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# Concepts

- Alerts
  - Introduction
    - Background
    - Which type of alert is best?
  - Script alerts
    - `alert()` function events
    - Order fill events
  - `alertcondition()` events
    - Using one condition
    - Using compound conditions
    - Placeholders
  - Avoiding repainting with alerts
- Backgrounds
- Bar coloring
- Bar plotting
  - Introduction
  - Plotting candles with `plotcandle()`
  - Plotting bars with `plotbar()`
- Bar states
  - Introduction
  - Bar state built-in variables
    - `barstate.isfirst`
    - `barstate.islast`
    - barstate.ishistory`
    - barstate.isrealtime`
    - `barstate.isnew`
    - barstate.isconfirmed`
    - barstate.islastconfirmedhistory`
  - Example
- Chart information
  - Introduction
  - Prices and volume
  - Symbol information
  - Chart timeframe
  - Session information
- Colors
  - Introduction
    - Transparency
    - Z-index
  - Constant colors
  - Conditional coloring
  - Calculated colors
    - color.new()
    - color.rgb()
    - color.from\_gradient()
  - Mixing transparencies
  - Tips

- Designing usable colors schemes
- Plot crisp lines
- Customize gradients
- Color selection through script settings

# • Fills

- Introduction
- o `plot()` and `hline()` fills
- Line fills

#### Inputs

- Introduction
- Input functions
- Input function parameters
- Input types
  - Simple input
  - Integer input
  - Float input
  - Boolean input
  - Color input
  - Timeframe input
  - Symbol input
  - Session input
  - Source input
  - Time input
- Other features affecting Inputs
- Tips

# Levels

- `hline()` levels
- Fills between levels

# Libraries

- Introduction
- Creating a library
  - Library functions
  - Argument form control
  - User-defined types and objects
- Publishing a library
  - House Rules
- Using a library
- · Lines and boxes
  - Introduction
  - Lines
    - Creating lines
    - Modifying lines
    - Line styles
    - Getting line properties
    - Cloning lines
    - Deleting lines
  - Boxes
    - Creating boxes
    - Modifying boxes
    - Box styles
    - Getting box properties
    - Cloning boxes
    - Deleting boxes
  - Realtime behavior

- Limitations
  - Total number of objects
  - Future references with `xloc.bar\_index`
  - Additional securities
  - Historical buffer and `max\_bars\_back`
- Examples
  - Pivot Points Standard
  - Pivot Points High/Low
  - Linear Regression
  - Zig Zag
- Non-standard charts data
  - Introduction
  - `ticker.heikinashi()`
  - o `ticker.renko()`
  - o `ticker.linebreak()`
  - `ticker.kagi()`
  - `ticker.pointfigure()`
- Plots
  - Introduction
  - `plot()` parameters
  - Plotting conditionally
    - Value control
    - Color control
  - Levels
  - Offsets
  - Plot count limit
  - Scale
    - Merging two indicators
- Repainting
  - Introduction
    - For script users
    - For Pine Script<sup>™</sup> programmers
  - Historical vs realtime calculations
    - Fluid data values
    - Repainting `request.security()` calls
    - Using `request.security()` at lower timeframes
    - Future leak with `request.security()`
    - `varip`
    - Bar state built-ins
    - `timenow`
    - Strategies
  - Plotting in the past
  - Dataset variations
    - Starting points
    - Revision of historical data
- Sessions
  - Introduction
  - Session strings
    - Session string specifications
    - Using session strings
  - Session states
  - Using sessions with `request.security()`
- Strategies
  - A simple strategy example

- Applying a strategy to a chart
- Backtesting and forwardtesting
- Broker emulator
- Order placement commands
- Closing market position
- OCA groups
- Risk management
- Currency
- Margin
- Tables
  - Introduction
  - Creating tables
    - Placing a single value in a fixed position
    - Coloring the chart's background
    - Creating a display panel
    - Displaying a heatmap
  - Tips
- Text and shapes
  - Introduction
  - o `plotchar()`
  - o `plotshape()`
  - o `plotarrow()`
  - Labels
    - Creating and modifying labels
    - Positioning labels
    - Reading label properties
    - Cloning labels
    - Deleting labels
    - Realtime behavior
- Time
  - Introduction
    - Four references
    - Time built-ins
    - Time zones
  - Time variables
    - 'time' and 'time\_close'
    - `time\_tradingday`
    - `timenow`
    - Calendar dates and times
    - `syminfo.timezone()`
  - Time functions
    - time()` and `time\_close()`
    - Calendar dates and times
    - `timestamp()`
  - Formatting dates and time
- Timeframes
  - Introduction
  - Timeframe string specifications
  - Comparing timeframes