= Marble Madness =

Marble Madness is an arcade video game designed by Mark Cerny and published by Atari Games in 1984 . The player uses a trackball to guide an onscreen marble through six obstacle @-@ filled courses within a time limit . Marble Madness was Atari 's first game to use the Atari System 1 hardware and to be programmed in the C programming language . It was also one of the first games to use true stereo sound ; previous games used either monaural sound or simulated stereo .

Cerny drew inspiration from miniature golf , racing games , and artwork by M. C. Escher . He applied a minimalist approach in designing the appearance of the game 's courses and enemies .

Marble Madness was commercially successful . The game was ported to numerous platforms and inspired the development of other games . A sequel was developed and planned for release in 1991 , but canceled when location testing showed the game could not compete with other titles .

= = Gameplay = =

Marble Madness is an isometric platform game in which the player manipulates an onscreen marble from a third @-@ person perspective . The player controls the marble 's movements with a trackball , though most home versions use game controllers with directional pads . The aim of the game is for the player to complete six maze @-@ like , isometric race courses before a set amount of time expires . With the exception of the first race , any time left on the clock at the end of a race is carried over to the next one , and the player is granted a set amount of additional time as well . The game allows two players to compete against each other , awarding bonus points and extra time to the winner of each race ; both players have separate clocks .

As the game progresses , the courses become increasingly difficult and introduce more enemies and obstacles . Each course has a distinct visual theme . For example , the first race (titled " Practice ") is a simple course that is much shorter than the others , while the fifth race (named " Silly ") features polka @-@ dot patterns and is oriented in a direction opposite that of the other courses .

= = Development = =

Marble Madness was developed by Atari Games , with Mark Cerny as the lead designer and Bob Flanagan as the software engineer . Both Cerny and Flanagan handled programming the game . It uses the Atari System 1 hardware , an interchangeable system of circuit boards , control panels , and artwork . The game features pixel graphics on a 19 inch Electrohome G07 model CRT monitor , and uses a Motorola 68010 central processing unit (CPU) with a MOS Technology 6502 subsystem to control the audio and coin operations . Marble Madness was Atari 's first game to use an FM sound chip produced by Yamaha , which is similar to a Yamaha DX7 synthesizer and creates the music in real time so that it is in synchronization with the game 's on @-@ screen action . The game 's music was composed by Brad Fuller and Hal Canon who spent a few months becoming familiar with the capabilities of the sound chip .

Cerny and Flanagan first collaborated on a video game based on Michael Jackson 's Thriller . The project was canceled and the two began working on an idea of Cerny 's that eventually became Marble Madness . Development lasted 10 months . Following the North American video game crash of 1983 , video game development within Atari focused on providing a distinctive experience through the use of a unique control system and by emphasizing a simultaneous two @-@ player mode . Cerny designed Marble Madness in accordance with these company goals . He was first inspired by miniature golf and captivated by the idea that a play field 's contours influenced the ball 's path . Cerny began testing various ideas using Atari 's digital art system . After deciding to use an isometric grid , Cerny began developing the game 's concept . His initial idea involved hitting a ball in a way similar to miniature golf , but Atari was unenthusiastic . Cerny next thought of racing games and planned for races on long tracks against an opponent . Technology limitations at the time were unable to handle the in @-@ game physics necessary for the idea , and Cerny switched the game 's

objective to a race against time .

The development toolkit for the Motorola CPU included a compiler for the C programming language , which the two programmers were familiar with . After Atari had conducted performance evaluations , it approved usage of the language . Cerny and Flanagan 's decision to program Marble Madness in the C language had positive and negative consequences . Atari games had previously been programmed in assembly language . The C language was easier to program , but was less efficient , so the game operates at the slower speed of 30 Hz instead of the normal 60 Hz frequency of arcade games at the time . Cerny decided to use a trackball system (marketed by Atari as Trak @-@ Ball) to give the game a unique control system , and he chose a motorized trackball for faster spinning and braking when the in @-@ game ball traveled downhill and uphill , respectively . As it was building the prototypes , Atari 's design department informed Cerny that the motorized trackball 's design had an inherent flaw ? one of the four supports had poor contact with the ball ? and the use of a regular trackball was more feasible . Additionally , Cerny had anticipated the use of powerful custom chips that would allow RAM @-@ based sprites to be animated by the CPU , but the available hardware was a less @-@ advanced system using ROM @-@ based , static sprites .

These technical limitations forced Cerny to simplify the overall designs . Inspired by M. C. Escher , he designed abstract landscapes for the courses . In retrospect , Cerny partly attributed the designs to his limited artistic skills . He was a fan of the 3D graphics used in Battlezone and I , Robot , but felt that the visuals lacked definition and wanted to create a game with " solid and clean " 3D graphics . Unlike most other arcade games of the time , the course images were not drawn on the pixel level . Instead , Cerny defined the elevation of every point in the course , and stored this information in a heightmap array . The course graphics were then created by a ray tracing program that traced the path of light rays , using the heightmap to determine the appearance of the course on screen . This format also allowed Cerny to create shadows and use spatial anti @-@ aliasing , a technique that provided the graphics with a smoother appearance . Cerny 's course generator allowed him more time to experiment with the level designs . When deciding what elements to include in a course , practicality was a big factor ; elements that would not work or would not appear as intended were omitted , such as an elastic barricade or a teeter @-@ totter scale . Other ideas dropped from the designs were breakable glass supports , black hole traps , and bumps and obstacles built into the course that chased the marble .

Cerny 's personal interests changed throughout the project , leading to the inclusion of new ideas absent from the original design documents . The game 's enemy characters were designed by Cerny and Sam Comstock , who also animated them . Enemies had to be small in size due to technical limitations . Cerny and Comstock purposely omitted faces to give them unique designs and create a minimalistic appearance similar to the courses . Atari 's management , however , suggested that the marble should have a smiley face to create an identified character , similar to Pac @-@ Man . As a compromise , the cabinet 's artwork depicts traces of a smiley face on the marbles . Flanagan programmed a three @-@ dimensional physics model to dictate the marble 's motions and an interpreted script for enemy behavior . As Marble Madness neared completion , the feedback from Atari 's in @-@ house focus testing was positive . In retrospect , Cerny wished he had included more courses to give the game greater longevity , but extra courses would have required more time and increased hardware costs . Atari was experiencing severe financial troubles at the time and could not extend the game 's development period as it would have left their production factory idle .

= = Reception and legacy = =

Marble Madness was commercially successful following its December 1984 release and was positively received by critics . Around 4 @,@ 000 cabinets were sold , and it soon became the highest @-@ earning game in arcades . However , the game consistently fell from this ranking during its seventh week in arcades that Atari tracked the game 's success . Cerny attributed the six @-@ week arcade life to Marble Madness 's short gameplay length . He believed that players lost interest after mastering it and moved on to other games . The arcade cabinets have since become fairly rare . Stan Szczepanski holds the official world record of 187 @,@ 880 points .

Bruce Webster of BYTE wrote that the graphics of the Amiga version of Marble Madness in December 1986 " are really amazing " . While criticizing the lack of a pause function or a top scores list , he stated that it " is definitely worth having if you own an Amiga " . Many reviewers felt that the high level of skill required to play the game was part of its appeal . In 2008 , Levi Buchanan of IGN listed Marble Madness as one of several titles in his " dream arcade " , citing the game 's difficulty and the fond memories he had playing it . Author John Sellers wrote that difficulty was a major reason that players were attracted . Other engaging factors included the graphics , visual design , and the soundtrack . Retro Gamer 's Craig Grannell , in referring to the game as one of the most distinctive arcade games ever made , praised its visuals as " pure and timeless " . In 2008 , Guinness World Records listed it as the number seventy @-@ nine arcade game in technical , creative , and cultural impact . Marble Madness was one of the first games to use true stereo sound and have a recognizable musical score . British composer Paul Weir commented that the music had character and helped give the game a unique identity . A common complaint about the arcade cabinet was that the track ball controls frequently broke from repeated use .

Marble Madness inspired other games that feature similar gameplay based on navigating a ball through progressively more difficult courses ; such games are often described in terms that relate them to Marble Madness . Melbourne House 's Gyroscope and Electric Dreams Software 's Spindizzy were the first such games ; both met with a good reception . In 1990 , Rare released Snake Rattle ' n ' Roll , which incorporated elements similar to Marble Madness . The Super Monkey Ball series uses similar gameplay based on rolling a ball , but adds other features such as minigames and monkey characters . Archer Maclean 's Mercury also contains many elements similar to Marble Madness , but with minor variations , including the ability to change color , added hazards , and that the player controls a blob of liquid mercury rather than a marble .

= = = Ports and unreleased sequel = = =

Beginning in 1986 , the game was ported to numerous platforms with different companies handling the conversions ; several home versions were published by Electronic Arts , Tiger Electronics released handheld and tabletop LCD versions of the game , and it was ported to the Nintendo Entertainment System by Rare . Early versions featured simplified graphics , and the different ports were met with mixed reception . John Harris of Gamasutra thought the arcade 's popularity fueled the sales of the home versions , while Thomas Hanley of ScrewAttack commented that most versions were not as enjoyable without a track ball . Grannell echoed similar statements about the controls and added that many had poor visuals and collision detection . He listed the Amiga , Game Boy , and Sega Mega Drive ports as the better conversions , and the Sinclair ZX Spectrum , PC , and Game Boy Advance versions among the worst . Compute ! writers called the Amiga version 's graphics and gameplay " arcade @-@ quality " . Editors for Computer Gaming World stated that the Amiga version was superior to the arcade original , while the Commodore version had an extra level not present in other versions . Dragon 's three reviewers ? Hartley , Patricia , and Kirk Lesser ? praised the Apple IIGS port , calling it a " must have " title for arcade fans . MegaTech reviewers rated the Sega Mega Drive release a favorable 73 % . In 2003 , Marble Madness was included in the multi @-@ platform title Midway Arcade Treasures , a compilation of classic games developed by Williams Electronics , Midway Games , and Atari Games . Electronic Arts released a mobile phone port in 2010 that includes additional levels with different themes and new items that augment the gameplay . Marble Madness was also included in the 2012 multi @-@ platform compilation Midway Arcade Origins . A port of the game is also playable in Lego Dimensions via an Arcade Dock in the level " Prime Time " .

An arcade sequel titled Marble Man : Marble Madness II was planned for release in 1991 , though Cerny was uninvolved in the development . Development was led by Bob Flanagan who designed the game based on what he felt made Marble Madness a success in the home console market . Because the market 's demographic was a younger audience , Flanagan wanted to make the sequel more accessible and introduced , ball like a superhero (a.k.a. Marble Man) . Marble Man expanded on the gameplay of the original game by featuring new abilities for the marble such as Heli , Cloak ,

Knobby , and Crusher , included pinball minigames between sets of levels , and allowed up to three players to traverse isometric courses . Its final wave is called " King of the Mountain " . Flanagan intended to address the short length of the first game and , with the help of Mike Hally , developed seventeen courses .

Atari created prototypes for location testing , but the game did not fare well against more popular titles at the time such as Street Fighter II . Atari assumed the track balls accounted for the poor reception and commissioned a second model with joystick controls . Because the new models were met with the same poor reception , production was halted and the focus shifted to Guardians of the ' Hood , a beat ' em up game . The prototypes that were produced have since become collector items .