of the Soviet regime if he did so, Pajitnov took the opportunity offered by Perestroika and gave the rights to the Soviet government for ten years.<sup>[16][21]</sup> In 1988, the Soviet government began to market the rights to *Tetris*, following a promotional trip to the country by Gerald Hicks, the one-time United States champion of the game, through an organization called Elektronogtechnica, or "Elog" for short. At this time, Elog had still not been paid by Andromeda, but Andromeda was licensing and sub-licensing the rights to the game. A different version of *Tetris* was originally released in late 1988 by Bullet-Proof Software (BPS) for several Japanese home computers as well as the MSX and the Family Computer in Japan, predating Nintendo's version. An unlicensed arcade version was released in South Korea, as well as an unlicensed Master System (titled ***Super Tetris*** (슈퍼 테트리스 *Syupeo Teteuliseu*)).

## Nintendo

By 1989, half a dozen different companies claimed rights to create and distribute the *Tetris* software for home computers, game consoles and handheld systems.<sup>[22]</sup> Elog, meanwhile, held that none of the companies was legally entitled to produce an arcade version, and signed those rights over to Atari Games, while it signed non-Japanese console and handheld rights over to Nintendo. *Tetris* was on show at the January 1988Consumer Electronics Showin Las Vegas, where it was picked up by Dutch games publisher Henk Rogers, then based in Japan, which eventually led to an agreement brokered with Nintendo that saw*Tetris* bundled with everyGame Boy.<sup>[23]</sup> Rogers later stated, "*Tetris* made Game Boy and Game Boy made*Tetris*."<sup>[16]</sup>

### Tengen

Tengen (the console software division of Atari Games), regardless, applied for copyright for their *Tetris* game for the Nintendo Entertainment System, loosely based on the arcade version, and proceeded to market and distribute it under the name *TETRAIS: The Soviet Mind Game* (with faux Cyrillic typography incorporating the Cyrillic letter Ya), disregarding Nintendo's license from Elog. Nintendo contacted Atari Games claiming they had stolen rights to *Tetris*, whereupon Atari Games sued, believing they had the rights. After four weeks on the shelf, the courts ruled that Nintendo was the only company which had the rights to *Tetris* on home game systems. Tengen's *TETRAIS* was recalled with an unknown number of copies sold.<sup>[24]</sup> The lawsuits between Tengen and Nintendo over the NES version carried on until 1993. The Tengen version of *TETRAIS* is considered rare.

### NES

Nintendo released their version of *Tetris* for the Nintendo Entertainment System (NES), developed by Gunpei Yokoi. The NES version sold 8 million copies worldwide.<sup>[25]</sup> Nintendo's NES version lacked the side-by-side 2-player option featured in Tengen's version. Nintendo Power reviewed this version in its November / December 1989 edition. The Classic Tetris World Championship commenced in 2010 and uses the Nintendo version of*Tetris*.

## Sega

In 1988, an arcade version was released by Sega in Japan for the Sega System 16 and System E arcade boards.<sup>[26]</sup> It won the Japanese Gamest Award for Game of the Year the following year

Sega's arcade version was commercially successful in Japanese arcades. On *Famicom Tsūshin*'s arcade earnings chart, it was number-three in August 1989 and September 1989<sup>[27]</sup> It rose to number two in October 1989, overtakingNamco's racing video game*Winning Run*.<sup>[28]</sup>

In 2014, in conjunction with the 30th anniversary of the series, Sega released *Puyo Puyo Tetris*, a multi-platform game that blends gameplay elements of both the*Tetris* and *Puyo Puyo* franchises.<sup>[29]</sup>

## The Tetris Company

In 1996, the rights to the game reverted from the Russian state to Pajitnov himself, who previously had made very little money from the game.<sup>[23]</sup> In 1996, The Tetris Company was founded, claiming to hold copyright registrations for *Tetris* products in the U.S.<sup>[30][31]</sup> and taking out trademark registrations for *Tetris* in almost every country in the world.<sup>[32]</sup> They have licensed the brand to a number of companies, and the U.S. Court of International Trade and the U.S. Customs have at times issued seizure orders to preclude unlicensed *Tetris*-like games from being imported into the U.S.,<sup>[33]</sup> though bulletins circulated by the U.S. Copyright Office state that copyright does not apply to the rules of a game.<sup>[34][35]</sup>

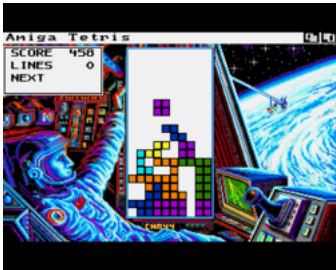
In mid-2006,<sup>[36]</sup> and in late 1997,<sup>[37]</sup> TTC's legal counsel sent cease and desist letters to Web sites on the basis of *Tetris*-type games infringing the "Tetris" trademark, trade dress, and/or "look and feel" copyright. Around 2009, TTC and Tetris Holding LLC brought legal action against BioSocia, Inc., on the grounds that BioSocia's "Blockles" game infringed on proprietary rights that were held by TTC and Tetris Holding LLC<sup>[38]</sup> On September 10, 2009, the legal case against BioSocia was resolved, with BioSocia agreeing to discontinue making the "Blockles" game available to the public.<sup>[38]</sup> In May 2010, TTC's legal counsel sent cease and desist letters to Google insisting that 35 *Tetris* clones be removed from the Android Market.<sup>[39]</sup> A US District Court judge ruled in June 2012 that the *Tetris* clone "Mino" from Xio Interactive infringed on The Tetris Company's copyrights by replicating sth elements as the playfield dimensions and the shapes of the block.<sup>[40]</sup>

In 2012, The Tetris Company trademarked both the shapes of the blocks and the playfield dimensions.

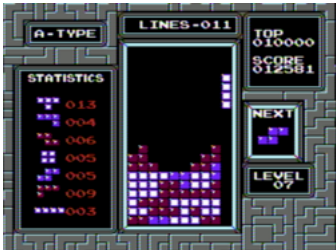
# Variations

*Tetris* has been subject to many changes throughout releases since the 1980s. Newer *Tetris* games have focused on a trend of pace rather than endurance. Older releases such as Game Boy or NES *Tetris* offer records according to points. Since the meter for points is restricted to a specific number of digits, these games' records can be "maxed out" by an experienced player. The next big Game Boy release after *Tetris*, *Tetris DX*, in marathon mode—comparableto mode A in previous releases—allowed an additional digit for the point meter. Even so, players still maxed it to 9,999,999 points after hours of play. For *The New Tetris*, world record competitors have spent over 12 hours playing the same game.<sup>[41]</sup> In *Tetris DX* and *The New Tetris*, the new modes sprint and ultra were added. These modes require the player to act under a timer, either to gain the most lines or points in that time. Releases like *Tetris Worlds* removed point records. This particular game kept records by how fast a certain number of lines could be cleared depending on the level. Critics of*Tetris Worlds* said it was flawed by virtue of the ability of a piece to hover over the bottom for as long as a player needs.<sup>[4]</sup>

There are many different modes of play added in recent years. Modes appearing in more than one major release include classic marathon (game A), sprint (otherwise game B or 40 lines), ultra, square, and cascade.



The version designed by Spectrum Holobyte contained Russia related images (Amiga version screenshot, 1988)



A-Type game screenshot of the official NES version of *Tetris*

The field dimension of *Tetris* is perhaps the least deviated among releases: almost always 10 cells wide by 20 high. Some releases on handheld platforms with small screens have smaller fields; for example, the *Tetris Jr.* keychain game has 8 by 12, and *Tetris* for Game Boy has 10 by 18.

Traditionally, blocks spawn within the four most central columns and the two highest rows. The *I* Tetrimino occupies columns 4, 5, 6 and 7, the *O* Tetrimino occupies columns 5 and 6, and the remaining 5 Tetriminos occupy columns 4, 5 and 6 (or in some, especially older, versions, 5, 6 and 7). In some more recent games, pieces spawn above the visible playfield.

In traditional games, a level-up would occur once every ten lines are cleared. After a level-up, the blocks fall slightly faster, and typically more points are given. In some newer games such as *Tetris Worlds*, the number of lines required vary upon each new level. For example, NES *Tetris* operates at 60 frames per second. At level 0, a piece falls one step every 48 frames, and at level 19, a piece falls one step every 2 frames. Level increments either terminate at a certain point (Game Boy *Tetris* tops off at level 20) or increase forever yet not in speed after a certain point. NES *Tetris* will level up in speed until level 29 (due to limitations of the game's engine, pieces are not capable of dropping faster than this), but tool-assisted emulation will show that the level indicator increases indefinitely—eventually leading to a glitch where the meter displays non-numeric characters. Modern games such as *Tetris the Grand Master* or *Tetris Worlds*, at their highest levels, opt to drop a piece more than one row per frame. Pieces will appear to reach the bottom as soon as they spawn. As a result, these games have a delay that lets the player slide the piece on the bottom for a moment to help deal with an otherwise unplayable fall speed. In some games, the hover time is regenerated after a piece is moved or rotated.

Soft drops were first implemented in Nintendo releases of *Tetris* so that pieces would be able to drop faster while not locking as to slide into gaps. The other option is hard dropping, which originated in early PC games such as *Microsoft Tetris*, a game developed by Dave Edson and bundled with *Microsoft Entertainment Pack*. With hard dropping, a piece falls and locks in one frame. Newer *Tetris* games feature both options. Some games have their locking roles reversed, with soft dropping making the pieces drop faster and locking down, and hard dropping making the pieces drop instantly but not lock.

Single direction rotation is an older restriction that has since been ruled out in nearly every new official release by the favor of separate buttons for clockwise and one for counter clockwise rotation. In traditional games, the unsymmetrical vertical orientation I-, Z-, and S-pieces will fill the same columns for each clockwise and counter clockwise rotation. Some games vary this by allowing two possible column orientations: one for counter clockwise and one for clockwise rotations. Double rotation—only seen in progressive clones such as *Quadra* and *DTET*—rotates the piece 180°.

One of the features most appreciated by skilled players is *wall kick* or the ability to rotate the pieces even if these touch the left or right walls. In the NES version, for example, if a Z piece is "vertically" aligned and falling touching the left wall, the player cannot rotate the piece, giving the impression that the rotate buttons are locked. In this situation, the player has to move the piece one position to the right before rotating it, losing precious time. Proper implementations of wall kick first appeared in the arcade version *Tetris* by Atari Games.

Piece preview allows a look at the next piece to enter the field. This feature has been implemented since the earliest games, though in those early games, having the preview turned on made the score increase more slowly.

## Variants

Several *Tetris* variants exist. Some feature alternate rules and pieces, some feature alternate topologies or dimensions, and others have completely different gameplay.

A popular variant called "The Grand Master" eventually becomes so fast players have to use every second of time optimally, and it even has a mode dubbed "Invisible Tetris", where the blocks are only shown when falling – revealed when the game is over.

Because of its popularity and the relatively simple code required to produce the game, a game with nearly the same rules as *Tetris* is often used as a *hello world* project for programmers coding for a new system or programming language. This has resulted in the availability of a large number of *ports* for different platforms. For instance, *µTorrent* and *GNU Emacs* contain similar shape-stacking games as easter eggs.<sup>[42]</sup><sup>[43]</sup>

## End of play

Players lose a typical game of *Tetris* when they can no longer keep up with the increasing speed, or when the player can not find an appropriate solution to the Tetriminos they've been given, and the Tetriminos stack up to the top of the playing field. This is commonly referred to as *dropping out*.

### Infinite gameplay impossibility

The question *Would it be possible to play forever?* was first encountered in a thesis by John Brzustowski in 1992.<sup>[44]</sup> The conclusion reached was that the game is statistically doomed to end. The reason has to do with the S and Z Tetriminos. If a player receives a sufficiently large sequence of alternating S and Z Tetriminos, the naïve gravity used by the standard game eventually forces the player to leave holes on the board. The holes will necessarily stack to the top and, ultimately, end the game. If the pieces are distributed randomly, this sequence will eventually occur. Thus, if a game with, for example, an ideal, uniform, uncorrelated random number generator is played long enough, any player will top out.<sup>[45]</sup><sup>[46]</sup>

In practice, this does not occur in most *Tetris* variants. Some variants allow the player to choose to play with only S and Z Tetriminos,<sup>[47]</sup> and a good player may survive well over 150 consecutive Tetriminos this way. On an implementation with an ideal uniform randomizer, the probability at any given time of the next 150 Tetriminos being only S and Z is 



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2

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7

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150


{\displaystyle (2/7)^{150}}

 (approximately 2x10<sup>-82</sup>). Most implementations use a *pseudorandom number generator* to generate the sequence of Tetriminos (e.g. write *π* in base 7, and let 0=I, 1=J, 2=T, 3=L, 4=Z, 5=O, 6=S), and such an S–Z sequence is almost certainly not contained in the sequence produced by the 32-bit *linear congruential generator* in many implementations (which has roughly 4.2 × 10<sup>9</sup> states). The "evil" algorithm in *Bastet* (an unofficial variant) often starts a game with a series of more than seven Z pieces.

Modern versions of *Tetris* released after 2001 use a bag-style randomizer that guarantees players will never receive more than four S or Z pieces in a row. This is one of the "Indispensable Rules" enforced by the *Tetris Guideline* that all officially licensed *Tetris* games must follow.<sup>[9]</sup>

Recent versions of *Tetris* such as *Tetris Worlds* allow the player to repeatedly rotate a block once it hits the bottom of the playfield, without it locking into place (see *Easy spin dispute*, above). This permits a player to play for an infinite amount of time, though not necessarily to land an infinite number of blocks.

## Computational complexity

In *computer science*, it is common to analyze the *computational complexity* of problems, including real life problems and games. It was proven that for the "offline" version of *Tetris* (the player knows the complete sequence of pieces that will be dropped, i.e. there is no hidden information) the following objectives are **NP-complete**:

- Maximizing the number of rows cleared while playing the given piece sequence.
- Maximizing the number of pieces placed before a loss occurs.
- Maximizing the number of simultaneous clearing of four rows.
- Minimizing the height of the highest filled grid square over the course of the sequence.

Also, it is *difficult* to even *approximately solve* the first, second, and fourth problem. It is *NP-hard*, given an initial gameboard and a sequence of *p* pieces, to approximate the first two problems to within a factor of *p*<sup>1−*ε*</sup> for any constant *ε* > 0. It is NP-hard to approximate the last problem within a factor of *2* − *ε* for any constant *ε* > 0.

To prove NP-completeness, it was shown that there is a polynomial *reduction* between the *3-partition problem* which is also NP-Complete, and the *Tetris* problem.<sup>[48]</sup>



A 5th generation iPod featuring *Tetris* (2006)

# Music

## Game Boy version

- Music A has become known, to the point that Level 20 in*Tetris DS* is based on this Game Boy version of*Tetris* and uses that theme. It is an instrumental arrangement of a Russian folk tune called 'Korobeiniki', which has been covered by UK dance bandDoctor Spin, US alternative rock bandOzma, Tokyo Ska Paradise Orchestra Basshunter, Doctor P, and the German techno group Scooter on their 2007 album*Jumping All Over the World* It was also sampled in "21 Concepts" byMC Lars. Music A and B are also remixed and arranged for*Super Smash Bros. Brawl* and can be selected for the stage*Luigi's Mansion*, as well as being used in custom stages. The remixes were brought back in *Super Smash Bros. for Nintendo 3DS*and *Wii U*, with Music A once again playing in*Luigi's Mansion*in the Wii U version and being one of the bonus songs to play in the 3DS exclusive "Smash Run" mode, and Music B playing in "Whu Island" from*Wii Sports Resort*. The song has also been remixed for two dance games, under the name "Pumptris Quattro" in*Pump It Up NX2*and "Happy-hopper" in*Dance Maniax 2nd Mix*. Ronan Murrayhas recorded an arrangement of the tune for*pipe organ*. The A theme was adapted by Australian musical group*Flap!*, with original lyrics added, on their debut album*Flap!*.<sup>[49]</sup>
- Music B is an original track byHirokazu Tanaka, the game's sound designer
- Music C is an arrangement ofJohann Sebastian Bach's French Suite No. 3 In B Minor BWV 814, IV. Menuett – Trio.

## Nintendo Entertainment System version

- Music 1 in Nintendo's NES version is "Dance of the Sugar Plum Fairy", a tune noted to be scene 14c of act two of*The Nutcracker*, composed byTchaikovsky.
- One song in theBPS and Tengen versions is the "Kalinka" (or Karinka, as referred in-game), a famous Russian song written byIvan Petrovich Larionov
- The victory song playing while the rocket blasts off is George's Bizet's "Les Toreadors" from*Carmen* Suite No. 1.

## Atari version

Atari's arcade version of*Tetris*, and its NES port by subsidiary Tengen have original pieces composed by Brad Fuller as well as traditional Russian tunes also arranged by Fuller.<sup>[50]</sup>

# Cognitive effects

According to research from Dr. Richard Haier, *et al.* prolonged *Tetris* activity can also lead to more efficient brain activity during play.<sup>[51]</sup> When first playing *Tetris*, brain function and activity increases, along with greater cerebral energy consumption, measured by glucose metabolic rate. As *Tetris* players become more proficient, their brains show a reduced consumption of glucose, indicating more efficient brain activity for this task.<sup>[52]</sup> Moderate play of *Tetris* (half-an-hour a day for three months) boosts general cognitive functions such as "critical thinking, reasoning, language and processing" and increases cerebral cortex thickness.<sup>[53]</sup>

In January 2009, an Oxford University research group headed by Dr. Emily Holmes reported in PLoS ONE that for healthy volunteers, playing *Tetris* soon after viewing traumatic material in the laboratory reduced the number of flashbacks to those scenes in the following week. They believe that the computer game may disrupt the memories that are retained of the sights and sounds witnessed at the time, and which are later re-experienced through involuntary, distressing flashbacks of that moment. The group hopes to develop this approach further as a potential intervention to reduce the flashbacks experienced in post-traumatic stress disorder but emphasized that these are only preliminary results.<sup>[54]</sup>

Professor Jackie Andrade and Jon May, from Plymouth University's Cognition Institute, and Ph.D. student Jessica Skorka-Brown have conducted research that shows that playing *Tetris* could give a "quick and manageable" fix for people struggling to stick to diets, or quit smoking or drinking.<sup>[5]</sup>

Another notable effect is that, according to a Canadian study in April 2013, playing *Tetris* has been found to treat older adolescents with amblyopia (lazy eye), which was better than patching a victim's well eye to train his weaker eye. Dr. Robert Hess of the research team said: "It's much better than patching – much more enjoyable; it's faster, and it seems to work better."<sup>[56]</sup> Tested in the United Kingdom, this experiment also appears to help children with that problem.<sup>[57]</sup>

The game has been noted to cause the brain to involuntarily picture *Tetris* combinations even when the player is not playing (the *Tetris effect*), although this can occur with any computer game or situation showcasing repeated images or scenarios, such as jigsaw puzzle.

# Hasbro Games

In 2013, The Tetris Company signed a contract with Hasbro to make a Bop It and a Jenga themed version of *Tetris*. The games were shown at the New York Toy Fair and Bop It Tetris was sold on Amazon.com in June 2013.

Jenga Tetris is like Jenga but using*Tetris* shapes.

Bop It Tetris is an audio game. It has several game modes including *Marathon* and *Pass It*. In the Marathon Mode, the player has four lives and has to complete the puzzles with the square lights. The game unit has three actions which are: "Slam It" which slams the top part of the device down, "Slide it", a screen which can rotate from left and right, and "Spin It", where the device can spin. If the player fails to complete the puzzle, the voice of Buddy Rubino will make a Santa Claus type laugh and will encourage the player with a comment such as: "Squares man! They're just squares!" or "Shapes are hard!" and Buddy will then say "Life lost" and one of the four squares on the top screen will disappear. After every stage is completed Buddy will tell the player with a comment such as: "Level up!" and there will then be a 45-second bonus round which the player can score two or more bonus points.

In the Pass It Mode, it is the same as the Marathon mode except Buddy Rubino will say "Pass It" to let other people join in.

# Reception

*Compute!* called the IBM version of *Tetris* "one of the most addictive computer games this side of the Berlin Wall ... [it] is *not* the game to start if you have work to do or an appointment to keep. Consider yourself warned".<sup>[69]</sup> Orson Scott Card joked that the game "proves that Russia still wants to bury us. I shudder to think of the blow to our economy as computer productivity drops to 0". Noting that *Tetris* was not copy-protected, he wrote "Obviously, the game is meant to find its way onto every American machine".<sup>[70]</sup> The IBM version of the game was reviewed in 1988 in *Dragon* No. 135 by Hartley, Patricia, and Kirk Lesser in "'The Role of Computers" column. The reviewers gave the game 4.5 out of 5 stars.<sup>[71]</sup> The Lessers later reviewed Spectrum HoloByte's Macintosh version of *Tetris* in 1989 in *Dragon* No. 141, giving that version 5 out of 5 stars.<sup>[72]</sup> In 1993, the ZX Spectrum version of the game was voted number 49 in the *Your Sinclair Official Top 100 Games of All Time*.<sup>[73]</sup> In 1996, *Tetris Pro* was ranked the 38th best game of all time by Amiga Power.<sup>[74]</sup>

*Computer Gaming World* gave *Tetris* the 1989 Compute! Choice Award for Arcade Game, describing it as "by far, the most addictive game ever".<sup>[75]</sup> The game won three Software Publishing Association Excellence in Software Awards in 1989, including Best Entertainment Program and the Critic's Choice Award for consumers.<sup>[76]</sup> *Computer Gaming World* in 1996 ranked it 14th on the magazine's list of the most innovative computer games.<sup>[77]</sup> That same year, *Next Generation* listed it as number 2 on their "Top 100 Games of All Time", commenting that, "There is something so perfect, so Zen about the falling

## Reception



blocks of *Tetris* that the game has captured the interest of everyone who has ever played it."<sup>[78]</sup> On March 12, 2007, *The New York Times* reported that *Tetris* was named to a list of the ten most important video games of all time, the so-called game canon.<sup>[79]</sup> After announced at the 2007 Game Developers Conference, the Library of Congress took up the video game preservation proposal and began with these 10 games, including*Tetris*.<sup>[80]</sup><sup>[81]</sup>

In 2007, video game website GameFAQs hosted its sixth annual "Character Battle", in which the users nominate their favorite video game characters for a popularity contest in which characters participate. The L-shaped *Tetris* piece (or "L-Block" as it was called) entered the contest as a joke character, but on November 4, 2007, it won the contest.<sup>[82]</sup> On June 6, 2009, Google honored *Tetris*' 25-year anniversary by changing its logotype to a version drawn with *Tetris* blocks – the "I" letter being the long *Tetris* block lowering into its place,<sup>[83]</sup> seen here.<sup>[84]</sup> In 2009, *Game Informer* put *Tetris* 3rd on their list of "The Top 200 Games of All Time", saying that "If a game could be considered ageless, it's *Tetris*".<sup>[85]</sup> The *Game Informer* staff also placed it third on their 2001 list of the 100 best games ever<sup>[86]</sup>

*Electronic Gaming Monthly's* 100th issue had *Tetris* as first place in the "Greatest Game of All Time". In 2007, *Tetris* came in second place in IGN's "100 Greatest Video Games of All Time".<sup>[87]</sup> In January 2010, it was announced that the *Tetris* franchise had sold more than 170 million copies, approximately 70 million physical copies and over 100 million copies for cell phones,<sup>[23]</sup><sup>[88]</sup> making it the best-selling paid-downloaded game of all timeIn 1991, *PC Format* named *Tetris* one of the 50 best computer games ever The editors called it "incredibly addictive" and "one of the best games of all time".<sup>[89]</sup>

*Guinness World Records* has recognized the game as being the most ported in the history of video gaming, appearing on in excess of 65 different platforms by 2011.<sup>[90]</sup>

In research

*Tetris* has been the subject of academic research. Vladimir Pokhilko was the first clinical psychologist to conduct experiments using *Tetris*.<sup>[91]</sup> Subsequently, it has been used for research in several fields including the theory of computation algorithmic theory, and cognitive psychology

During the game of *Tetris*, blocks appear to adsorb onto the lower surface of the window. This has led scientists to use tetrominoes "as a proxy for molecules with a complex shape" to model their "adsorption on a flat surface" to study thermodynamics of nanoparticles<sup>[92]</sup><sup>[93]</sup>

Film

Threshold Entertainmenthas teamed up with The Tetris Company to develop a film adaptation of *Tetris*. Threshold's CEO describes the film as an Epic Sci-Fi Adventure film and says that the story is so big, it'll be part of a trilogy.<sup>[94]</sup> <sup>[95]</sup> In 2016, sources reported on a press release claiming the film would be shot in China in 2017 with an \$80 million budget. However, no 2017 or later sources confirm the film ever actually went into production.<sup>[96]</sup>

*Tetris* appeared in the 2010 short animated film*Pixels*, and in the 2015 movie*Pixels* inspired by the former<sup>[97]</sup>

See also

- Brain Wall* and *Blokken* — game shows based on*Tetris*
- Ecstasy of Order: The Tetris Masters* — 2011 documentary about the 2010*Tetris* Championships featuring interviews with Pajitnov and DrRichard Haier
- Game Over* — 1993 book covering Nintendo historyincluding interviews with Alexey Pajitnov and others regarding*Tetris* licensing.
- List of *Tetris* variants

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Review scores	
Publication	Score
<i>AllGame</i>	Arcade: <span><span></span><span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[58]</sup>
	C64: <span><span></span><span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[59]</sup>
	Macintosh: <span><span></span><span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[60]</sup>
	NES (Tengen): <span><span></span><span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[61]</sup>
	NES (Nintendo): <span><span></span><span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[62]</sup>
CVG	94% <sup>[63]</sup>
<i>Crash</i>	77% <sup>[64]</sup>
<i>Sinclair User</i>	<span><span></span><span><span></span><span></span><span></span><span></span><span></span><span></span><span></span></span><span></span></span> <sup>[65]</sup>
<i>Your Sinclair</i>	9/10 <sup>[66]</sup>
<i>Zzap!64</i>	98% <sup>[67]</sup>
ACE	95% <sup>[68]</sup>
Awards	
Publication	Award
<b>Zzap!64</b>	Gold Medal
<b>Sinclair User</b>	SU Classic

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## External links

- Official website
- The MS-DOS version of *Tetris* can be played for free in the browser at the Internet Archive

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