CLAIMS

What is claimed is:

Claim 1. A computing apparatus to interpret a domain-specific language for interactive exploration, filtering, and analysis of a dynamic data set, the apparatus comprising a processor and a memory storing instructions that, when executed by the processor, configure the apparatus to:

provide a multi-line editor user input interface that allows a user to enter and edit input on any line at any time;

provide a grid view display interface;

on a continual basis, as the user enters input including a first expression in the multi-line editor input interface:

parse the first expression with respect to the domain-specific language, wherein the domain-specific language comprises a plurality of data tags and a plurality of operations, each data tag is associated with at least one value for each of a plurality of identifiers of the data set, and each operation can be applied to data tag-associated values;

wherein the parsing includes recognizing, in the first expression, a data tag of the domain-specific language and an operation provided in the domain-specific language;

execute the parsed expression, wherein the executing includes:

determining, out of the plurality of identifiers, a first subset of identifiers to which the parsed expression is applied;

identifying one or more data sources associated with the recognized data tag;

loading values associated with the recognized data tag from at least one of the identified data sources; and

applying the operation to the loaded values to produce result values for a second subset of identifiers, wherein each result value

is associated with an identifier in the second subset of identifiers; and

update the grid view display interface with a live display of the result values for the second subset of identifiers, wherein the updating includes, for each displayed identifier, adding an associated value of the result values to the grid view display interface,

such that the grid view display interface is immediately updated according to the current contents of the multi-line editor user input interface.

Claim 2. The computing apparatus of Claim 1, further comprising receiving, via the multi-line editor input interface, user input designating a universe of identifiers, such that the first subset of identifiers to which the parsed expression is applied is determined to be the designated universe of identifiers.

Claim 3. The computing apparatus of Claim 1, further comprising receiving expressions on multiple lines in the multi-line editor input interface including a preceding expression, such that the first subset of identifiers to which the parsed expression is applied is determined to be a subset of identifiers resulting from the preceding expression.

Claim 4. The computing apparatus of Claim 1, wherein the first expression includes a data tag that references output from an existing screen, such that the result values for the second subset of identifiers are based on the output from the existing screen.

Claim 5. The computing apparatus of Claim 1, wherein the identifying one or more data sources associated with the recognized data tag is performed automatically, without requiring the user to explicitly specify a data source.

Claim 6. The computing apparatus of Claim 1, further comprising assigning the result values for the second subset of identifiers to a new automatically named data tag.

Claim 7. The computing apparatus of Claim 1, wherein the operation comprises assigning the result values for the second subset of identifiers to a new user-named data tag.

Claim 8. The computing apparatus of Claim 6, further comprising parsing another expression containing the new user-named data tag, such that the new user-named data tag functions as one of the plurality of data tags in the domain-specific language.

Claim 9. The computing apparatus of Claim 1, wherein the operation produces a result value for each identifier in the first subset, such that the second subset contains the same identifiers as the first subset.

Claim 10. The computing apparatus of Claim 9, wherein the operation is a transformation that produces result values that comprise metadata characterizing data tag-associated values, and wherein the transformation is one of averaging by mean or median, ranking, bucketing into quintiles or deciles, standardizing, or indicating a trend or trend stability.

Claim 11. The computing apparatus of Claim 1, wherein the operation filters the first subset of identifiers to which the expression is applied, such that the second subset of identifiers is a proper subset of the first subset that contains fewer identifiers than the first subset; and wherein updating the grid view display interface further comprises displaying the second subset of identifiers in place of the first subset of identifiers or removing identifiers not contained in the second subset of identifiers from the grid view display interface.

Claim 12. The computing apparatus of Claim 1, wherein each expression or data tag entered in the multi-line editor input interface corresponds to a column of information displayed in the grid view display interface.

Claim 13. The computing apparatus of Claim 12, wherein the updating the grid view display interface comprises inserting a column for the result values in the grid view display interface; and further comprising, upon the user deleting a line or data tag from the multi-line editor input interface, removing the corresponding column from the grid view display interface.

Claim 14. The computing apparatus of Claim 1, wherein updating the grid view display interface comprises, based on a transformation or a data tag name, displaying a heat map of values in the grid view display interface.

Claim 15. The computing apparatus of Claim 1, wherein a data tag is associated with structured data or an array of values for each identifier, and wherein updating the grid view display interface comprises determining the type of the structured data or array of values and automatically displaying a graph of successive values, or a link to a source document, in the grid view display interface.

Claim 16. The computing apparatus of Claim 1, wherein the parsing, executing, and updating on a continual basis comprises, as the user edits the first expression in the multi-line editor input interface, changing the displayed result values to reflect the user's edits.

Claim 17. The computer-readable storage medium of Claim 17, further comprising a natural language user interface configured to generate, from natural language input, the first expression in the domain-specific language and to insert the first expression into the multi-line editor user input interface.

Claim 18. The computer-readable storage medium of Claim 17, further comprising:

providing a user-selectable option to perform a backtest; and in response to user selection of the option:

performing the backtest that selects securities based on the parsed expression over historic data;

wherein the multi-line editor user input interface continues to allow the user to enter and edit input on any line at any time; and

wherein performing the backtest does not affect the parsing, executing, and updating on a continual basis.

Claim 19. The computer-readable storage medium of Claim 17, wherein in response to a typographical error or incomplete input in the first expression, the multi-line editor user input interface displays a semantically correct error handling suggestion.

Claim 20. A computer-readable storage medium having stored thereon instructions that, when executed by a processor, configure the processor to:

provide a multi-line editor user input interface that allows a user to enter and edit input on any line at any time;

provide a grid view display interface;

on a continual basis, as the user enters input including a first expression in the multi-line editor input interface:

parse the first expression with respect to the domain-specific language, wherein the domain-specific language comprises a plurality of data tags and a plurality of operations, each data tag is associated with at least one value for each of a plurality of identifiers of the data set, and each operation can be applied to data tag-associated values;

wherein the parsing includes recognizing, in the first expression, a data tag of the domain-specific language and an operation provided in the domain-specific language;

execute the parsed expression, wherein the executing includes:

determining, out of the plurality of identifiers, a first subset of identifiers to which the parsed expression is applied;

identifying one or more data sources associated with the recognized data tag;

loading values associated with the recognized data tag from at least one of the identified data sources; and

applying the operation to the loaded values to produce result values for a second subset of identifiers, wherein each result value is associated with an identifier in the second subset of identifiers; and

update the grid view display interface with a live display of the result values for the second subset of identifiers, wherein the updating includes, for each displayed identifier, adding an associated value of the result values to the grid view display interface,

such that the grid view display interface is immediately updated according to the current contents of the multi-line editor user input interface.

AMENDED CLAIMS
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Claim 1. A computing apparatus to interpret a domain-specific language for interactive exploration, filtering, and analysis of a dynamic data set, the apparatus comprising a processor and a memory storing instructions that, when executed by the processor, configure the apparatus to:

provide a multi-line editor user input interface that allows a user to enter and edit input on any line at any time;

provide a grid view display interface;

on a continual basis, as the user enters input including a first expression in the multi-line editor input interface:

parse the first expression with respect to the domain-specific language, wherein the domain-specific language comprises a plurality of data tags and a plurality of operations, each data tag is associated with at least one value for each of a plurality of identifiers of the data set, and each operation can be applied to data tag-associated values;

wherein the parsing includes recognizing, in the first expression, a data tag of the domain-specific language and an operation provided in the domain-specific language;

execute the parsed expression, wherein the executing includes:

determining, out of the plurality of identifiers, a first subset of identifiers to which the parsed expression is applied;

identifying one or more data sources associated with the recognized data tag;

loading values associated with the recognized data tag from at least one of the identified data sources; and

applying the operation to the loaded values to produce result values for a second subset of identifiers, wherein each result value

is associated with an identifier in the second subset of identifiers; and

update the grid view display interface with a live display of the result values for the second subset of identifiers, wherein the updating includes, for each displayed identifier, adding an associated value of the result values to the grid view display interface,

such that the grid view display interface is immediately updated according to the current contents of the multi-line editor user input interface.

Claim 2. The computing apparatus of Claim 1, further comprising receiving, via the multi-line editor input interface, user input designating a universe of identifiers, such that the first subset of identifiers to which the parsed expression is applied is determined to be the designated universe of identifiers.

Claim 3. The computing apparatus of Claim 1, further comprising receiving expressions on multiple lines in the multi-line editor input interface including a preceding expression, such that the first subset of identifiers to which the parsed expression is applied is determined to be a subset of identifiers resulting from the preceding expression.

Claim 4. The computing apparatus of Claim 1, wherein the first expression includes a data tag that references output from an existing screen, such that the result values for the second subset of identifiers are based on the output from the existing screen.

Claim 5. The computing apparatus of Claim 1, wherein the identifying one or more data sources associated with the recognized data tag is performed automatically, without requiring the user to explicitly specify a data source.

Claim 6. The computing apparatus of Claim 1, further comprising assigning the result values for the second subset of identifiers to a new automatically named data tag.

Claim 7. The computing apparatus of Claim 1, wherein the operation comprises assigning the result values for the second subset of identifiers to a new user-named data tag.

Claim 8. The computing apparatus of Claim 7, further comprising parsing another expression containing the new user-named data tag, such that the new user-named data tag functions as one of the plurality of data tags in the domain-specific language.

Claim 9. The computing apparatus of Claim 1, wherein the operation produces a result value for each identifier in the first subset, such that the second subset contains the same identifiers as the first subset.

Claim 10. The computing apparatus of Claim 9, wherein the operation is a transformation that produces result values that comprise metadata characterizing data tag-associated values, and wherein the transformation is one of averaging by mean or median, ranking, bucketing into quintiles or deciles, standardizing, or indicating a trend or trend stability.

Claim 11. The computing apparatus of Claim 1, wherein the operation filters the first subset of identifiers to which the expression is applied, such that the second subset of identifiers is a proper subset of the first subset that contains fewer identifiers than the first subset; and wherein updating the grid view display interface further comprises displaying the second subset of identifiers in place of the first subset of identifiers or removing identifiers not contained in the second subset of identifiers from the grid view display interface.

Claim 12. The computing apparatus of Claim 1, wherein each expression or data tag entered in the multi-line editor input interface corresponds to a column of information displayed in the grid view display interface.

Claim 13. The computing apparatus of Claim 12, wherein the updating the grid view display interface comprises inserting a column for the result values in the grid view display interface; and further comprising, upon the user deleting a line or data tag from the multi-line editor input interface, removing the corresponding column from the grid view display interface.

Claim 14. The computing apparatus of Claim 1, wherein updating the grid view display interface comprises, based on a transformation or a data tag name, displaying a heat map of values in the grid view display interface.

Claim 15. The computing apparatus of Claim 1, wherein a data tag is associated with structured data or an array of values for each identifier, and wherein updating the grid view display interface comprises determining the type of the structured data or array of values and automatically displaying a graph of successive values, or a link to a source document, in the grid view display interface.

Claim 16. The computing apparatus of Claim 1, wherein the parsing, executing, and updating on a continual basis comprises, as the user edits the first expression in the multi-line editor input interface, changing the displayed result values to reflect the user's edits.

Claim 17. A computer-readable storage medium having stored thereon instructions that, when executed by a processor, configure the processor to:

provide a multi-line editor user input interface that allows a user to enter and edit input on any line at any time;

provide a grid view display interface;

on a continual basis, as the user enters input including a first expression in the multi-line editor input interface:

parse the first expression with respect to the domain-specific language, wherein the domain-specific language comprises a plurality of data tags and a plurality of operations, each data tag is associated with at least one value for each of a plurality of identifiers of the data set, and each operation can be applied to data tag-associated values;

wherein the parsing includes recognizing, in the first expression, a data tag of the domain-specific language and an operation provided in the domain-specific language;

execute the parsed expression, wherein the executing includes:

determining, out of the plurality of identifiers, a first subset of identifiers to which the parsed expression is applied;

identifying one or more data sources associated with the recognized data tag;

loading values associated with the recognized data tag from at least one of the identified data sources; and

applying the operation to the loaded values to produce result values for a second subset of identifiers, wherein each result value is associated with an identifier in the second subset of identifiers; and

update the grid view display interface with a live display of the result values for the second subset of identifiers, wherein the updating includes, for each displayed identifier, adding an associated value of the result values to the grid view display interface,

such that the grid view display interface is immediately updated according to the current contents of the multi-line editor user input interface.

Claim 18. The computer-readable storage medium of Claim 17, further comprising a natural language user interface configured to generate, from natural language input, the first expression in the domain-specific language and to insert the first expression into the multi-line editor user input interface.

Claim 19. The computer-readable storage medium of Claim 17, further comprising:

providing a user-selectable option to perform a backtest; and in response to user selection of the option:

performing the backtest that selects securities based on the parsed expression over historic data;

wherein the multi-line editor user input interface continues to allow the user to enter and edit input on any line at any time; and

wherein performing the backtest does not affect the parsing, executing, and updating on a continual basis.

Claim 20. The computer-readable storage medium of Claim 17, wherein in response to a typographical error or incomplete input in the first expression, the multi-line editor user input interface displays a semantically correct error handling suggestion.