unsigned long registerPosition paceval_cRegisteredObject (paceval_cCleanupHandler *handle_CleanupHandler_in) + ~paceval_cRegisteredObject() + void setRegisterPosition (unsigned long registerPosition_in) + unsigned long getRegister Position() paceval_cCleanupHandler paceval_cBaseAtomicGraphNode # paceval callbackStatusType # bool * handle_stackHasCache * handle_CallbackStatus OptionAvailable # paceval_eStatusTypes # paceval_sNodeSpecificData currentStatus * handle sNodeSpecificData · paceval_cBaseAtomicGraph # int percentageDone paceval_cSyntacticAnalysis Node(paceval_cCleanupHandler # unsigned long length *handle_CleanupHandler_in) _functionString # paceval_cScanner * handle_Scanner · void initiateData(const # bool lastError_isError char *operator_in, long # paceval_cGraph * handle # paceval_sErrorInformation valueNode1_in, long valueNode2 lastErrorInformation paceval_cGraph in, long resultNode in, long # paceval cListOfVariables # paceval_cListOfPointer position_in, const char *valueOperator_in) * listOfVariables * listOfpacevalObjects ~paceval_cBaseAtomicGraph + paceval_cGraph(paceval # long currentAtomicGraphNode # unsigned long numberOfObjects _cCleanupHandler *handle + paceval_cSyntacticAnalysis CleanupHandler in, PACEVAL # unsigned long maxNumberOf paceval_eListOfPointerTypes (paceval_cCleanupHandler _HANDLE handle_pacevalComputation_in) Objects getPointerType() *handle_CleanupHandler_in) + void initializeData() paceval_cCleanupHandler + long getPosition() void initializeData (paceval callbackStatusType + ~paceval_cGraph() paceval_cUnsignedLongList ⊦ void getValueOperator (PACEVAL_HANDLE handle *paceval_callbackStatus_in) # unsigned long * arrayOfUnsignedLong (const paceval_eCalculation unsigned long addAtomicGraph _pacevalComputation_in, bool initializeDataCleanup Node(paceval cBaseAtomicGraphNode PrecisionTypes useCalculationPrecision paceval_cListOfPointer const char *functionString # unsigned long size paceval_cScanner Handler() in, bool *valueOperatorIsTrusted *handle cBaseAtomicGraphNode _in, paceval_cListOfVariables _arrayOfUnsignedLong paceval_cListOfVariables _out, long double *valueAsLongDouble _in, paceval_eListOfPointerTypes *listOfVariables_in) · ~paceval_cCleanupHandler() # unsigned long sizeUsed paceval_cListOfPointer _out, double *valueAsDouble_out, float ePointerType_in, bool *success_out) - paceval_cScanner(paceval void setCurrentStatus + ~paceval_cSyntacticAnalysis() _arrayOfUnsignedLong (paceval_cCleanupHandler *valueAsFloat_out) + paceval_cBaseAtomicGraph cCleanupHandler *handle (paceval_eStatusTypes paceval cListOfVariables *handle_CleanupHandler_in) + paceval_cGraph * getGraph() # unsigned long increaseCounter Node * getAtomicGraphNode paceval_eOperatorTypes _CleanupHandler_in) currentStatus in, int (paceval cCleanupHandler · void initializeData + paceval_cListOfVariables paceval_cCharArray (unsigned long position_in) paceval_cUnsignedLongList getOperator() percentageDone_in) *handle_CleanupHandler_in) ⊦ void initializeData (unsigned long proposedSize_in) * getVarList() (paceval_cCleanupHandler + long * getValueField1() # char * handle_charArray (const char *functionString_in) + long sizeOf() paceval_eStatusTypes ⊦ void initializeData *handle_CleanupHandler_in) + ~paceval_cListOfPointer() # void doAnalyzeTerms() getCurrentStatus(int (unsigned long proposedSize_in) + long * getValueField2() + paceval cCharArray + long getMaximumField() + ~paceval_cScanner() # void setOperationPlaceholders void initializeData() *percentageDone_out) + bool doAddPointer(void (paceval_cCleanupHandler + ~paceval_cListOfVariables() + long * getResultField() + long getNumberOfPosition + void identifyMatch *handle_Pointer_in, paceval Positions(long *position *handle_CleanupHandler_in) ~paceval_cUnsignedLongList() · void setPercentageDone Levels() (paceval_eMathematicalCharacter + bool doAddVariable + bool hasCacheOptionAvailable _eListOfPointerTypes ePointerType _value1_in, long *position Types eMathematicalCharacterType_in) (int percentageDone_in) + void initializeData bool doAddUnsignedLong (const char *varable_in) + long getMaxToDoLevelMultithread (unsigned long stackNumber_in) _in, unsigned long *pointerPosition_out) _value2_in, long *position (unsigned long valueUnsigned (unsigned long length_in) · int getPercentageDone() · void setMainPositionOfScanner Position() + void addVariablesAtOnce _result_in) bool CreateLookaheadCache paceval_eListOfPointerTypes + ~paceval_cCharArray() (long mainPositionOfScanner_in) void setLengthFunctionString (const char *variables + void resetMaxToDoLevelMultithread getPointerType(unsigned # void addElementaryArithmetic (unsigned long length_functionString_in) _in, unsigned long numberOfVariables_in) unsigned long * getUnsigned + char * getCharacterPointer() long getMainPositionOfScanner() OrPowerSign(const char *operator long position_in) void setLevelMultithread LongPointer(unsigned long _in, long position_in) unsigned long getLengthFunction ⊦ unsigned long getNumberOf Jump(long levelMultithreadJump_in) + long lockAndGetToDoLevel paceval_eMathematicalCharacter · void * getPointer(unsigned position_in) MultithreadPosition(unsigned Variables() Types getLookAheadMathematicalCharacter # void addFacultationSign long position_in) bool hasLevelMultithread bool setUnsignedLong long stackNumber_in, unsigned bool registerObject F long identifyVariablePositionfrom (long position_in) Jump(long *levelMultithreadJump_out) + bool removePointer (unsigned long position long idSingleCalculationToDo (unsigned long *registerPosition String(const char *variable_in) const char * getScannerString # void addFunction(const (unsigned long position_in) void setValueLevelMultithread _in, unsigned long valueUnsigned _in, unsigned long *lastToDoLevelMultithread _out, void *handle_Pointer (long *lengthOfScannerString_out) char *functionAsOperator (unsigned long idSingleCalculation Long_in) unsigned long sizeOf() Position_in, unsigned long *startSpecificAtNode _in, paceval_eListOfPointerTypes _in, long position_in) _in, const paceval_eCalculationPrecision _in, unsigned long *endSpecificAtNode_in) + unsigned long sizeOf() ePointerType_in) Types useCalculationPrecision_in, long # void doSummation() + bool unlockToDoLevelMultithread # bool dolncreaseSize() bool unregisterObject double valueLevelMultithreadAsLongDouble # void doTerm() Position(unsigned long stackNumber (unsigned long registerPosition in, double valueLevelMultithreadAsDouble _in, unsigned long lockedLevelMultithread _in, void *handle_Pointer_in, # void doPowerCharacter() in, float valueLevelMultithreadAsFloat in, Position_in, unsigned long idSingleCalculationToDo_in) paceval_eListOfPointerTypes bool hasTrustedLevelMultithreadMinMaxResult | # void doSingleCharacter() ePointerType_in) in, long double valueLevelMultithreadMinValue + bool identifyGraphCaching # void addValue(long _in, long double valueLevelMultithreadMaxValue in) Opportunities(paceval cBaseAtomic void cleanupAllpacevalObjects() position_in, const GraphNode *handle cAtomicGraphNode bool has Value Level Multithread + bool resetComputationError() char *valueAsOperator_in) _in, unsigned long handle_handle (unsigned long idSingleCalculation + void setLastError(bool # void addConstant(long _AtomicGraphPosition_in) in, const paceval eCalculationPrecision lastError_isError_in, position_in, const char Types useCalculationPrecision_in, long paceval_eErrorTypes lastError *constantAsOperator_in) double *valueLevelMultithreadAsLongDouble eErrorType in, paceval eOperatorTypes # void addVariable(long out, double *valueLevelMultithreadAsDouble lastError_eOperator_in, long lastError position_in, long variable out, float *valueLevelMultithreadAsFloat out, ePosition_in) Position_in) bool *hasTrustedLevelMultithreadMinMaxResult bool getLastError(char out, long double *valueLevelMultithreadMinValue *lastError strOperator out, long double *valueLevelMultithreadMaxValue out) out, paceval_eErrorTypes void setZeroCachingJump *lastError eErrorType out, (long zeroCachingJump_in) paceval_eOperatorTypes *lastError + bool hasZeroCachingJump _eOperator_out, long *lastError (long *zeroCachingJump_out) ePosition out) paceval_cComputation int64 thisInt64 HANDLE # PACEVAL_HANDLE thisPtrComputation # unsigned long display _lengthfunctionString # char display_functionString50 # unsigned long numberOfCached Calculations # unsigned long numberOfPrefetched Calculations # unsigned long numberOfInner CachedCalculations # unsigned long numberOfOuter CachedCalculations # unsigned long idSingleCalculation # long singleCalculationPosition # bool useFunctionStringOptimized # unsigned long * optimized PositionMapping # char * functionStringOptimized # bool thisComputationIsBusy # paceval eCalculationPrecision Types eFloatingPointPrecision # paceval cGraph * handle Graph # paceval_cListOfVariables * handle_listOfVariables # paceval_cValuesStack ** handle_ValuesStacks # bool useTrustedMinMaxResult paceval_cComputation (paceval_callbackStatusType *paceval_callbackStatus_in) void initializeData (PACEVAL HANDLE handle _pacevalComputation_in, unsigned int sizeOfLongDouble paceval_cAtomicGraphNode _in, const char *functionString Operation _in, unsigned long numberOfVariables + long lockedInnerCacheFor _in, const char *variables_in, bool StackNumber useInterval in) # bool outerCachedLinkedResult ~paceval cComputation() Available + void initializeMathConstants() # long outerCachedLinkedResult · void initializeFinal (paceval cGraph *handle # bool * handle_InnerCached ResultAvailable _Graph_in, unsigned int sizeOfLongDouble in, paceval # void ** handle InnerCachedData cListOfVariables *listOfVariables · paceval_cAtomicGraphNode _in, bool useInterval_in) Operation(paceval_cCleanupHandler int getVersionString *handle_CleanupHandler_in) (char *paceval_strVersion_in) void initializeDataOperation + paceval_cGraph * getGraph() (const char *operator_in, + void setVariablesAsLongDouble long valueNode1_in, long ForStack(unsigned long stackNumber valueNode2_in, long resultNode paceval cAtomicGraphNode _in, long double *values_in) _in, long position_in) ~paceval cAtomicGraphNode · void setVariablesAsDouble Operation() ForStack(unsigned long stackNumber in, double + void setOuterCachedLinked AddValue(paceval cCleanupHandler *values_in) Result(long outerCachedLinkedResult_in) · void setVariablesAsFloat + bool hasOuterCachedResult ForStack(unsigned long (long *outerCachedLinkedResult_out) stackNumber_in, float long valueNode1_in, long position + bool updateInnerCachedResult *values_in) (const unsigned long stackNumber bool doComputation in, const paceval eCalculationPrecision (bool singleCalculation Types useCalculationPrecision in, const _in, unsigned long startSpecific void *handle value1 in, const void *handle AtNode_in, unsigned long endSpecific value2 in, const void *handle result in, position_in, const char *valueOperator_in) AtNode_in, paceval_eCalculationPrecisionTypes const bool hasTrustedMinMaxValues in, const useCalculationPrecision_in, void *result long double *trustedResult in, const long double _out, unsigned long stackNumber, bool *error *trustedMinValue_in, const long double *trustedMaxValue_in) out, paceval sErrorInformation *errorInformation bool hasInnerCachedResult out, long double *trustedMinResult out, long double (const unsigned long stackNumber *trustedMaxResult_out) in, const paceval eCalculationPrecision · long getNumberOfVariables() Types useCalculationPrecision in, const + long getNumberOfPosition void *handle_value1_in, const void *handle _value2_in, long double *resultAsLongDouble LevelsInGraph() _out, double *resultAsDouble_out, float *resultAsFloat + void resetSingleCalculation out, bool *hasTrustedMinMaxValues_out, long double Position() *trustedResult_out, long double *trustedMinValue_out, long getSingleCalculation long double *trustedMaxValue_out) Position() t void initiateData(const + bool getIsBusy() char *operator_in, long bool setIsBusy(bool valueNode1_in, long valueNode2 _in, long resultNode_in, long thisComputationIsBusy_in) position_in, const char *valueOperator_in) int getComputationInformation XML(char *paceval_strXML_out) long getPositionForDisplay (long positionFunction_in) paceval_cListOfVariables * getListOfVariables() unsigned long getNumberOf CachedCalculations() unsigned long getNumberOf PrefetchedCalculations() · void increaseldSingleCalculation() unsigned long getIdSingle Calculation() unsigned long getNumberOf SingleCalculationThreads() long lockAndGetToDoLevel MultithreadPosition(unsigned long stackNumber_in, unsigned long idSingleCalculationToDo _in, unsigned long *lastToDoLevelMultithread Position_in, unsigned long *startSpecificAtNode _in, unsigned long *endSpecificAtNode_in) bool unlockToDoLevelMultithread Position(unsigned long stackNumber _in, unsigned long lockedLevelMultithread Position_in, unsigned long idSingleCalculationToDo_in)

AddValue

bool createOptimizedFunction String(const char *functionString

bool identifyOptimizedEnd

void initiateReferencePrecision Cuts(paceval eCalculationPrecision Types useCalculationPrecision in)

paceval_cSyntacticAnalysis * createSyntacticAnalysis (const char *functionString in, paceval_cListOfVariables

*listOfVariables_in)

_in, unsigned long *lengthFunctionString

Position(const char *functionString _in, unsigned long insertStartPosition, unsigned long *insertEndPosition_out)

_out, unsigned long *lengthOptimizedFunctionString_out)

+ paceval cAtomicGraphNode

*handle_CleanupHandler_in)

· void initializeDataAddVariable

(const char *operator_in,

_in, long resultNode_in)

(const char *operator_in,

long resultNode_in, long

· void initializeDataAddValue

paceval_cRegisteredObject

paceval_cValuesStack

Types arrayOfVariableValuesHasPrecision

paceval_eCalculationPrecision

_arrayOfVariableValuesAsLong

double * handle_arrayOfVariable

_stackOfValuesAsLongDouble

double * handle_stackOfValues

float * handle_stackOfValues

_stackOfTrustedMinValues

_stackOfTrustedMaxValues

(paceval_cCleanupHandler

· ~paceval_cValuesStack()

⊦ long double * getValueFrom

(unsigned long position_in)

⊦ double * getValueFromArray

· float * getValueFromArray

void * getArrayOfVariable

OfVariablesAsFloat(unsigned

⊦ void setArrayOfVariableValues

void setArrayOfVariableValues

+ void setArrayOfVariableValues

ValuesFieldPointerAsLongDouble

(unsigned long positionField_in)

FieldPointerAsDouble(unsigned

FieldPointerAsFloat(unsigned

+ bool * getStackOfHasTrusted

ValuesAsDouble_in)

ValuesAsFloat_in)

+ long double * getStackOf

+ double * getStackOfValues

long positionField_in)

long positionField_in)

MinMaxValuesPointer()

TrustedMinValues() + long double * getStackOf TrustedMaxValues()

+ long double * getStackOf

float * getStackOfValues

AsLongDouble(long double

ValuesPointer(paceval_eCalculation

PrecisionTypes useCalculationPrecision_in)

*handle_arrayOfVariableValuesAsLong

AsDouble(double *handle arrayOfVariable

AsFloat(float *handle arrayOfVariable

OfVariablesAsDouble(unsigned

ArrayOfVariablesAsLongDouble

*handle_CleanupHandler_in)

(unsigned long numberOfValues_in)

bool * handle_stackOfHas

TrustedMinMaxValues

long double * handle

long double * handle

⊦ void initializeData

long position_in)

long position_in)

Double_in)

paceval cValuesStack

float * handle_arrayOfVariable

long double * handle

ValuesAsDouble

ValuesAsFloat

AsDouble

AsFloat

long double * handle

paceval_cCleanupHandler * handle_CleanupHandler