About Snooker 147

Many years ago when I was completing my Physics PhD, a colleague and myself would often play pool on the PC. However, there was a serious lack of good pool games and those that were available just didn't seem to obey the laws of physics: balls would disappear off the table when they came close to a pocket (the black hole effect); the angles of the collisions were not always correct; and you could not give the cue ball any spin at all. Most people may find this slightly annoying, but as physicists, we found it almost unbearable. At that point in time, I decided that I would write a pool simulation that was very realistic and also fun to play.

A few years later, I started writing Poolster in my spare time. As the game progressed, I increased its features and improved the graphics until it was one of the best pool simulations available for the Windows environment. Following the success of Poolster, I started working on a snooker game which became Snooker147.

If Snooker147 or Poolster gives you as much pleasure as it has given me in creating it then I am pleased, if you purchase the registered copy, then I am overjoyed. Please distribute the unregistered (shareware) version to your friends so that they to may enjoy it!

Have fun and I look forward to your registrations.

Dr. James H. Clark.

Snooker 147's System Requirements

Snooker147 is not a resource hungry "bloat-ware" application. It has been designed to be relatively lean in terms of the hardware required to run it. However, due to the nature of the numerical calculations required, a fast(ish) processor is recommended. Moreover, it will only run under a 32-bit Windows operating system (i.e., Windows95 or NT3.51 or greater). This is because 16-bit Windows was just too slow!

The basic requirements are thus:

- 486DX 33MHz or higher. A fast Pentium is recommended as this will greatly improve the animation, especially when there are lots of calculations being performed, for example during the break. Note: Snooker147 was developed on a 486DX4/100 with 12Mb RAM! Not exactly cutting edge technology.
- 256 colour video card is a must, more colours only mean that Snooker147 doesn't have to keep changing the Windows palette. To ensure that the animation is acceptable, the video card should be accelerated—though most are nowadays. The resolution should ideally be 800x600 or higher. Snooker147 will run in 640x480 mode but the bottom of the game window will be off of the screen. This may make adjusting the spin and the power tricky. If you must run in 640x480 mode, then try hiding the Windows taskbar and moving Snooker147 to the top of your screen. Snooker147 will also rescale the game window to fit the current screen resolution: the higher the resolution the better.
- 8Mbytes of RAM minimum (this is really the minimum for Windows anyway). The more RAM the better. Whilst Snooker147 doesn't itself need much RAM, all your other applications will run much better with more memory.
- Windows95/NT(3.51 or greater) is required! It will NOT run on Windows 3.1.
- A mouse is essential. Snooker147 uses mouse input as its only way of aiming shots and controlling the power and spin. However, a mouse-like object (trackball, touchpad, etc.) will also work so long as it produces a mouse pointer in Windows.

Version History

 Version 1.0 of Poolster (a pool-game like Snooker147) first released 1 July 1997. This was the fist game released which used the ***Poolster billiard engine***.

 Version 1.1 of Poolster was then released 10 October 1997. This update release included some additional features and bug-fixes (all of which are included in Snooker147).

 Version 1.0 of Snooker 147 was released on 1 March 1998. This game also uses the acclaimed ***Poolster billiard engine***. Whilst it is obviously based on Poolster, Snooker147 includes many enhancements making it the ultimate PC billiard experience.

Where to find Snooker147

Snooker147 may be upgraded from time-to-time. To download the latest shareware version via the internet, simply connect to one of the following sites, which will usually have the latest version available for download, together with other JHC SoftWare products.

The JHC SoftWare home page can be found at:

http://freespace.virgin.net/j.h.c/

Some alternative download sites are:

http://www.winsite.com — and search for "Snooker147".

http://www.windows95.com — and look under 32-bit shareware | games | sports.

On-line registration for Snooker147 is also available at both of these sites mentioned above. So if you haven't registered but have a credit card and web access, why not download the latest registered version today. Go to out home page:

http://freespace.virgin.net/j.h.c/

Ball Positioner

The ball positioner allows you a simple way to position all the balls in the Snooker147 simulation environment, allowing you to:

- Set up new game layouts that you have invented.
- Devise trick shots for others to try and solve.
- When you encounter a difficult situation in a real game of snooker (e.g., in the pub the previuos evening) use the ball positioner to build a simulation of that game and practice different shots to learn what is the best way out of that situation.
- Arrange the balls to investigate some of the Physics involved in billiard ball collisions and their motion. Note: Snooker147 has been designed as far as possible to accurately obey the laws of physics of the game of snooker.
- Finally, the ball positioner may be used to "cheat" during a game. If a ball is in a really awkward position for you to do a wonderful clear-up of all the balls, just use this tool to remove it and (if required) place it somewhere else and/or change its colour.

Note: the ball positioner feature is only available in the purchased (i.e., Registered) version of Snooker147. This feature alone is a great reason to Register today!

Using the Ball Positioner

The ball positioner is activated by selecting the “Ball Positioner” option on the “Position” menu. When it is activated, a tick mark is placed along-side this menu item. To deactivate the ball positioner, simply reselect the menu option. *Note:* that when the ball positioner is active, many of the other menu options will be disabled. For example, the cue ball cannot be positioned with the ball positioner. Instead you must use the separate cue ball positioner feature, but first the ball positioner tool must be deselected.

Once active the mouse cursor changes. Depending where the mouse is, a different cursor will be displayed, as described below:

When this cursor is displayed, a new ball can be positioned here by clicking the left mouse button. The new ball will take on the colour of the lowest available colour. That is, if there are less than 15 reds on the table, the new ball will be red. Otherwise the new ball will be a colour. There is a limit to the number of balls that may be created on the table. Once this limit has been reached, no more balls can be placed on the table. To add other balls, one or more balls will first have to be removed from the table. Note that there can only be 15 reds and 1 of each colour.

If the mouse is moved over an existing ball, then the cursor changes to a colour wheel. Clicking the left mouse button will change the colour of the ball that the cursor is touching. Note: the ball does not have to be directly under the cursor to have its colour changed, it only has to be touching it. There can only be 15 reds and 1 of each other colour on the table at any time. You cannot create another white ball, there can only be one cue ball. Clicking the right mouse button will **delete** the ball that is currently touching the cursor.

If the cursor is moved somewhere it cannot go, this “NO” cursor is displayed. Clicking the left mouse button will do nothing.

Right-clicking the mouse button (except when the cursor is a colour wheel) will pop up a small help window.

Physics of Snooker and Tips for Playing

The game of Snooker, Pool and all other Pocket billiard games alike, have a great deal of Physics involved in them. As a physicist, I was interested in investigating the motions of billiard balls in these games and one of the results was Poolser and subsequently Snooker147 itself. This section briefly describes some of the mechanisms involved in the game of snooker that are implemented in Snooker147. Knowing something about these mechanics gives you a better understanding of the game and ultimately makes you a better player.

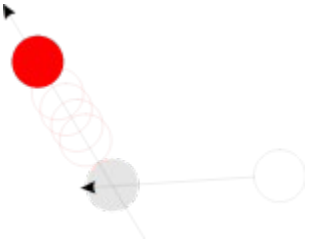
Aiming a shot.

The object of snooker (and other similar billiard games) is to use the cue ball to pocket other balls that are on the table. Whilst this seems simple when you are watching an accomplished player, beginners can find this very difficult indeed. However, with some simple guidance you will find that there are some simple rules to follow that are easy to remember and to apply.

In Snooker147, a shot is aimed using the  cursor.This cursor is exactly the same size as the snooker balls which makes aiming much easier than you may first imagine.

To aim a shot, simply draw an imaginary line through the centre of the ball you want to hit in the direction you want to hit it, as below:

Next you want to place the cursor carefully so that the edge of the cursor just touches the edge of the ball you are aiming to pocket, and line up the centre of the cursor with the imaginary line you have drawn through the ball. (This imaginary line joins the centre of the cursor, and the centre of the ball along the path you want the ball to travel.) When you click the left button to play the shot, the cue ball will move exactly to where the cursor is positioned (assuming that it is not coming from the wrong side of the object ball and that there are no obstacles in its way) and the object ball will move along the imaginary line as shown:



Cue ball after a collision.

When the cue ball strikes an object ball, the object ball moves in the direction as described above. An important question is what direction does the cue ball move in after such a collision. Well, the laws of physics tell us (take my word for it, or look it up) that if the collision is elastic (i.e., no energy is lost in the collision) and the masses of the two balls are the same, then the cue ball will move off at right angles to the direction of the object ball. Clearly there are two possible directions that are at right angles to the direction of the object ball. Working out which is the correct one is simple because only one of them looks right—the wrong one sends the cue

ball in an impossible direction.

Snooker147 uses this theory and assumes that the collisions between balls is elastic. Realistically, the collision is inelastic and energy is lost—we know this because we hear a click when the balls collide and this sound is a release of energy. In real snooker, the energy lost is only around 5% of the total energy meaing that deviations from the ideal case are negligible.

Knowing that the angle that the cue ball moves off in will be at right angles to the direction of the object ball is extremely useful, allowing you to more accurately estimate where the cue ball will go after a shot. However, this simple case is complicated by the spin of the cue ball which will cause the cue ball to follow an arc. Initially the cue ball will move at right angles to the object ball and this direction will be modified by the spin of the ball. If there is not much spin on the ball, then the simple case with no spin is approximated. If, however, there is a large degree of cue ball spin, after the collision the cue ball will follow a very curved path. Knowing exactly where the cue ball will go in this case is difficult and it usually requires some practice to get the cue ball to go exactly where you want.

Momentum transferred in a collision.

The amount of momentum (or velocity) transferred to an object ball by the cue ball depends on the angle that the cue ball strikes the object ball. In other words, the angle between an imaginary line joining the centres of the balls together and the direction that the cue ball is moving in. If this angle is zero or very small, the collision is head-on and most of the cue ball's momentum is transferred to the other ball (the cue ball almost stops while the object ball moves off). However if the angle is large (it cannot be larger than 90 degrees as this is a physical impossibility) the collision is grazing and the object ball hardly moves while the cue ball continues almost unhindered. In between these two extremes momemtum is transferred from the cue ball to the object ball in varying amounts depending on the angle of the collision.

Ball spin and velocity are different.

When a billiard ball is moving on a table, it may posess both spin and velocity. The velocity part is analagous to the case where the ball was sliding over a surface rather than rolling over it. This idea of sliding is important because the laws of physics are easier to understand in this case. Because the ball is sliding it doesn't even have to be spherical, it could for example be a box. If you imagine pushing a box across a table-top then you are observing the simple velocity part of a billiard ball's motion: once you push it and start it moving, it gradualy slows down and stops. If it hits another box of the same size, this other box will move off whilst the first box will stop. This is simple billiard-ball motion when only velocity is considered and is, in fact, the way most snooker simulations handle the motion. However, billiard balls are spherical and they roll rather than slide, therefore, they posess some spin.

When considering a spinning ball, it is simpler if you think of the horizontal spin (parallel to the table surface) and the vertical spin (perpendicular to the table surface) separately. The horizontal spin is simpler so it is considered first.

If you take a coin and spin it on its edge on a table, then generally it will remain in the same place (assuming the table is level). In other words, the horizontal spin interacts with the surface uniformly, and the friction of the table slows the spinning coin uniformly. If the friction was not uniform then the coin would begin to move in a preferred direction. In snooker, the table is not a uniform surface, but has a baize which is flattened in one direction only. This has the result that a ball spinning horizontally will actually move depending on the lay of the cloth. However, this subtelty is not actually included in the Snooker147 simulation (I thought that it might confuse some people). Therefore, you can think of horizontal spin as having no effect on the velocity

(motion) of the ball just like the spinning coin. However, vertical spin is different.

When a ball spins vertically it is acting just like a wheel on a car. If a car accelerates very quickly from a standstill, it will perform a *wheelspin*: for a few seconds the tyres will spin whilst the car remains stopped. Gradually, the car will begin to move off and the *wheelspin* will end. This is exactly what happens with a ball which has vertical spin and no velocity: for a few moments it will remain still then it will gradually accelerate in the diirection of the spin.

The horizontal spin really only comes into play when the ball hits a cushion. Here, the horizontal spin can interact strongly with the cushion, resulting in a change in direction of the ball. For example, if a ball with lots of left-hand spin is aimed head-on at a cushion, the ball will bounce from the cushion moving to the left rather than back towards where it came from (as would be expected if there were no spin). The amount the ball changes direction depends on a number of factors including the amount of spin, the actual velocity of the ball, the mass (inertia) of the ball and the amount of friction between the ball and the cushion. Generally, the more side spin that is applied, the more the ball will tend towards that direction when it is reflected from the cushion.

The main motion of a billiard ball in a game of snooker comes from a combination of the velocity and the vertical spin. Both of these quantities may be thought of as trading-off against each other. If you consider the wheelspinning car, above, the tyres are initially have no velocity but lots of spin. Then during acceleration, the amount of spin is reduced whilst the velocity of the car increases. Eventually, the velocity and the spin will be the same, i.e., the speed of the outside of the tyre will match the speed of the car; there is no slipping. Conversely, if a ball is pushed along with some velocity so that it has no vertical spin, then as it rolls, the interaction (friction) with the table will cause the ball to start spinning. Eventually, both the vertical spin and the velocity will be the same just as in the case of the car tyre. Obviously, this process can become quite complex when balls with arbitrary spins begin to collide with other balls with their own spins. You don't have to worry about all of this too much because Snooker147 takes care of all those calculations. But, knowing some basics will improve your game.

Ball spin; friend or foe.

If a ball is moving it will usually posess some spin. If this ball collides with a second ball such that it stops whilst the second ball moves off, the first ball, although stopped (i.e., having no velocity) still has some vertical spin. The *will* cause the ball to gradually accelerate in the direction of the spin. This may be a good or a bad thing, depending on the circumstances.

Imagine an object ball hanging on the edge of a pocket. If you aim the cue ball so that it contacts squarely with the object ball such that the object ball falls into the pocket, the cue ball will still posses some forward spin (not momentum as some people might say) which will cause it to move forward after the collision and most likely fall into the pocket too. This is obviously a bad thing.

Using spin carefully allows you to avois this scenario. For example, in the same shot as just described, if you hit the cue ball on the bottom so that you give it some back spin, then when it collides with the object ball and stops, if it still has some back spin, rather than moving towards the pocket as in the first case, the cue ball will actually move away from the pocket—it has screwed back! If the spin is controlled even more precisely, the shot can be played so that the cue ball has no spin when the collision happens and it really does stop. Using spin in this way allows you to carefully control the position of the cue ball during play, enabling you to plan ahead for the next shot, ultimately pocketing more balls and becoming a better player.

Summary.

To play snooker, you must learn how to aim the cue ball to pockets the other balls—this is

essential. Once this has been mastered, you should try to anticipate where the cue ball will go after a collision (to start with do not put any spin on the cue ball). By carefully controlling the velocity given to the cue ball, you should become proficent at positioning the cue ball after a shot. Once this is mastered, using spin will provide you with all the tools you need to position the cue ball where you want (within reason).

Remember, the aim is to have fun. If you play a bad shot and taking it again will make you happier, then UNDO the shot and have another go. This is the advantage Snooker147 has over the real thing, you can undo mistakes. Retaking shots using different conditions is also an excellent way of learning how to play better, in particular how to play for cue ball position. UNDO is not a cheat, it is the best learning tool.

Contents

Home Page: http://freespace.virgin.net/j.h.c/
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Special Features

Snooker147 has some special features to make the game more flexible and enjoyable:

The Ball Positioner

The Boss Feature

Boss Feature

The boss feature is so named because it gives you some protection from your "Boss".

Its concept is very simple:

If your boss walks in to see you and you are playing Snooker147, then he/she may be very annoyed indeed (well, they may want a game too). Moreover, some companies view game-playing as a serious—if not a sacking—offense. But we all know that Snooker147 is not so much a game as an accurate simulation of the Physics of snooker. The boss feature gives you some protection against possible nasty outcomes of playing (sorry, simulating) snooker in work-time.

Operation:

By quickly minimising the Snooker147 window, and blanking the title, no obvious signs of the Snooker147 game will be present other than a rather non-descript item on the task-bar. Clicking this item, reactivates Snooker147 to the state it was in before the "boss" feature was implemented. Thus, you don't have to exit the game. If, however, Snooker147 has been "bossed" for more than 5 minutes, it will terminate and the game will be lost—although your job will be saved if you have to quickly leave your computer.

Activation:

The quickest way to activate the "boss" feature is to press the *escape* <ESC> key at any time, even during a shot. Alternatively, it may be activated from the Game menu. The use of the escape key is preferred as it is the quickest way of activating this feature.

Playing Instructions

Snooker147 has been designed to be an easy-to-use windows application so anyone even slightly familiar with windows should be able to use Snooker147. All control of the game is via the mouse, with the exception of the menu options and the "boss" feature which can also use the keyboard. The Snooker147 window is divided into several regions which either convey information or allow you to use a particular feature. An example of the Snooker147 window that you see is shown below. Simply place the mouse over different regions of this picture and click with the left mouse button. Tips on the features of this window will be shown.

Remember, at any time during the game, clicking the *right* mouse button will show you these small help windows identifying which region of the window you are in and what you can do there.

When Snooker147 first starts, the balls are racked for playing standard international Snooker rules. The positions of the balls can be changed by either loading in another game with the File| Open Game menu option, or by using the ball positioner.

To take your first shot, aim the cursor on the table where you want the cue (white) ball to go. Pressing the left mouse button will start the shot. The cue ball will move towards the point where you aimed, colliding with other balls and cushions as it goes. Now wait until all the balls have stopped moving and the mouse pointer has changed back to normal.

If the cue ball ends up in a pocket you will be prompted (if Display Messaged is on) to reposition the cue ball. Commonly, the cue ball would be positioned inside the "D" or semi-circle on the table, but sometimes it is positioned anywhere to the right of the white line (depending on which

rules are being played). For maximum flexibility, Snooker147 permits you to position the cue ball anywhere on the table. So you must judge where is and is not a valid position for the cue ball.

For maximum effectiveness, you should always consider how hard you want to hit the cue ball and if you want to give it some spin. The spin and power are automatically reset after you have taken your shot if the Reset Spin option is checked in the Options Menu. It is not necessary to adjust the power or spin before every shot as the previous setting will be used anyway. Beginners should use the default settings most of the time until they are used to the ball motions, otherwise balls can seem to move in strange directions.

To change how hard you hit the ball, click with the left mouse button on the cue (bottom middle of the game window) and drag the cue. The further the cue is to the left (i.e., away from the cue ball) the harder the shot will be played. Conversely, moving the cue to the right will reduce the power of the shot.

Similarly, spin may be applied to the ball by clicking with the left mouse button on the large cue ball on the bottom right of the game window and dragging the cursor. Moving the cursor to the top will cause the cue ball to move forward after a collision, moving it to the bottom will cause the cue ball to move backwards after a collision (or screw back). Use side spin to change how the cue ball deflects from the cushions.

The aim of the game is to pocket all the balls of one colour before your opponent, and then to pocket the black ball. For more information, see the Rules of Snooker.

For more information on how to aim to cue ball to pocket balls and for a better description of spin, see Physics of Snooker.

Table: Select where you wish the cue (white) ball to go using the  cursor and click the left mouse button to take your shot. The cue ball will be struck with the power and spin currently set and will move towards the mouse cursor in a straight line.

Power: The cursor shown is:  . Click and hold the left mouse button and drag the cue to change the power applied to the large cue ball. The further the cue is from the cue ball (i.e., to the left) the more power will be applied to the shot. The power is automatically reset after you have taken your shot if the Reset Power option is checked in the Options Menu.

Spin: The cursor shown is:  . Click and hold the left mouse button and drag the target marker to change the spin applied to the cue ball. Moving the cursor to the top will cause the cue ball to move forward after a collision, moving it to the bottom will cause the cue ball to move backwards after a collision (or screw back). Use side spin to change how the cue ball deflects from the cushions. The spin is automatically reset after you have taken your shot if the Reset Spin option is checked in the Options Menu.

First Contact: The colour of the ball displayed here indicates the colour of the first ball that the cue ball hit during the shot. If this indicator is white, then no other ball contacted the cue ball.

Go For: This indicates the colour of the ball that you must hit and that you should try to pot. This can indicate red, any colour, or a specified colour. If a free-ball has been awarded, then the words “Free Ball” will also be shown. In this case, the first ball hit (regardless of the colour) is deemed to be valid.

Score Board: This shows the score and which player is currently playing. The top rails show the score for player 1, while the bottom rails show the score for player 2. To read the score add the score from the 20s rail to that of the units rail. The player that is currently ‘‘on’’ the table is also indicated.

Ball Positioner: To position a new ball, move the cursor so that no balls are beneath it (the  cursor is displayed) and click the *left* mouse button. (Note that the maximum number of reds is 15 and only 1 ball of each colour is permitted!) To change the colour of a ball, move the cursor so it "touches" a ball (the pointer changes) so that the

 cursor is displayed and click the *left* mouse button. To remove a ball, move the cursor so it "touches" a ball (

 is displayed) and click the *right* mouse button.

Cue Ball Positioner: The cursor shown is: 

. To position the cue ball, move the cursor to a location on the table where there is no other ball and click with the *left* mouse button. The cue ball will be positioned here.

Snooker147 Menu Options

The menus in Snooker147 allow you to access a range of features to enhance the functionality of and the enjoyment from the Snooker147 game. In the following section, all the menus are described in the order that they appear (left-to-right / top-to-bottom). Most of the options are single-click selections that are activated by simply pressing the left mouse button. However, some options are "toggled" on or off by clicking with the mouse. In these cases, the feature is enabled if a tick-mark is placed beside the menu text.

Game

Re-Rack: If a game is currently in progress, you will be asked if you want to abandon it, if you select "Yes" the current game will end and the balls will be re-positioned in the standard international snooker positions ready for the next game.

Open Game: Opens a previously saved game file. If a game is currently in progress, you will be asked if you want to abandon it, if you select "Yes" the current game will end and the balls will be re-positioned according the their saved positions. The colours of the balls may also change: for example, a saved game may have 4 blacks, 4 reds and 4 yellows! A game file may also be dragged and dropped onto the Snooker147 window.

Save Game: Saves the current positions of all the balls (together with their colours if they have been changed) to a file of your choice. This feature allows games in mid-progress to be saved for future use, used as examples, e-mailed to colleagues to play snooker-by-post (a bit like postal chess, I suppose) and to save game configurations composed with the ball positioner tool. "Save Game" is only available in the Registered version.

"Boss" Esc: Activates the special Boss feature. Use the

escape key for the fastest activation of this option.

Exit: If all the balls have stopped moving Snooker147 exits and the window closes. If, however, a shot is still in progress, all the balls are halted (as if "Halt Balls!" was selected) but the program does not exit. To exit in this case, simply select the "Exit" option once more.

Shot

Undo: Reverts the game back to the state it was in before the last shot was taken. This can be a very useful feature. Windows is a multitasking environment. Sometimes, the operating system will decide to do some activity such as accessing the hard disk. Normally, such *background* activity is not noticed. But, in a processor intensive application such as Snooker147, such activity can interrupt the calculations of the ball motions for a sufficient time that the motion is not correct. This may sound pedantic, but it can mean that the cue ball can seem to pass through another ball if the background activity lasts for a suitable period of time. In other words, your shot was ruined by the multitasking. To overcome this, use the UNDO facility to reposition the balls and retake your shot. Alternatively, if you feel that your shot was *perfect* to start with, then use the Re-Simulate feature to take it exactly as you had intended in the first place. Note: if you are playing against the computer, you will have to turn the computer opponent off, otherwise you will not be able select the undo option.

Re-Simulate: This command remembers these parameters of your last shot: power, spin, and the cue ball aim. It simply runs the simulation again using these values to attempt to replicate your last shot. This may be used if the animation is interrupted by some background task to retake your last shot (see UNDO, above). It may also be used to reshow your last shot allowing you to investigate what happened in more detail. The ‘‘Replay’’ and ‘‘Replay Slow’’ functions are the recommended way to review previous shots, as it can never be guaranteed that the Re-Simulate will perform exactly the same each time—Re-Simulate is the only means to review shots in the UnRegistered Version.

Replay: During the simulation of a shot, the positions of all the balls are monitored every 1/20 of a second. The Replay command displays these positions as a movie to show you exactly what happened during the simulation. The actual simulation runs much faster than the 20 frames per second diaplayed in the replay, so fast moving balls will appear to move jerkily. However, these are the EXACT positions that the balls actually moved in during the simulation—this has been thoroughly investigated.

Replay Slow: As its name suggests, this command replays the previous shot but at a slower speed—in fact 4 times slower than in the Replay function. Remember, that if the slow motion replay seems to be taking an age to stop, just use the Halt Balls! Menu option, or press <CTRL>Z. The replay and slow motion replay features are only available in the Registered Version.

Open Shot: Loads a previously saved shot into memory and replays it. This allows fellow Snooker147 players to exchange games mid-way (a sort of Snooker147 by post). It is also used to display teaching shots that show you some of the techniques involved in snooker. Once a shot has been loaded, it can be replayed using one of the Replay options mentioned above. A shot file may also be dragged and dropped onto the Snooker147 window and run automatically.

Save Shot: You have played a shot and you thought it was so good you wanted to keep it for future reference or for showing your friends. Alternatively, your snooker-playing friend lives too far away to play snooker with but you still want to play over long distances (like postal chess). The save shot feature is for you. This creates shot files (used in Open Shot, above) that can be replayed, used to restart a game in mid-session, or used for tutoring or as trick shots. Games can only be saved in the Registered Version.


Halt Balls!: During the simulation, the only way to stop the balls moving is to use this command. This is useful in many circumstances. For example, if you have just taken a bad shot and you want to undo it. Use Halt Balls! to stop the simulation immediately, then use UNDO. It is also usually desirable to use this feature towards the end of a slow motion replay. The fastest way to use this feature is to use the <CTRL>Z key combination.

Options


Auto Spin Reset: Once a shot has been taken, the spin will automatically reset back to having no spin. This is the commonest shot played and this resetting is thus covenient. It also prevents inexperienced users getting confused over the seemingly strange motions of the cue ball when in fact they have applied maximum back spin to the ball. To prevent this resetting, uncheck this menu option by selecting it. To reactivate it, just check it again.


Auto Power Reset: Similar to Auto Spin Reset, above, this feature resets the power back to a default value after each shot. To disable this auto-setting, just uncheck the menu option.


Computer Player 1: When selected, the computer will play Player 1.


Computer Player 2: When selected, the computer will play Player 2. Note that the computer can play either Player 1 or Player 2, both players or neither!

Set Computer Level: Displays a dialog box to allow you to set the ability of the computer opponent. There are three levels available ranging from easy to difficult.

Configure Sounds: The sound routines used in Snooker147 allow low-latency real-time mixing of sounds. However, different sound cards have different hardware buffer sizes. This option allows you to adjust the delay of the sound effects to allow for these buffers on the sound card. Essentially: if you have problems with the sound effects, set the delay to a longer value (set in milliseconds); although the timing will be slightly worse, the overall effect should be better.

Display Reminders: When some actions occur, for example pocketing the cue ball, a reminder pops up telling you what to do next. Whilst this is useful for beginners, it gets tedious for experienced used. Therefore, unchecking this option prevents the displaying of these messages.

Ball Trails: When this is selected, the balls will leave trails on the screen. This is a very useful feature for illustrating the motions of the balls and to investigate the physics involved. For example, watch the arc of the cue ball when you strike the object ball at a slight angle, with lots of screw-back – it is very educational.

Colour Blind Tips: This is a feature especially implemented for my colour-blind, snooker-mad friend, Russell. When this is enabled, the colour of the ball will be shown (in text) when the cursor hovers over the ball. This tool has proved to

be incredibly effective whilst still being unobtrusive.

Position

Position Cue Ball: If the cue ball has been pocketed, it is necessary to reposition it on the table. The valid places for this depend on the rules being played but generally it should be placed inside the "D" on the table. This function can be used to reposition the cue ball at any time during the game.

Position Balls: Toggles the "Ball Positioner" tool on and off. When active, this menu option has a ckeck-mark placed beside it. To deactivate it, just reselect it is remove the check mark. This tool is only available in the Registered version.

Window

Normal (fastest): Sizes the game window to the default size. This is both the fastest mode and the mode in which the graphics are most accurate. On high-resolution screens this mode may be too small to use easily. Conversely on low-resolution (e.g., 640 x 480) screens, the default window size will be too large to display all the information.

Auto Fit: This option stretches the game window so that it fits on the screen as neatly as possible. On high-resolution displays, the window will grow. On low-resolution displays, the window will shrink. When this option is enabled, the graphics may appear to "shimmer". This is perfectly normal and is an artifact of the scaling procedure.

Help

Contents: Displays this help file.

Playing Instructions: Displays help on how to play Snooker147, just like clicking here.

Registration Info: Displays information on how to register, just like clicking here.

About: This shows copyright information, the current Snooker147 version number, distribution information and whether the copy is registered or shareware.

Registration and Purchasing

Snooker147 is NOT Freeware. It is distributed as Shareware and as such requires that, after a reasonable evaluation period has elapsed, the product be registered (purchased). If the Snooker147 software (or any part of it) remains in use beyond this evaluation period then it may be considered to be illegal! (In the context of Snooker147, a reasonable evaluation period may be taken to mean 30 days of use).

By not registering you are not hurting a big company, instead you are inhibiting the development of future Snooker147 versions and derivatives in addition to other software by JHC SoftWare. Substantial effort has been invested in the Snooker147 application to ensure that it gives the most enjoyment to the widest range of people. In addition it aims to be the most realistic 2D snooker simulation for the Windows95/NT platform. If you think that it fulfills this aim (for you at least) then why not register it? JHC SoftWare believes in top-quality software at affordable prices: if software is less expensive, more people can afford to use it legally. By reducing the price of software, the incentives for piracy are greatly reduced!

Benefits of Registration

It ensures that the copy you have is legal for ever more. Upon registration the program becomes the sole property of you (not the author). However, no copies of the software must be made for anything other than backup purposes. The exception to this is that the software may be installed on any number of machines in the same domestic residence (i.e., home) or up to a maximum of 3 machines in a small office.

The ball positioner is enabled in the registered version allowing you to easily create scenarios and new game layouts for more enjoyment.

The "Save Game" option is enabled allowing games to be stored for future use. This option works well in conjuction with the ball positioner.

"Shot Tracking" is available. This allows the shots to be saved and viewed as exact replays of the shot taken. The unregistered version only replays approximately by re-simulating the shot played. In some cases, the resimulated shot does not match the real shot accurately. Shot tracking removes these problems.

Messages displaying "Unregistered" are removed.

The application does not exit after a preset number of Re-Racks.

Your copy is LEGAL!

Snooker147 + Poolster special deal

For even better value, you can order both Snooker147 and Poolster for a reduced price. The combined price is £24 (compared to £28 seperately) and there is only one delivery charge. (Saving £6, £12 outside Europe). If you are already a registered Poolster customer, there is a discount available for Snooker (price = £10 + delivery). Just circle the appropriate option on the registration form and use the name and address you used to register Poolster (these will be cross-referenced).

To Register: (click here)

Payment should be made (where possible) in pounds UK sterling (£).

Registration of Snooker147 costs £14.

A site license is available which covers up to 20 PCs. The price for this is only £30!

Postage and packaging is charged at £2 inside the United Kingdom and mainland Europe and £4 overseas.

Payment in other currencies cannot guarantee the shipment of Snooker147, although every effort will still be made. Though you may also wish to add about 10% extra to cover possible commission charges and exchange rate fluctuations!!!! Such payments should be made in the currency of your country and drawn on a bank within that counrty. (This is NOT a preferred option!)

Payment should be made by Cheque or Postal Order payable to: "James H. Clark". Cash is also acceptable, although if you send cash you should be careful how it is packaged to prevent anyone knowing that it is cash, otherwise I may never

receive it. Send payment to the following address:

James H. Clark
46 Rivington Drive
Burscough
Ormskirk
L40 7RP.
England, UK.

For a Registration Form click here.

On-Line Registration

There is also the option of registering on-line via a secure (encrypted) internet service. The advantage of on-line registration is that you can use VISA, Mastercard or American Express to place your orders (in US Dollars) from anywhere in the world, and download the registered version instantly. Alternatively you may request for a disk to be sent to you directly. The registration price on-line is $20.

To register on-line just go to the JHC SoftWare internet home page:

http://freespace.virgin.net/j.h.c/

(copy the above line and paste into Internet Explorer or Netscape Navigator, to jump to the correct page)

Once connected, select register, and just fill in the form to download the latest registered version.

(If you are unable to connect to the above site, try connecting to it by going to "http://www.windows95.com/apps/games-sports.htm" then find Snooker147 and select Register Now.)

Registration Form

Print (or duplicate) this form, fill it in and send it to:

James H. Clark
46 Rivington Drive
Burscough
Ormskirk
L40 7RP.
England, UK.

Registration Request for Snooker147 Version 1.0
(or the latest version available).

I enclose remittance (payable to "James H. Clark") for:

product:	(*Snooker147*) (*only*)	(*Snooker147*) (*+Poolster*)	(*Snooker147 for a*) (*Registered Poolster owner*)
registration:	[£14]	[£24]	[£10]
site license:	[£30]	[£50]	N/A
delivery:	[£2] (UK, Europe) or	[£4] (overseas)	*(circle as appropriate)*

Total: _____ *(complete as necessary)*

Please send my copy of the Registered Version of Snooker147 to:

Name: _____
House No. and Street: _____
_____
Town / City: _____
(State): _____
(Zip) Post Code: _____
Country: _____

On-line registration is also available for $20 (US dollars). To register now go to:
http://freespace.virgin.net/j.h.c/

Send Payment in UK pounds sterling (where possible). Payment will be accepted in cash, cheque or postal order (or equivalent) made payable to "James H. Clark". See Registration and Purchasing for more details. Proof of postage is not a guarantee of proof of delivery. If the registration form and appropriate fee are received, Snooker147 *will* be dispatched within 28 days, normally much sooner (*i.e.,* a few days).

Rules

The rules of snooker are well standardised throughout the world. The rules that are implemented in Snooker147 are those of the "international" or English game. These are the rules that are played on UK TV. The rules presented below are not intended to be a comprehensive guide to playing the game of Snooker, instead they are intended to be used as a reference guide to the rules that are implemented in the Snooker147 game.

Firstly some terminology used:

The Balls:

Snooker used 8 differently coloured balls. These consist of the cue ball (which is white), 15 red balls (the "reds"), and one yellow, green, brown, blue, pink and black ball (the "colours"). The cue ball is the only ball that may be struck with the cue, and the object of the game is to pocket the object balls with this cue ball. The points obtained on potting the other balls are: red-1, yellow-2, green-3, brown-4, blue-5, pink-6 and black-7.

The Rack:

When the balls are "racked" they are placed on the table in the standard configuration; this is how Snooker147 begins. The apex ball of the triangle of reds is racked as close as possible to the pink without touching it.

Baulk-line and the Baulk:

A straight line drawn 29 inches from the face of the bottom cushion and parallel to it is called the baulk-line and the intervening space is termed the baulk.

The half-circle:

The half-circle is drawn in the baulk with its centre at the middle of the baulk-line. When the striking player has the cue ball in hand within the half-circle, he may place the base of the ball anywhere on the line or within the half-circle. In Snooker147, the exact positioning of the ball is NOT enforced, it is up to the sportmanship of the player to position the cue ball only within this region.

Frame:

A frame is the term used to describe one "game" from when the balls are racked until all the balls are potted or the game has been resigned. Typically a Game consists of several frames, and the player who has won the most frames is deemed to be the winner.

Ball On:

The "ball on" is the term used to describe the ball that the player can legally strike. In Snooker147, this is indicated by the "Go For:" icon. The striking player MUST first contact the ball on with the cue ball before contacting with any other balls, otherwise it is a foul.

The Object of the Game:

To put it most simply, the object of Snooker is to score more points than your opponent. The way in which this is done is summarised below.

Scoring:

Points are scored in two way: players are awarded points for fouls by the oponent (see "Penalties for Fouls" below), and by legally potting reds or colours. Each legally potted red ball has a point value of one; each legally potted colour ball has a point value as indicated (see "The Balls" above). A frame ends when all balls have been potted, following the "Rules of Play" (below). If the player's scores are equal after the last ball has been potted, the black is spotted on its original position and the game play continues until one of the

players wins.

Opening Break:

To begin the first frame, the players should draws lots to decide who plays first. However, in Snooker147, Player1 always breaks first. Therefore, the players should draw lots to see who should be Player1 and thus be first to break. To break the balls the striking player must hit one or more of the red balls, otherwise it is a foul. If any balls other than a red is potted on the break then this is also a foul. Note that it is not necessary to pot a red on the break.

Rules of Play:

1) A legally potted ball entitles the striker to continue at the table until he fails to legally pot a ball.

2) The legal balls, or the "ball on" is indicated by the "Go For:" icon. This is the ball that the cue ball must first contact, otherwise it is a foul. When a ball is potted, it is only legal if this is the same colour as the ball on. In the case where the ball on is a colour and there are still reds on the table, the potted ball must be the same ball as that first contacted by the cue ball. While there are reds on the table, the legal ball alternates between reds and colours, until there are no reds on the table. When only colours remain, the balls must be potted in ascending numerical value. When there are reds on the table, and a new striker approaches the table, the legal ball is always red. Colours must always be preceded by a red (unless there are no reds remaining on the table).

3) It is not necessary to cause the cue ball or an object ball to contact a cushion or drop in a pocket after the cue ball has contacted a legal object ball (ball on). It is only sufficient for the cue ball to contact the "ball on". Failure to contact a legal object ball first is a foul.

4) Any reds potted on a legal shot are legally potted balls; the striker need not call any particular red ball(s) or pocket(s) or details of how the shot will be played.

5) If the striker's ball on is a red and he pots a colour, it is a foul.

6) If the striker's ball on is a colour and he pots any ball other than the nominated ccolour (in Snooker147, the nominated ball is the ball that the cue ball first contacted with), it is a foul.

7) While reds remain on the table, each potted colour is spotted prior to the next stroke. The colours are spotted on their designated spots (as in the rack). In the case that the coloured ball's spot is occupied, the ball is spotted on the highest available spot. If no spots are available, the ball is placed as close to its original spot as possible, without toughing any other balls.

8) When no reds remain on the table, the coloured balls are potted in ascending numerical order (mentioned in rule 2, above). In this case, the balls are not respotted, unless the ball was potted on a foul stroke.

9) A Miss is deemed to be when it is judged that the player has not made a reasonable attempt to strike the ball on. This is somewhat subjective and depends on the players ability. The Snooker147 judge makes an assessment of the shot to decide if a miss should be awarded.

10) Following a Miss, the incoming player has the option to play the balls as they lie or to reset the balls to their previous position and force the opponent to retake the shot. The option to retake the shot is not available when playing the computer players in Snooker147. This is because it is possible for the computer players to replay the same shot over and over again, thus leading to an unfair advantage for the real player.

11) A “Free Ball” is awarded after a foul when the incoming player does not have a clear shot (i.e., not requiring deflection from a cushion) of the ball on. In this case the player is informed (the Go For icon indicates “Free Ball”) and the player may strike (and pot) ANY ball as if it were the ball on. Play then continues as if the chosen free ball were indeed the legal object ball.

Penalties for Fouls:

When a player commits a foul, the opponent is awarded points, and the striking player does not receive any points for the shot just played. The points are awarded depending on the ball that was fouled. If the foul is caused by not striking any balls, the points awarded are those for the ball on. If the foul is caused by the first contact of, or by the potting of, a ball other than the ball on, then the points awarded are either the score fouled ball or the ball on, whichever is highest. The minimum points for a foul shot is 4, thus a foul on a red, yellow, green and brown carry four points. A foul on a blue carried 5, a pink carries 6 and a black carrries 7.

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