SQL Engineer 2.5: The Ultimate tool to work with GUPTA SQLBase

SQL Engineer 2.5 is a replacement tool for the 16 bit Gupta Quest to work with Gupta SQLBase databases. This is a comprehensive program similar to the old Gupta Quest and comparable to programs such as TOAD or SQL Navigator. Over the years it has evolved into a product with features comparable to products costing more than 500-700 dollars in the market.

SQL Editor: In other words, dreary SQL on the fastest Porsche

SQL Editor has some exciting features like multiple connections to different databases from one application window, Find-Replace with regular expressions, bookmarks, Dynamic SQL Help and function call tips. Dynamic SQL Help helps you type several times faster than SQLTalk by displaying a list of table, column and function names in the SQL editor window

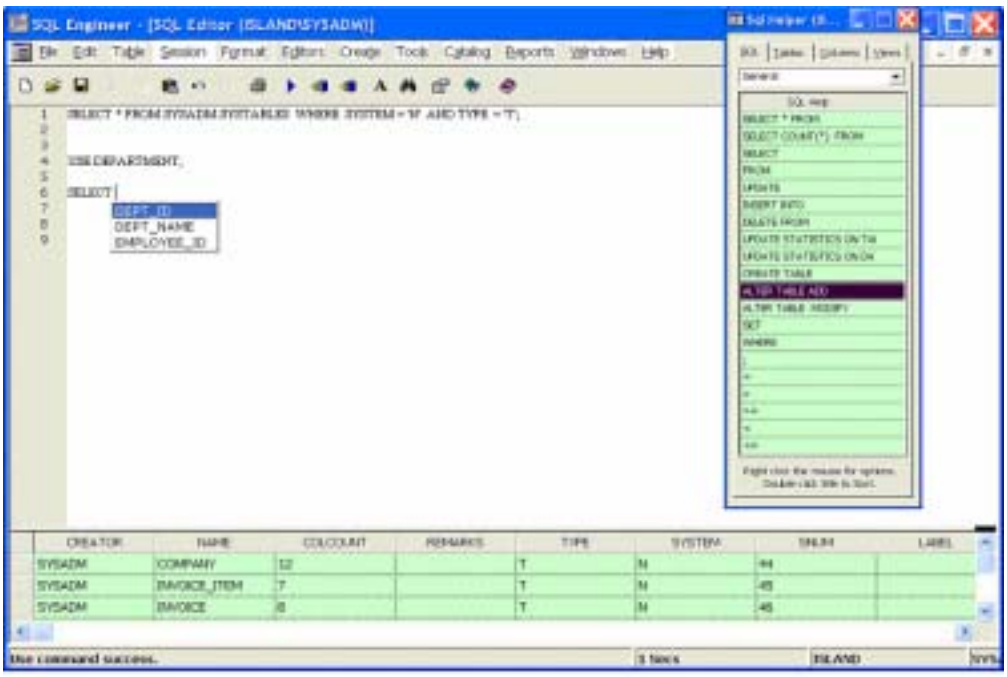


Figure: SQL Editor with Dynamic SQL Help and SQL Helper

Some of the other features of SQL Editor include:

- Multiple files can be opened from one application window.
- Describe the data types of all columns in the output of a SELECT statement like the Oracle DESC command.
- Describe the data types of a table if the selected (highlighted) text is a table.
- Check syntax by parsing the SQL statement.
- Find-Replace dialog box that includes regular expressions.
- SQL Helper that allows you to insert SQL snippets and object names into the SQL Editor.
- Create QRP files from the output of SELECT statements.

Table Editor: Database Table Editing as easy as 123

Figure: Filtering tables based on the schema owner

Table Editor has a variety of features make table browsing easier. It is possible to filter tables in the selection box based on the schema owner. It is also possible to open views or select synonyms. However, if views or synonyms are selected, the table is opened in read only mode.

The Table Editor offers a rich feature set enabling you to easily work with database tables like a spreadsheet. You can insert, update, delete, search and order data easily without knowing SQL. You can also type sub queries and edit the resulting rows. For example, you can first search the EMPLOYEE table for employees belonging to marketing department and then edit data for those employees only.

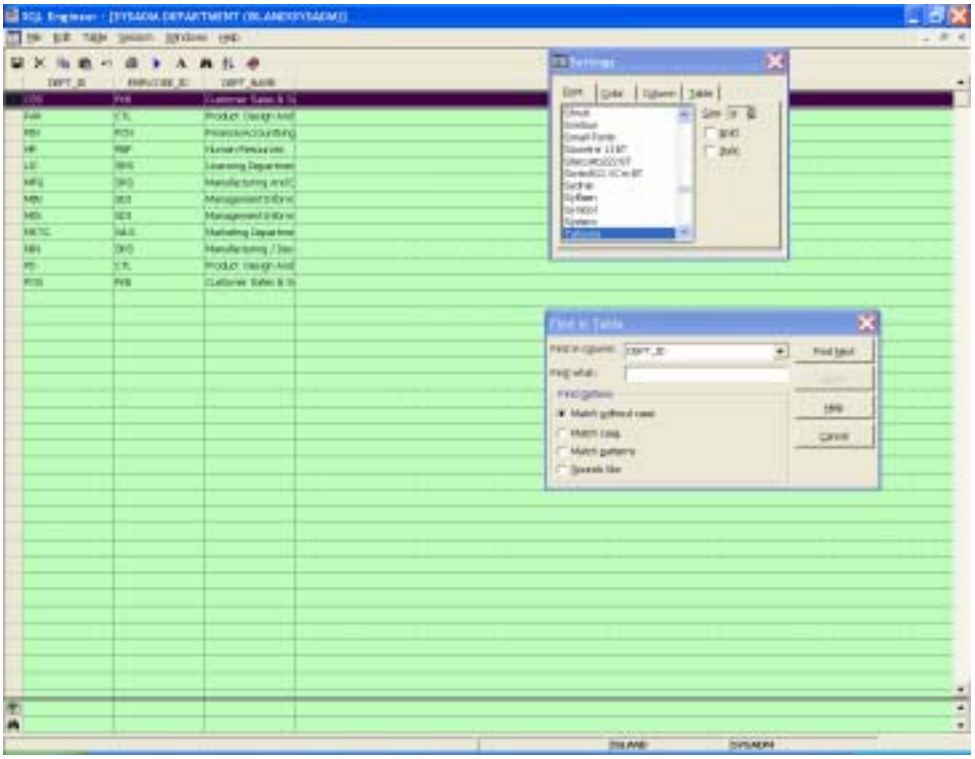


Figure: Table Editor

Master Detail Editor:

The master detail editor offers a convenient way to browse master detail relationships. The entire functionality of the table editor is available in both master and detail tables. You can also type the referential integrity condition incase it is not defined during table creation.

Figure: Master Detail Editor

Creating Tables:

SQL Engineer automatically versions your table as a table comment. It builds the table script according to the column names and data types specified. You can specify both primary key and foreign key relationships unlike most other software.

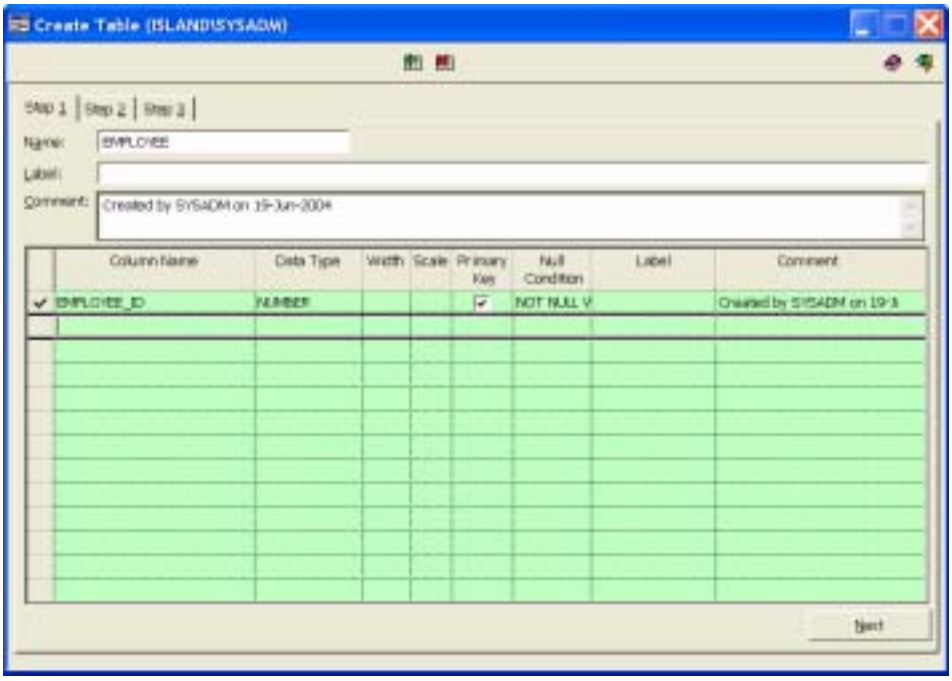


Figure: Create Table

Creating Views:

SQL Engineer automatically versions your view as a comment. It builds the view script according to the SQL specified. You can also specify the check option.

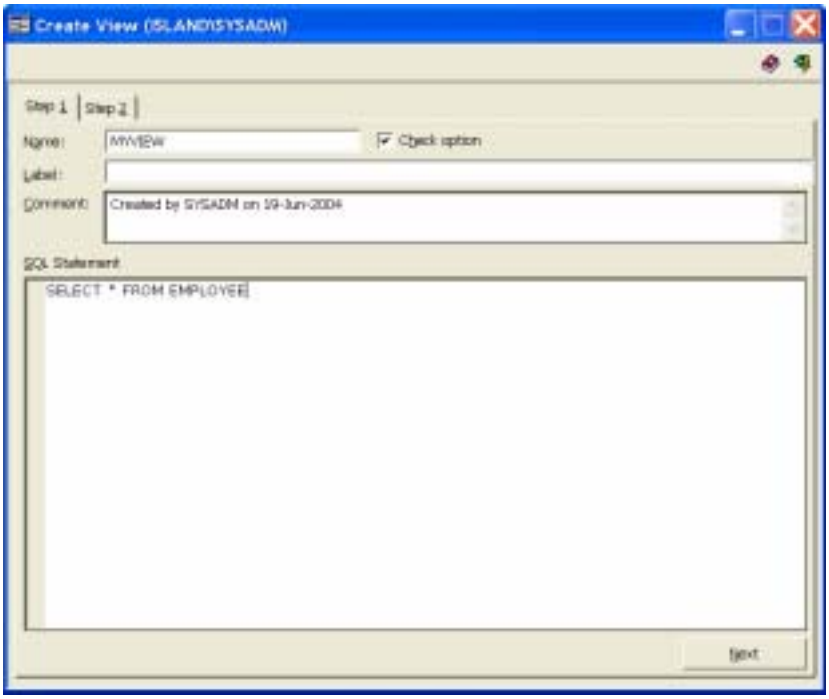


Figure: Create View

Creating Indexes:

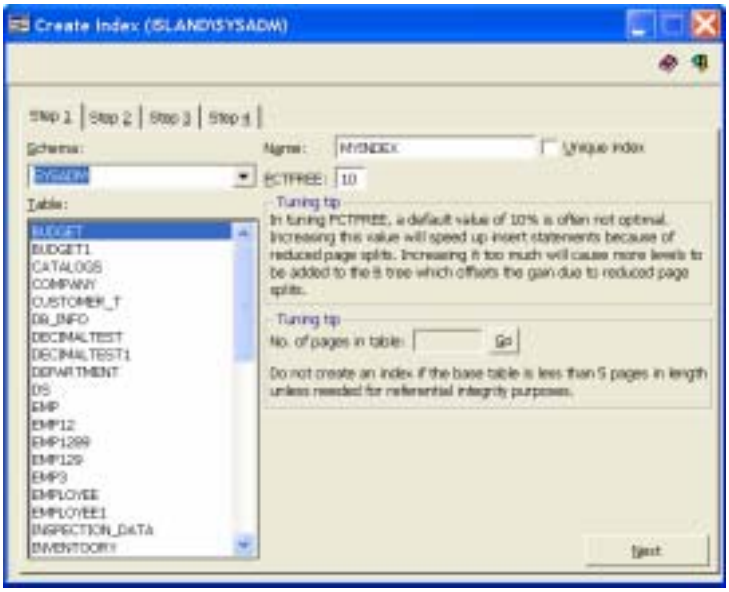


Figure: Create Index

Unlike usual index creation screens, the Create Index screen in SQL Engineer has several tuning facilities in-built. These include:

- Determining whether your table is big enough to warrant index creation.
- Arranging index columns for best performance based on their cardinality.
- Determining whether the index is skewed and whether it would cause future performance problems.

Creating Clustered Hashed Indexes:

Hashed indexes can be created in a step by step wizard. SQL Engineer automatically helps you determine the number of buckets needed to store the hashed rows in case you want to hash a table that has some records.

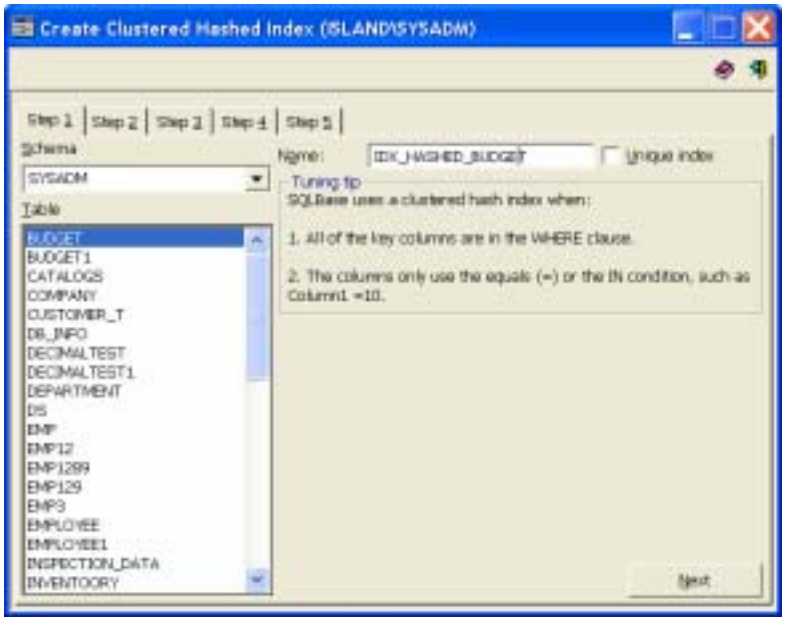


Figure: Create Clustered Hashed Index

Creating Triggers:

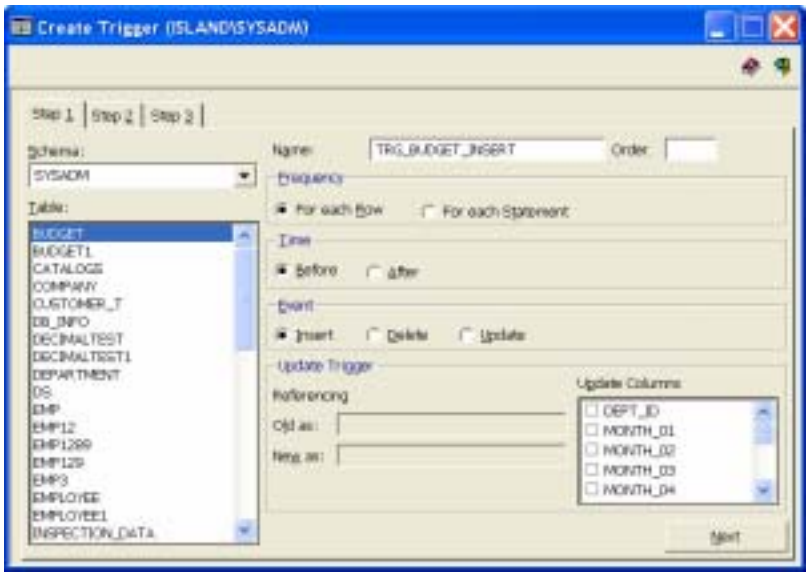


Figure: Create Trigger

The create trigger screen allows you to create both inline and procedure triggers in a visual environment.

Creating Synonyms:

Using the create synonym screen, you can create synonyms for any type of SQLBase object. This includes tables, views, external functions, procedure and stored commands.

Figure: Create Synonym

Database Navigator:

The database navigator offers a rich feature set enabling you to browse the SQLBase catalog or metadata tables.

- You can drop tables
- Generate table scripts. Script extraction includes scripts to generate primary key, foreign keys, triggers, grants and synonyms.
- Navigate to any other related object from a base table. You can view columns, indexes, triggers, primary keys, foreign keys, grants and synonyms by using command buttons or right mouse menu.
- Get the total rows in a table without performing a COUNT(*). This uses an internal SQLBase API function and is far faster than COUNT(*).
- Search and sort rows using the full functionality of the table editor.
- Create public synonyms with a single click of a command button

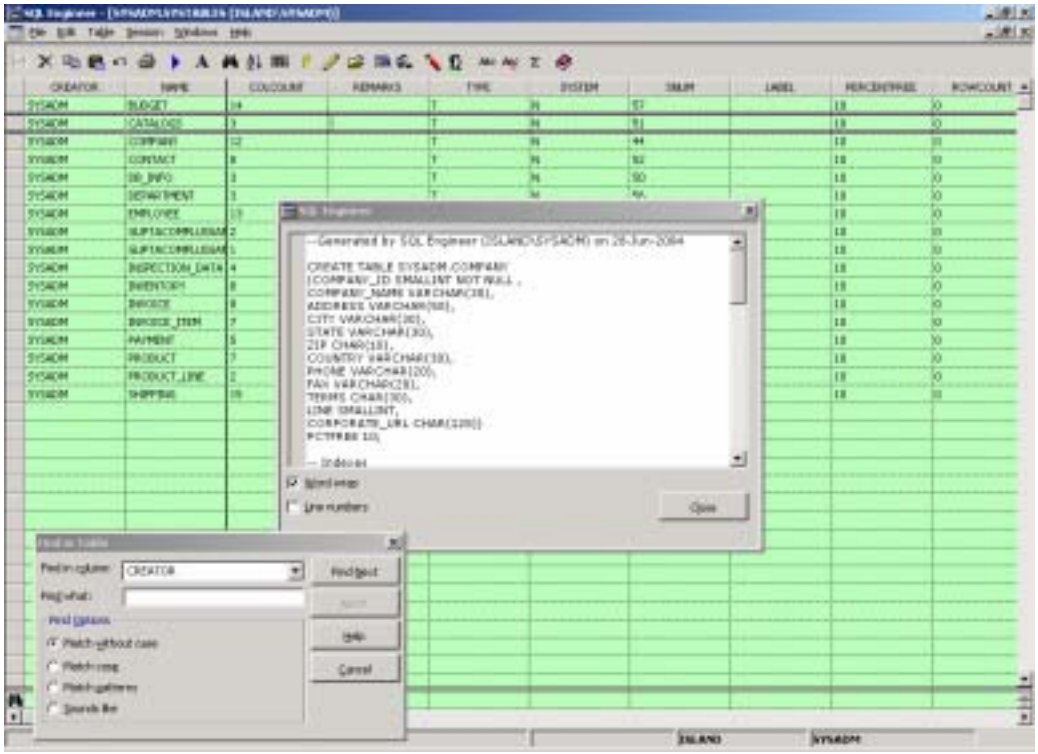


Figure: Database Navigator

Catalog Browser:

Similar to the database navigator, the catalog browser allows you to work with SQLBase objects in a visual environment. You can extract index, procedure, trigger scripts as well as drop the respective database objects. Additionally, you can drop primary and foreign key constraints.

Export / Import:

You can export multiple tables to ASCII or SQL files. There is no limit on the number of tables or the rows in each table. The export file is compatible with SQLBase LOAD command and the Import Tables screen. To facilitate batch imports, an option is provided to overwrite files. Both import and export can be carried out with a single click of the mouse.

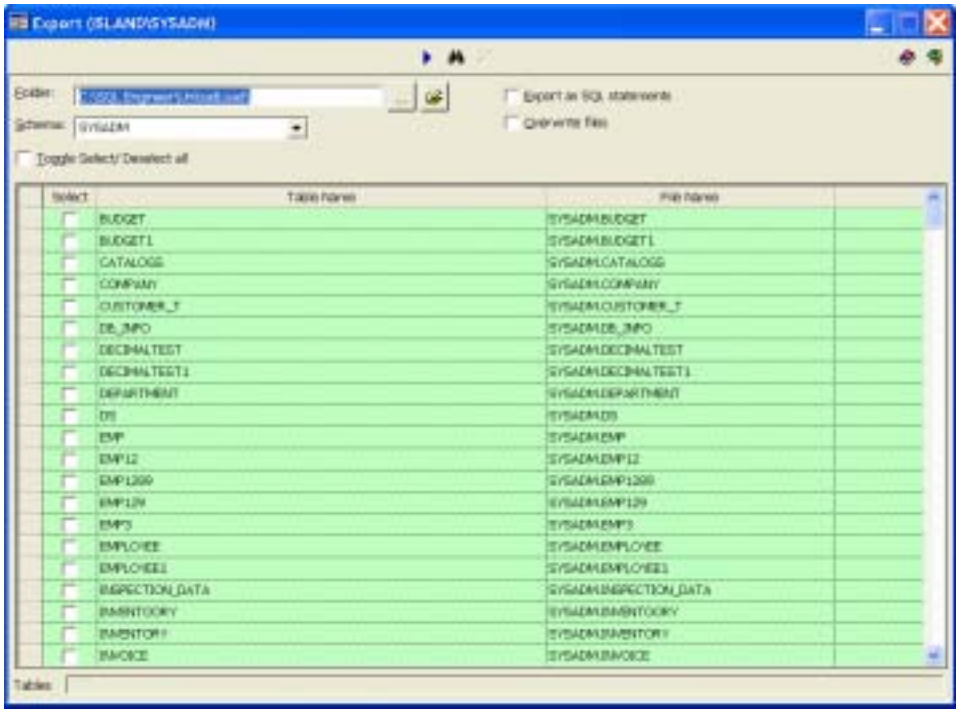


Figure: Export

Grant / Revoke Database Privileges:

You can grant and revoke database privileges such as Connect, Resource and DBA in this screen. The figure below shows the login user attempting to create a new user called NEWUSER and grant Connect authority to the ISLAND database.

Figure: Grant/Revoke Database Privileges

Grant/Revoke Table Privileges:

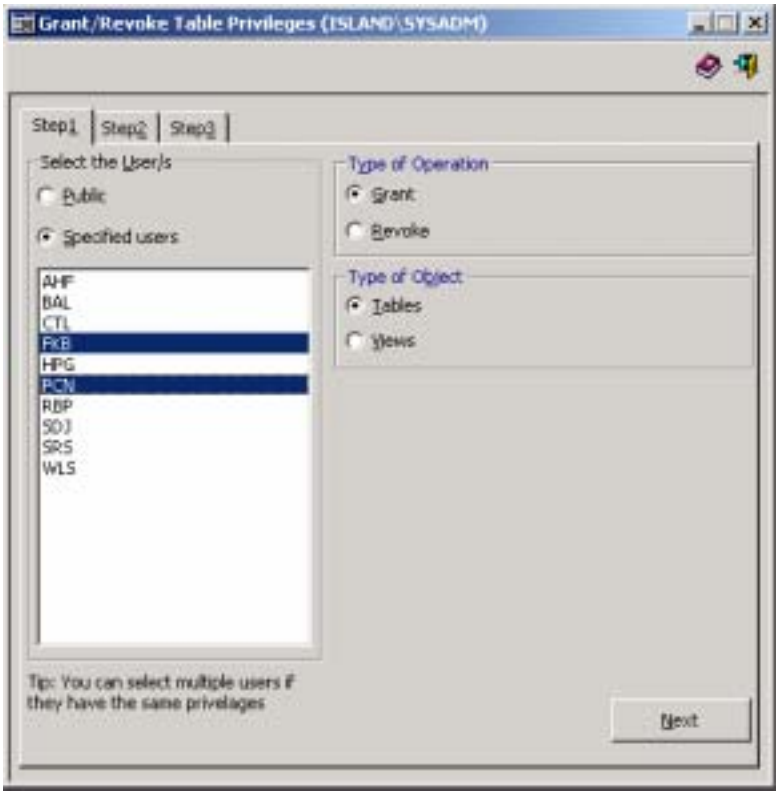


Figure: Grant/Revoke Table Privileges

If you have dozens of users and hundreds of database tables, creating users and managing table privileges such as SELECT, INSERT, DELETE, ALTER and UPDATE is a messy job. SQL Engineer allows you to do this in an easy and transparent manner. Both views as well as tables privileges can be granted.

Source Code Search:

You can search for text in the stored code used to create Views, Procedures and Triggers in this screen. The search options include Match case, Match whole word, Regular expression and Word start. The output is shown with all occurrences of the search string marked.

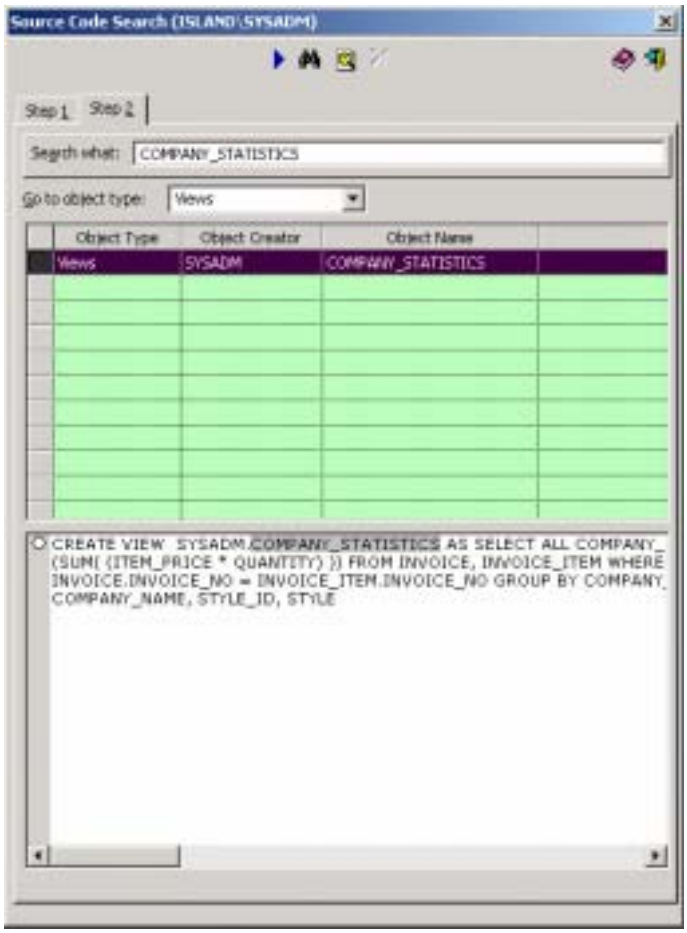


Figure: Source Code Search

Object Search:

You can search for a database object such as tables, views, procedures in this screen. The search string can consist of pattern matching characters. The percent character (%) matches any set of characters. The underscore character (_) matches any single character. For example,

- Entering %COMP% will search for database objects with the word COMP in them.
- Entering COMP_ will search for a four lettered object with COMP as the first three letters.

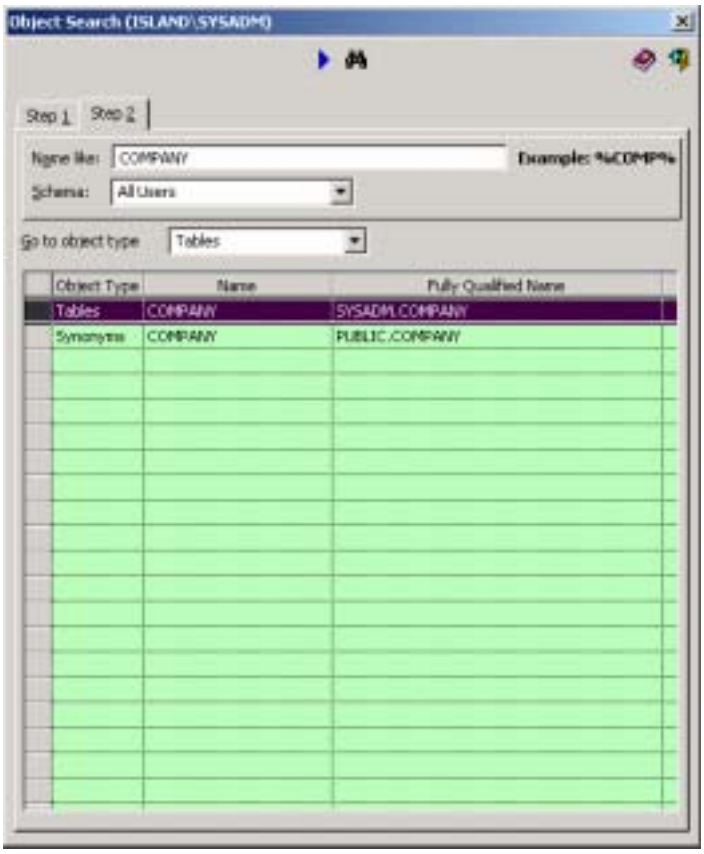


Figure: Object Search

Schema Comparison:

Using this screen, you can compare two schemas and identify objects present in one schema (Source), but missing in the other (Target). You can also select the objects to be compared by choosing one or more from among tables, views, procedures etc. The schema comparison is extremely useful to synchronize between production and development databases.

Figure: Schema Comparison

Estimate Table Size:

The table size estimator is a valuable tool for database administrators to forecast space requirements. For example, you can forecast that around 1 GB of space will be needed to store 100,000 invoices. The estimator is extremely simple to use and hides the complexity of the estimation process completely from the user. At the same time, it provides enough information such as the number of pages, row length etc. Additionally, you can simulate row level locking by forcing the PCTFREE to a high value and seeing its effect on the table size. Clustered Hashed Indexes are also supported.

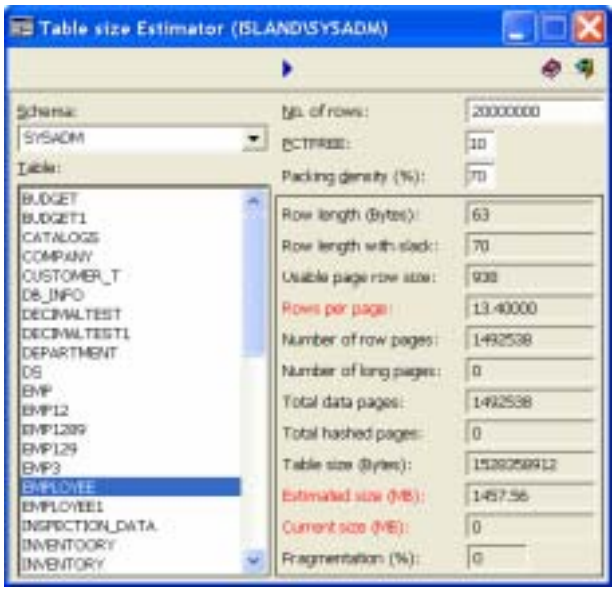


Figure: Table Size Estimator

Estimate Index Size:

Similar to estimating table size, you can estimate the size of a database B+ index. You can play around with different values of PCTFREE and determine its effect on index size.

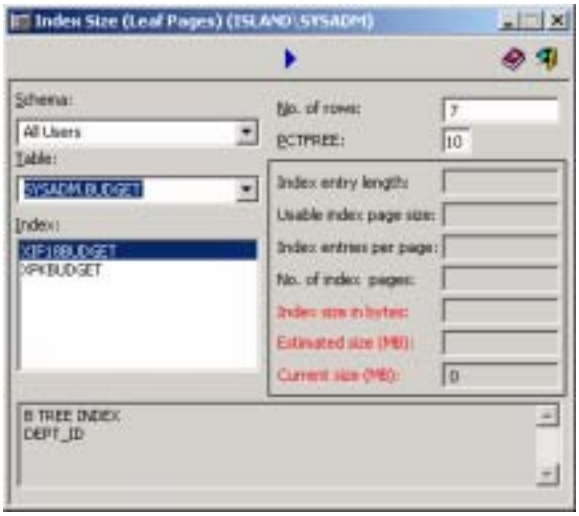


Figure: Index Size Estimator

Estimate Database Size:

Planning to start a SQLBase project and are wondering what could be the size of your database? The database estimator allows you do it as well as do what-if scenarios. The database size estimator just requires the objects to be created in the database and the number of rows in each table to be inputted. Internally, it takes into consideration the size of tables, views, procedures, triggers and other objects in the database and computes the final size.

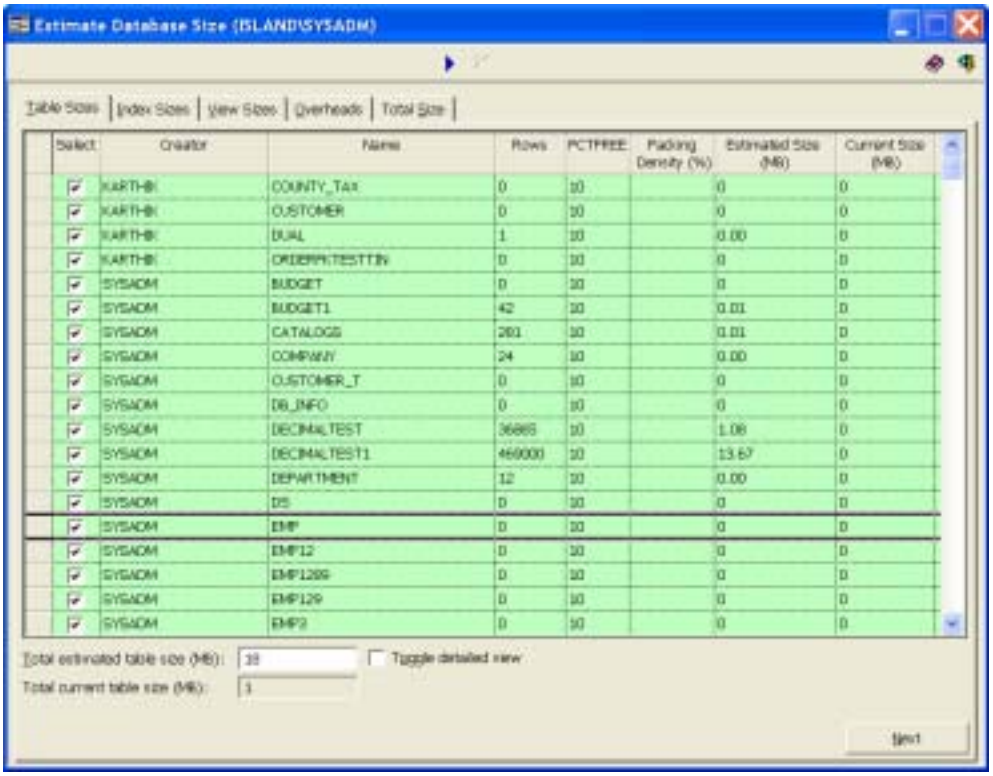


Figure: Database Size Estimator

Analyze indexes and identify poorly performing ones

The Analyze index screen allows you to analyze database indexes and identify poorly performing indexes based on a number of factors such as cardinality, number of nulls and skewness.

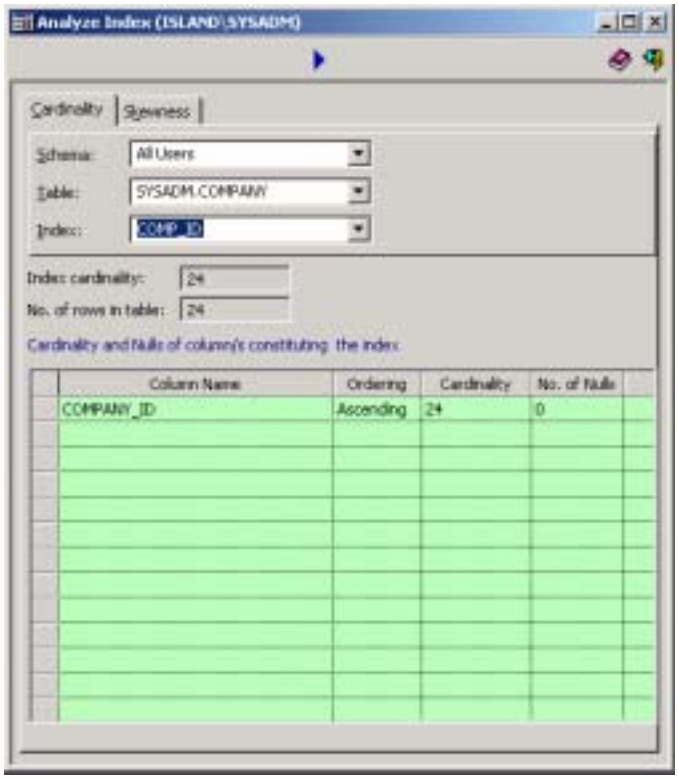
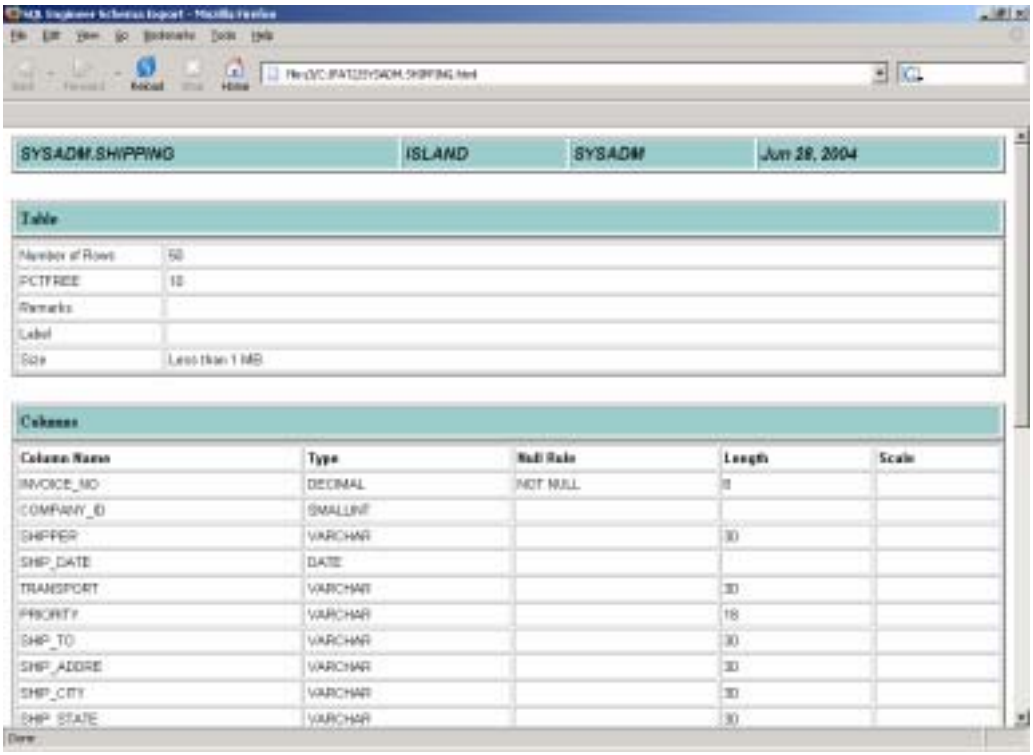


Figure: Analyze Index for performance

Reverse engineer database structures and produce reports

SQL Engineer can reverse engineer the entire SQLBASE table structure and create attractive schema reports of SQLBASE tables. One such report is shown below. You can also generate HTML, text and XML reports of queries and tables. Several other reports such as table sizes, index sizes, index count etc. are also available.



SYSADM.SHIPPING	ISLAND	SYSADM	Jun 28, 2004

Table

Number of Rows	50
PCTFREE	10
Remarks	
Label	
Size	Less than 1 MB

Columns

Column Name	Type	Null Rule	Length	Scale
INVOICE_NO	DECIMAL	NOT NULL	8	
COMPANY_ID	SMALLINT			
SHIPPER	VARCHAR		30	
SHIP_DATE	DATE			
TRANSPORT	VARCHAR		30	
PRIORITY	VARCHAR		18	
SHIP_TO	VARCHAR		30	
SHIP_ADDRE	VARCHAR		30	
SHIP_CITY	VARCHAR		30	
SHIP_STATE	VARCHAR		30	

Figure: Schema Reports

Other Reports

A variety of other reports can be produced including table sizes, table labels and comments, view label and comments, column data types, column labels and comments, index sizes, count of indexes in each table, count of columns in each index and extents. One such report giving table sizes is shown below.

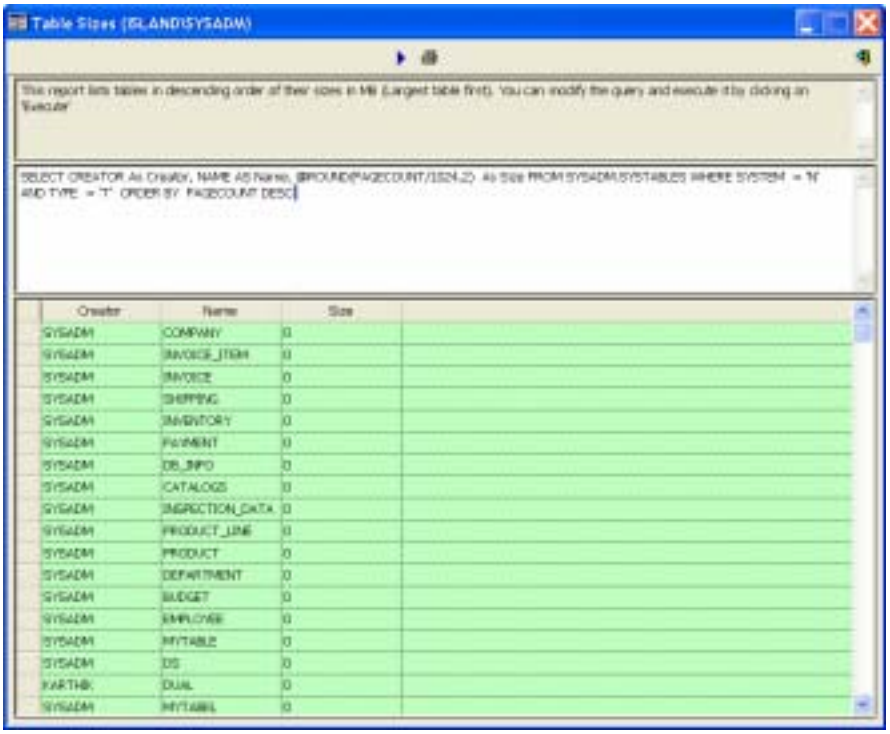


Table Sizes (ISLAND\SYSADM)

This report lists tables in descending order of their sizes in MB (Largest table first). You can modify the query and execute it by clicking on 'Execute'

SELECT CREATOR As Creator, NAME AS Name, (ROUND(PAGECOUNT/1024,2)) As Size FROM SYSADM.SYSTABLES WHERE SYSTEM = 'N' AND TYPE = 'T' ORDER BY PAGECOUNT DESC

Creator	Name	Size
SYSADM	COMPANY	0
SYSADM	INVOICE_ITEM	0
SYSADM	INVOICE	0
SYSADM	SHIPPING	0
SYSADM	INVENTORY	0
SYSADM	PAYMENT	0
SYSADM	DB_INFO	0
SYSADM	CATALOGS	0
SYSADM	INSPECTION_DATA	0
SYSADM	PRODUCT_LINE	0
SYSADM	PRODUCT	0
SYSADM	DEPARTMENT	0
SYSADM	BUDGET	0
SYSADM	EMPLOYEE	0
SYSADM	MYTABLE	0
SYSADM	DS	0
KARTHIK	DUAL	0
SYSADM	MYTABLL	0

Figure: Table Sizes