



Quick start guide for Railway Operation Simulator (RailOS)






The minimum recommended screen resolution is 1024 x 768. The program will adapt to other resolutions as it will to a resized window but the smaller the resolution the less convenient it will be to use.

The user manual and on-screen help contain detailed information, but for now the recommended approach is just to dive in and experiment. An information panel is provided during use for guidance, and hovering the mouse over an active button gives a short hint as to its function.



Two sample railways are provided, a simple one - the Liverpool Loop line as far out as Conway Park and Birkenhead Central; and a complex one - Birmingham and surrounding districts. Please don't give me a hard time over these railways! I tried initially to find out what the correct train reporting numbers should be but wasn't very successful, so I gave up and guessed - they're bound to be wrong. I also had to force myself to stop fiddling with the Birmingham layout - every time I looked at it I made changes to signals and junctions etc. So please don't expect them to be perfect or even good. The track layout is based (with artistic licence in some areas) on those excellent Quail track diagrams - please be assured that any errors are mine and not theirs. The timetables are also works of fiction. If you don't like the railways, the trains or the timetables then you have all the tools necessary to improve them!


To start, run the program, then decide whether a light (white) or dark (black or dark blue) background is preferred. These are selectable via the 'Mode' menu when there is no railway present. Then select menu items 'File', and 'Load railway', then click the 'Files of type' drop-down box and click 'Railway file (.rly)'. Double click on 'Liverpool Loop.rly' to bring up the Liverpool Loop line. Select menu items 'File' and 'Load timetable', and double click 'Liverpool 06:00 start; Light traffic.ttb'. Select menu items 'Mode' and 'Operate railway'.

The railway is now in 'Pre-start' mode, which means that the clock is stopped and trains won't run until the 'Run' button  is left clicked, but routes can be set and train information is available. Hover the mouse over the track element where trains enter from the Bidston link, and you will see details of the train service that is due to enter. This is a New Brighton to Liverpool service carrying headcode 2D00, expected at 06:08. The timetable for this service is also shown. Do the same over the entry element for the Chester link and you will see that service 2G00, Ellesmere Port to Liverpool, is expected at 06:01. Now set a route for the Ellesmere Port service by left clicking on the Chester link entry element, then the signal near to the start of Birkenhead Central station. A green route line will overlies the track, indicating that a 'Preferred direction route' has been set between the two points. The signal stays red for now as there is no route beyond it. Click the same signal again, then the signal at the end of Birkenhead Central station. Continue in this way from signal to signal as far as Liverpool Central and note that the preceding signals change in four-aspect order from red, to yellow, to double yellow, then to green. Now click the 'Run' button  to start the clock and the trains. The 'Run' button now becomes a 'Pause' button , which can be used to stop the clock again. Nothing happens until 06:01 when 2G00 enters, stopping at each station for thirty seconds until it reaches Liverpool Central.


Before then 2D00 will enter at the Bidston link and will need a route to be set from there to a signal behind 2G00 to allow it to follow it round the loop. At Liverpool 2G00 will change to a new service 2G01 at 06:13. Hovering the mouse over it will show that this is an Ellesmere Port service so it will need a route setting to the Chester link where it exits at the timetabled time of 06:21, all being well.

Note that 'Paused' mode is not the same as 'Pre-start' mode, in that no action can be taken that changes the state of the railway - i.e. routes can't be set, but train (and track if required) information is available by hovering the mouse over a train (or track) or train entry point. In this respect 'Pre-start' is a privileged type of 'pause', in which starting conditions for the timetable can be set up, because in reality these would already have been set up prior to the timetable start time being reached.

Automatic signal routes are available by left clicking one of the two light blue route buttons  - top is for signal to next signal (or entry/exit point), bottom is for signal to any following signal (or entry/exit point) - same for the two green route buttons for preferred routes. Automatic signal and preferred direction routes can only be set on tracks with preferred directions allocated (via the 'Mode' and 'Set preferred directions' menu items - these are already allocated for the sample railways). Unrestricted routes (red route button ) can be set from any point to any other point (other than points, bridges or crossovers and providing there's a track between them), regardless of preferred directions. Unrestricted routes are intended for unusual movements only.

When an automatic or unrestricted route type has been chosen the preferred route buttons  become available for reselection. It will be seen that the button corresponding to the currently set route type is disabled.


Preferred direction and unrestricted routes are cancelled automatically as a train runs along them, and all signals passed change to red. Automatic signal routes are not cancelled by trains, they remain in place until cancelled by the signaller (or by a train running on them in the wrong direction). When a train passes a signal on an automatic signal route it changes to red, but (in the absence of any following trains) at the same time the next earlier signal changes to yellow, the next earlier signal to that changes to double yellow, and the next earlier one to green. In this way trains may proceed from section to section without intervention by the signaller. Automatic signal routes should only be set where direction changes are not required.


At any stage during operation 'Sessions' can be saved using the  'save session' button, meaning that the current state of the entire railway is saved to file, to be loaded again at a later time. For the Birmingham railway, which is a lot more complex, a pre-start state has been saved as a session, consisting of preset automatic signal routes where appropriate. For that railway the session can be reloaded ('File' then 'Load session').

Different background colours are used to indicate the different train states as follows:-

grey = moving (black or white in zoom-out mode depending on the background colour);
pale green = stopped at a timetabled location;
pink = train ready to start from a timetabled location (10 seconds to departure);

bright green = stopped by a signal;
red = crashed or derailed;
light cyan = stopped at buffers, no attention needed;
cyan = stopped at buffers unexpectedly;
light blue = stopped by a train in front;
magenta = call-on available;
yellow = signal passed at danger (SPAD);
caramel = stopped under signaller control;
orange - train has failed.

In zoom-out mode (accessed by clicking the  button) any train that requires attention (at a signal, unexpectedly at buffers, SPAD, crashed/derailed or call-on), is shown flashing, with the colour appropriate to the condition. Also flashing are warning symbols at the left of the screen to indicate that a train needs attention. These warnings are more useful for larger, multi-screen railways, where much of the action takes place on screens that aren't visible. An 'Actions Due' panel is available by clicking the hourglass symbol, when trains are listed with associated times to act in minutes to avoid delays. Left clicking a headcode in this list centres the train in the display with the mouse hovering over it giving detailed information. The normal display can be restored by clicking the 'Home' button or pressing the 'Home' key on the keyboard (with Numlock off).

After watching trains run in the normal manner for a while click the red cross to end the current session then restart operation by selecting 'Operate railway' from the 'Mode' menu. Left click the 'Performance log' button  to give a record of train movements. 2G00 will be seen to reach Birkenhead Central just before 06:02. Any time that is within a minute, before or after a scheduled time is classed as 'on time'. Although scheduled to depart at 06:02, it won't depart exactly at 06:02 because at least 30 seconds must elapse between any two consecutive train events, in this case arrival and departure. If the scheduled departure time was more than 30 seconds after the arrival time, then it would depart on schedule. When the clock reaches 20 seconds after arrival, the train background changes to pink to indicate train-ready-to-start, and at 30 seconds it will depart, accelerating away with a grey background.

At the next station right click the train when it is stopped and on the popup menu select 'take signaller control'. Right click again and the popup menu offers a number of options that can be experimented with. If the train is moved under signaller control it can be stopped again, and then other options offered. Note that the train only acts on the stop command at the end of a full track element, which is when the train speeds and times are calculated for the next element. When moving under timetable control it can't be stopped other than by a required railway stop, i.e. signal, station etc. Note that if signaller control is taken at a named location then the train must be returned to that location (not necessarily to the same platform) before timetable control can be restored. A train running under signaller control has a blue leading headcode character, a train running to the timetable has a red character. These coloured characters indicate the control mode of the train and also its running or facing direction.

Train drivers on these railways have complete faith in you as the signaller. They will take their train wherever the track leads, without regard for the timetable. They will stop at signals and buffers (if there is time and braking capacity), and timetabled stop locations, but will only stop for trains in front if they are being called-on, under signaller control (when they are on the lookout for trains in front), or at a timetabled stop location. Hence it is up to you to keep trains safe and on the right tracks. Errors other than crashes and derailments may usually be corrected by taking signaller control and making appropriate corrections, at the cost of course of time and possible delays to this and other trains. A train that runs on a wrongly set trailing point will always become derailed. Crashed and derailed trains must be removed from the railway by the signaller, no other option is offered. You can't do this unnoticed either, the performance log records every action - and is saved permanently to a file, so your career as a signaller might be very short. If you delete the file then your conscience will haunt you forever!

When you are adept at handling the light-traffic timetable have a go at the heavy one, it's a lot trickier. When you've mastered Liverpool, have a go at Birmingham, that's a whole different ball game! When you've had enough of them both then design, build and operate your own, or download and operate one of the many that are on the website. Timetable creation is the only part that takes time to learn - review the existing timetables ('.ttb' files in the 'Program timetables' folder) using the timetable editor in conjunction with the help file and hopefully you will soon pick up the idea. Help is also available on-screen within 'Create or Edit timetable' mode, and more information and tutorials are available from the website under the 'Help' tab.

To help with operating the trains formatted (i.e. readable) timetables are available in the 'Formatted timetables' folder. These have been produced by being exported from within the program via the menu and are created in two forms (a) traditional timetable format in spreadsheet form ('.csv' - comma-separated-variable files), readable and formattable by Microsoft Excel or any spreadsheet program, and (b) chronological order in plain text ('.txt' files), readable by any word processor or text editor. The spreadsheet versions have been tidied up using Microsoft Excel for better readability. Beware of printing out these files, particularly the chronological ones, unless multiple columns and small fonts are used, as they can run to many pages.

Images of the railway are available in the 'Images' folder. These have been created via the menu and are useful during initial design and development, and also as a permanent record of the state at any time during operation.

I hope you enjoy the railway samples and the program.

If you have any comments, criticisms, or suggestions, then please post them on discord, available via the website at <http://www.railwayoperationsimulator.com/> - thanks.

Happy operating!

Albert Ball