## PKB API

|  |
| --- |
| PKB |
| Overview: The PKB contains all the components required for the storage of data. Such as the tables and AST. |
| Public Interface: |
| BOOLEAN *isFollows* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to return if statement s1 is followed by statement s2. Return true if relationship holds, otherwise return false. |
| BOOLEAN *isFollowsStar* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to check Follows\*(s1, s2) holds. Return true if relationship holds, otherwise return false. |
| BOOLEAN *insertFollows* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to insert a pair of following statement numbers in FollowTable. Return true if successful, otherwise return false. |
| STMT\_NUM *getFollowingStmt* (STMT\_NUM s1)  Description:  Method to get the following statement to statement number s1.  Return the statement number if found, otherwise return -1. |
| STMT\_NUM *getFollowedStmt* (STMT\_NUM s1)  Description:  Method to get statement which is followed by statement s1. Return the statement number if found, otherwise return -1. |
| VECTOR<STMT\_NUM> *getFollowingStarStmt* (STMT\_NUM s1)  Description:  Method to get the list of  following statements to statement number s1 with relationship Follows\*.  Otherwise, return NULL. |
| VECTOR <STMT\_NUM> *getFollowedStarStmt* (STMT\_NUM s1)  Description:  Method to get the list of statements which are followed star by statement s1.  Otherwise, return NULL. |
| BOOLEAN *isModifies* (STMT\_NUM s1, INDEX varIndex)  Description:  Method to check if modifies relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertModifies* (STMT\_NUM s1, INDEX varIndex)  Description:  Method to insert a pair of statement number and variable holding the Modify relationship in ModifyTable.  Return true if successful, otherwise return false. |
| VECTOR<INDEX> *getModifiedVarAtStmt* (STMT\_NUM s1)  Description:  Method to get the variables modified in statement s1. Otherwise, return NULL. |
| VECTOR<STMT\_NUM> *getStmtModifyingVar* (INDEX varIndex)  Description:  Method to get the list of statements that modify var. Otherwise, return NULL. |
| BOOLEAN *isModifiesProc* (PROC proc1, INDEX varIndex)  Description:  Method to check if modifies relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertModifiesProc* (PROC proc1, INDEX varIndex)  Description:  Method to insert a pair of procedure and variable holding the Modify relationship in ModifyTable.  Return true if successful, otherwise return false. |
| VECTOR<INDEX> *getModifiedVarAtProc* (PROC proc1)  Description:  Method to get the variables modified in procedure proc1. Otherwise, return NULL. |
| VECTOR<PROC> *getProcModifyingVar* (INDEX varIndex)  Description:  Method to get the list of procedures that modify var. Otherwise, return NULL. |
| INDEX *insertVar* (STRING VarName)  Description:  If “varName” is not in the VarTable, insert it into the VarTable and return its index value. Otherwise, return -1 (special value) and the table remains unchanged. |
| STRING *getVarName* (INT index)  Description:  If there is record in VarTable having index value “index”, return its variable name.  If “index” is out of range:  Throws: InvalidReferenceException |
| INDEX *getVarIndex* (STRING varName)  Description:  If there is record in VarTable having name “varName”, return its index value.  Otherwise, return -1 (special value) |
| INT *getVarTableSize* ()  Description:  Returns the size of the VarTable. |
| BOOLEAN *isParent* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to return if statement s1 is parent of statement s2. Return true if relationship holds, otherwise return false. |
| BOOLEAN *isParentStar* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to return if statement s1 is parent star of statement s2. Return true if relationship holds, otherwise return false. |
| BOOLEAN *insertParent* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to insert a pair of parent and child statement numbers in ParentTable.  Return true if successful, otherwise return false. |
| VECTOR<STMT\_NUM> *getChildStmt* (STMT\_NUM parentStmt)  Description:  Return an array of child statement numbers of parent statement if found in ParentTable. Otherwise return NULL. |
| VECTOR<STMT\_NUM> *getParentStarStmt* (STMT\_NUM childStmt)  Description:  Return an array of statement numbers that are parent star of child statement if found in ParentTable. Otherwise return NULL. |
| VECTOR<STMT\_NUM> *getChildStarStmt* (STMT\_NUM parentStmt)  Description:  Return an array of child statement numbers of parent star statement if found in ParentTable. Otherwise return NULL. |
| INT *getParentTableSize()*  Description:  Returns the number of records in ParentTable. |
| BOOLEAN *insertStmt* (STRING name)  Description:  Inserts statement in StatTable. Return true if successful, otherwise return false. |
| VECTOR<STMT\_NUM> *getStmtIndex* (STRING name)  Description:  Return index of statement having name in StatTable. Otherwise, return NULL. |
| STRING *getStmtName* (INDEX index)  Description:  Return name of statement having index in StatTable. Otherwise, return NULL. |
| INT *getStatTableSize()*  Description:  Returns the number of records in StatTable. |
| BOOLEAN *isUses* (STMT\_NUM s1, INDEX varIndex)  Description:  Method to check if uses relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertUses* (STMT\_NUM s1, INDEX varIndex)  Description:  Method to insert a pair of statement number and variable holding the Use relationship in UseTable.  Return true if successful, otherwise return false. |
| VECTOR<INDEX> *getUsedVarAtStmt* (STMT\_NUM s1)  Description:  Method to get the variables used in statement s1. Otherwise, return NULL. |
| VECTOR<STMT\_NUM> *getStmtUsingVar* (INDEX varIndex)  Description:  Method to get the list of statements that use var. Otherwise, return NULL. |
| BOOLEAN *isUsesProc* (PROC proc1, INDEX varIndex)  Description:  Method to check if uses relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertUsesProc* (PROC proc1, INDEX varIndex)  Description:  Method to insert a pair of procedure and variable holding the Use relationship in UseTable.  Return true if successful, otherwise return false. |
| VECTOR<INDEX> *getUsedVarAtProc* (PROC proc1)  Description:  Method to get the variables used in procedure proc1. Otherwise, return NULL. |
| BOOLEAN *insertConst* (STRING name)  Description:  Inserts constant in ConstTable. Return true if successful, otherwise return false. |
| BOOLEAN *isConst* (STRING name)  Description:  Method to check is name is a Constant. Return true if successful, otherwise return false. |
| INDEX *getConstIndex* (STRING name)  Description:  Return index of constant having name in ConstTable. Otherwise, return NULL. |
| STRING *getConstName* (INDEX index)  Description:  Return name of constant having index in ConstTable. Otherwise, return NULL. |
| INT *getConstTableSize()*  Description:  Returns the number of records in ConstTable. |
| BOOLEAN *insertProc* (STRING name)  Description:  Inserts procedure in ProcTable. Return true if successful, otherwise return false. |
| BOOLEAN *isProc* (STRING name)  Description:  Method to check is name is a procedure. Return true if successful, otherwise return false. |
| INDEX *getProcIndex* (STRING name)  Description:  Return index of procedure having name in ProcTable. Otherwise, return NULL. |
| STRING *getProcName* (INDEX index)  Description:  Return name of procedure having index in ProcTable. Otherwise, return NULL. |
| INT *getProcTableSize()*  Description:  Returns the number of records in ProcTable. |
| BOOLEAN *isCalls* (PROC proc1, PROC proc2)  Description:  Method to check if calls relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertCalls* (PROC proc1, PROC proc2)  Description:  Method to insert a pair of procedure numbers holding the Call relationship in CallTable.  Return true if successful, otherwise return false. |
| VECTOR<PROC> *getCalledByProc* (PROC proc1)  Description:  Method to get the procedure called in procedure proc1. Otherwise, return NULL. |
| VECTOR<PROC> *getCalledByStarProc* (PROC proc1)  Description:  Method to get the list of procedures that call star proc1. Otherwise, return NULL. |
| BOOLEAN *isCallStmt* (PROC proc1, STMT\_NUM s1)  Description:  Method to check if calls relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *insertCallStmt* (PROC proc1, STMT\_NUM s1)  Description:  Method to insert a pair of procedure and statement holding the Call relationship in CallTable.  Return true if successful, otherwise return false. |
| VECTOR<PROC> *getCallingProc* (PROC proc1)  Description:  Method to get the procedures called in procedure proc1. Otherwise, return NULL. |
| VECTOR<PROC> *getCallingStarProc* (PROC proc1)  Description:  Method to get the procedures called in procedure proc1 with star relationship. Otherwise, return NULL. |
| PROC *getCalledProc* (STMT\_NUM s1)  Description:  Method to get the procedure called in statement s1. Otherwise, return NULL. |
| VECTOR<STMT\_NUM) *getCallingStmt* (PROC proc1)  Description:  Method to get the statement calling procedure. Otherwise, return NULL. |
| BOOLEAN *isNext* (LINE\_NUM n1, LINE\_NUM n2)  Description:  Returns true if n2 is next to n1. Otherwise false. |
| INDEX *insertNext* (LINE\_NUM n1, LINE\_NUM n2)  Description:  If the relation Next(n1, n2) is not in Next Table, insert it into the table and return the sizeof the table.  Otherwise: return -1 (special value) and the table remains unchanged. |
| VECTOR<STMT\_NUM> *getNextStmts* (STMT\_NUM s1)  Description:  Returns vector of stmt numbers next to s1. |
| VECTOR<STMT\_NUM> *getPreviousStmts* (LINE\_NUM n1)  Description:  Returns vector of stmt numbers previous of n1. |
| BOOLEAN *isNextStar* (LINE\_NUM n1, LINE\_NUM n2)  Description:  If there is no record of relation Next() of line numbers n1 and n2 return FALSE.  Otherwise return TRUE. |
| VECTOR<STMT\_NUM> *getNextStarStmts* (LINE\_NUM n1)  Description:  Returns vector of next to n1 with the star relationship |
| VECTOR< STMT\_NUM > *getPreviouStarStmts* (LINE\_NUM n1)  Description:  Returns vector of previous to n1 with the star relationship |
| BOOLEAN *isAffect* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to check if affects relationship exists. Return true if exists, otherwise return false. |
| BOOLEAN *isAffectStar* (STMT\_NUM s1, STMT\_NUM s2)  Description:  Method to check if affects star relationship exists. Return true if exists, otherwise return false. |
| VECTOR<STMT\_NUM> *getAffected* (VECTOR<VARIABLES> modifiedVar, STMT\_NUM currentStmt, VECTOR<STMT\_NUM> path)  Description:  Method to get the statements affected by statement currentStmt. Recursive function. Otherwise, return NULL. |
| VECTOR<STMT\_NUM> *getAffecting* (VECTOR<VARIABLES> modifiedVar, STMT\_NUM currentStmt, VECTOR<STMT\_NUM> path)  Description:  Method to get the statements affected by statement currentStmt. Recursive function. Otherwise, return NULL. |
| VECTOR<STMT\_NUM> *getAffectedStar* (STMT\_NUM s1)  Description:  Method to get the affected star relationship statements Otherwise, return NULL. |
| VECTOR<STMT\_NUM> *getAffectingStar* (STMT\_NUM s1)  Description:  Method to get the affecting star relationship statements Otherwise, return NULL. |
| BOOLEAN *isSibling* (NODEID nodeID1, NODEID nodeID2)  Description:  Method to check if 2 nodeID are siblings in the AST.  Return true if successful, otherwise return false. |
| VECTOR<NODEID> *getSibings* (NODEID nodeID1)  Description:  Return nodeid of siblings of nodeID1. Otherwise, return NULL. |
| BOOLEAN *insertSibling* (NODEID nodeID1, NODEID nodeID2)  Description:  Return true if insertion into the Siblings table is successful.  Otherwise, return false. |
| INT *getSiblingTableSize()*  Description:  Returns the number of records in Siblings Table. |
| BOOLEAN *isContains* (NODEID nodeID1, NODEID nodeID2)  Description:  Method to check if 2 nodeID are contained in the AST.  Return true if successful, otherwise return false. |
| VECTOR<NODEID> *getContained* (NODEID nodeID1)  Description:  Return nodeid of containing by nodeID1. Otherwise, return NULL. |
| VECTOR<NODEID> *getContaining* (NODEID nodeID1)  Description:  Return nodeid of contained by nodeID1. Otherwise, return NULL. |
| BOOLEAN *insertContains* (NODEID nodeID1, NODEID nodeID2)  Description:  Return true if insertion into the Contain table is successful.  Otherwise, return false. |
| INT *getContainTableSize()*  Description:  Returns the number of records in Siblings Table. |
| VECTOR<NODEID> *getContainedStar* (NODEID nodeID1)  Description:  Return nodeid of containing by nodeID1. Otherwise, return NULL. |
| VECTOR<NODEID> *getContainingStar* (NODEID nodeID1)  Description:  Return nodeid of contained by nodeID1. Otherwise, return NULL. |