```
/**              Variable Descriptions for Calculator and its libraries.         */

/*
 *      src/Calculator.java
 *                          < Calculator >
 *      --------------------------------------------------------------------------
 *      Serial no. |    Variable name   |      Data type       |      Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    commandRegex    |       String         | Regular expresion
 *                 |                    |                      | matching a command
 *      -----------+--------------------+----------------------+-----------------------
 *          2      |    previousAns     |       String         | Stores the previously
 *                 |                    |                      | evaluated answer
 *      -----------+--------------------+----------------------+-----------------------
 *          3      |    expParser       |    ExpressionParser  | Object with methods
 *                 |                    |                      | for evaluating math
 *                 |                    |                      | expressions
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                          < Calculator.main(String[]) >
 *      --------------------------------------------------------------------------
 *      Serial no. |    Variable name   |      Data type       |      Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    expression      |       String         | Store the expression
 *                 |                    |                      | entered
 *      -----------+--------------------+----------------------+-----------------------
 *          2      |    command         |       String         | Store the command
 *                 |                    |                      | entered
 *      -----------+--------------------+----------------------+-----------------------
 *          3      |    inp             |       Scanner        | Object with methods
 *                 |                    |                      | for input
 *      -----------+--------------------+----------------------+-----------------------
 *          4      |    i               |        int           | Counter variable
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                          < Calculator.evaluate(String) >
 *                          < Calculator.parseCommand(String) >
 */

/*
 *      src/CommandNotFoundException.java
 *                          < CommandNotFoundException >
 *      --------------------------------------------------------------------------
 *      Serial no. |    Variable name   |      Data type       |      Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    command         |       String         | Store the invalid
 *                 |                    |                      | entered
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
 *
 *                        < CommandNotFoundException
 *                            .CommandNotFoundException(String) >
 *                        < CommandNotFoundException.getCommand() >
 */


/*
 *      src/com/github/sahasatvik/math/ExpressionParser.java
 *                      < ExpressionParser >
 *      -------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type      |       Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    numberRegex     |      String        | Regular expresion
 *                 |                    |                    | matching a number
 *      -----------+--------------------+--------------------+-------------------------
 *          2      | signedNumberRegex  |      String        | Regular expresion
 *                 |                    |                    | matching a signed
 *                 |                    |                    | number
 *      -----------+--------------------+--------------------+-------------------------
 *          3      |   assignmentRegex  |      String        | Regular expresion
 *                 |                    |                    | matching an
 *                 |                    |                    | assignment statement
 *      -----------+--------------------+--------------------+-------------------------
 *          4      |     operators      |     String[]       | Array of arithmetic
 *                 |                    |                    | operators (BODMAS)
 *      -----------+--------------------+--------------------+-------------------------
 *          5      |     variables      |    String[][]      | Array of variable
 *                 |                    |                    | names and values
 *      -----------+--------------------+--------------------+-------------------------
 *          6      |   numberOfVars     |      int           | Number of variables
 *                 |                    |                    | currently defined
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                      < ExpressionParser.ExpressionParser(int) >
 *                      < ExpressionParser.addVariable(String, String) >
 *      -------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type      |       Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      | i                  |      int           | Counter variable
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                      < ExpressionParser.evaluate(String) >
 *      -------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type      |       Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    result          |      String        | Store the result after
 *                 |                    |                    | evaluating expressions
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
*                       < ExpressionParser.parseVariables(String) >
*        -----------------------------------------------------------------------------
*        Serial no. |    Variable name    |      Data type     |        Purpose
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*            1      |    i                |      int           | Counter variable
*        ----------+-------------------+--------------------+------------------------
*            2      |    start            |      int           | Store index of opening
*                   |                     |                    | angled brackets ('<')
*        ----------+-------------------+--------------------+------------------------
*            3      |    end              |      int           | Store index of closing
*                   |                     |                    | angled brackets ('>')
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*                       < ExpressionParser.parseParenthesis(String) >
*        -----------------------------------------------------------------------------
*        Serial no. |    Variable name    |      Data type     |        Purpose
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*            1      |    result           |      String        | Store the result after
*                   |                     |                    | evaluating the part
*                   |                     |                    | in parenthesis
*        ----------+-------------------+--------------------+------------------------
*            2      |    start            |      int           | Store index of opening
*                   |                     |                    | parenthesis ('(')
*        ----------+-------------------+--------------------+------------------------
*            3      |    end              |      int           | Store index of closing
*                   |                     |                    | parenthesis (')')
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*                       < ExpressionParser.parseFunctions(String) >
*        -----------------------------------------------------------------------------
*        Serial no. |    Variable name    |      Data type     |        Purpose
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*            1      |    result           |      String        | Store the result after
*                   |                     |                    | evaluating the part
*                   |                     |                    | in parenthesis
*        ----------+-------------------+--------------------+------------------------
*            2      |    func             |      String        | Store the function
*                   |                     |                    | name
*        ----------+-------------------+--------------------+------------------------
*            3      |    x                |      double        | Store the value of the
*                   |                     |                    | function argument
*        ----------+-------------------+--------------------+------------------------
*            4      |    start            |      int           | Store index of opening
*                   |                     |                    | square brackets ('[')
*        ----------+-------------------+--------------------+------------------------
*            5      |    end              |      int           | Store index of closing
*                   |                     |                    | square brackets (']')
*        ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

```
*                           < ExpressionParser.parseOperators(String) >
*         -------------------------------------------------------------------------------
*         Serial no. |     Variable name    |      Data type      |        Purpose
*         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*             1      |     leftIndex        |        int          |   Store index of left
*                    |                      |                     |   operand
*         -----------+----------------------+---------------------+-----------------------
*             2      |     rightIndex       |        int          |   Store index of right
*                    |                      |                     |   operand
*         -----------+----------------------+---------------------+-----------------------
*             3      |     stack            |       String[]      |   Store the expression
*                    |                      |                     |   after dividing it
*                    |                      |                     |   along the spaces
*         -----------+----------------------+---------------------+-----------------------
*             4      |     op               |       String        |   Store the operator
*                    |                      |                     |   name
*         -----------+----------------------+---------------------+-----------------------
*             5      |     i                |        int          |   Counter variable
*         -----------+----------------------+---------------------+-----------------------
*             6      |     left             |        int          |   Store the left
*                    |                      |                     |   operand
*         -----------+----------------------+---------------------+-----------------------
*             7      |     right            |        int          |   Store the right
*                    |                      |                     |   operand
*         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*                         < ExpressionParser.adjustNumberSpacing(String) >
*                         < ExpressionParser
*                                   .addVariable(String, int, char, char) >
*         -------------------------------------------------------------------------------
*         Serial no. |    Variable name    |      Data type       |        Purpose
*         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*             1      |    tmp              |        int           |   Temporary variable,
*                    |                     |                      |   store the position of
*                    |                     |                      |   the opening bracket
*         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*/

/*
*       src/com/github/sahasatvik/math/MathParser.java
*                         < MathParser >
*                         < MathParser.isNumber(String) >
*                         < MathParser.factorial(double) >
*         -------------------------------------------------------------------------------
*         Serial no. |    Variable name    |      Data type       |        Purpose
*         ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*             1      |    n                |        double        |   Counter for
```

```
 *                |                    |                         | multiplying to get
 *                |                    |                         | the factorial
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                      < MathParser
 *                              .solveBinaryOperation(double, String, double) >
 *      ---------------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type     |        Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    result          |       String      | Store the evaluated
 *                 |                    |                   | result
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                      < MathParser
 *                              .solveUnaryFunction(String, double) >
 *      ---------------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type     |        Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      |    result          |       String      | Store the evaluated
 *                 |                    |                   | result
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 */


/*
 *      src/com/github/sahasatvik/math/ExpressionParserException.java
 *                      < ExpressionParserException >
 *      ---------------------------------------------------------------------------------
 *      Serial no. |    Variable name   |     Data type     |        Purpose
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *          1      | faultyExpression   |       String      | Store the invalid
 *                 |                    |                   | expression
 *      ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                      < ExpressionParserException
 *                              .ExpressionParserException(String) >
 *                      < ExpressionParserException
 *                              .getFaultyExpression() >
 */


/*
 *      src/com/github/sahasatvik/math/NullExpressionException.java
 *                      < NullExpressionException >
 *                      < NullExpressionException
 *                              .NullExpressionException() >
 */


/*
 *      src/com/github/sahasatvik/math/UnmatchedBracketsException.java
 *                      < UnmatchedBracketsException >
```

```
 *           --------------------------------------------------------------------------------
 *           Serial no. |    Variable name    |      Data type      |      Purpose
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *              1       |    pos              |      int            |    Store the index of the
 *                      |                     |                     |    unmatched bracket
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                              < UnmatchedBracketsException
 *                                      .UnmatchedBracketsException(String, int) >
 *                              < UnmatchedBracketsException
 *                                      .getIndexOfBracket() >
 */


/*
 *           src/com/github/sahasatvik/math/MissingOperandException.java
 *                              < MissingOperandException >
 *
 *           --------------------------------------------------------------------------------
 *           Serial no. |    Variable name    |      Data type      |      Purpose
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *              1       |    op               |      String         |    Store the operator
 *                      |                     |                     |    which has a missing
 *                      |                     |                     |    operand
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                              < MissingOperandException
 *                                      .MissingOperandException(String, int) >
 *                              < MissingOperandException
 *                                      .getOperator() >
 */


/*
 *           src/com/github/sahasatvik/math/VariableNotFoundException.java
 *                              < VariableNotFoundException >
 *
 *           --------------------------------------------------------------------------------
 *           Serial no. |    Variable name    |      Data type      |      Purpose
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *              1       |    var              |      String         |    Store the name of the
 *                      |                     |                     |    unrecognized variable
 *           ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 *                              < VariableNotFoundException
 *                                      .VariableNotFoundException(String, String) >
 *                              < VariableNotFoundException
 *                                      .VariableNotFoundException(String) >
 *                              < VariableNotFoundException
 *                                      .getVar() >
 */


/*
```

```
*       src/com/github/sahasatvik/math/FunctionNotFoundException.java
*                         < FunctionNotFoundException >
*       --------------------------------------------------------------------------------
*       Serial no. |     Variable name    |      Data type       |        Purpose
*       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*          1       |     func             |       String         |   Store the name of the
*                  |                      |                      |   unrecognized function
*       ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
*                                 < FunctionNotFoundException
*                                         .FunctionNotFoundException(String, String) >
*                                 < FunctionNotFoundException
*                                         .FunctionNotFoundException(String) >
*                                 < FunctionNotFoundException
*                                         .getFunc() >
*/
```