Part 18

Developer 2000
Oracle Developer/2000 Key Features

WYSIWYG Layout Editor

Object Navigator View all application objects, drag and drop, speed search, create and remove objects
Inch, centimeter, character cell measurement units
X and Y coordinate indicators
Size indicators
Alignment grids
Rulers
Cut, copy, paste operations
Same-size and align operations
Object rotation
Zoom capability
Drawing tools for boilerplate text and graphics, color and pattern palettes
Rectangles, rounded rectangles, lines, polygons, polylines, circles, ellipses, arcs, symbols, freehand drawings
Boilerplate text
Color and pattern palettes
Integrated PL/SQL Debugger

- Access to both client and server PL/SQL code
- Incremental compilation
- Global search and replace
- Set break points
- Specify conditions on break points
- Step through source code with options to:
  - Step into
  - Step over
  - Step out
  - Step to source location
  - Browse call stack
  - Browse and edit local variables and argument values
- Fire debug triggers on:
  - Entry into every source line
  - Entry into a specific source line
  - Entry into the debugger
  - Entry into a break point
- Access to system text editors
Image and Graphics File Formats

TIFF
BMP
PCX
PICT (Image)
JFIF/JPEG
GIF
CALS
RAS
PCD
CGM
Oracle format
Sound format
AIFF-c
Unlimited Data Access
Oracle Server
SQL Server
Access
Rdb
Oracle Open Gateway-supported databases:
DB2
DB2/400
DRDA
APPC
EDA/SQL
Any data source via transactional triggers
Microsoft Excel SYLK files
Lotus 1-2-3 WKS files
ASCII delimited files
dBASE

National Language Support
ASCII and EBCDIC
Major 8-bit and multibyte character sets
Fully translatable user interfaces

Storage Methods
Oracle Server
Operating system files
User Interface Portability

MS-Windows
Macintosh
Motif
Character mode

Product Integration

Embed charts in forms and reports
Embed graphics in any OLE 2 container application
Pass data between forms, graphics and reports
Integrate with third-party packages through operating system calls and/or 3GL extensions
Integration of third-party VBX custom controls
OLE 2.0 container
Call DLLs directly from PL/SQL
Generate and reverse-engineer forms and reports using Modeller/2000
Integrate with third-party packages through operating system calls and/or 3GL extensions
Forms Features

General Forms Features
- Property palette - View and edit object properties
- Toolbars
- Graphical menu editor - Create, drag, and drop menu items
- Accessible object orientation
- Object groups for quick reuse of components
- Property classes for easy reuse of object properties and methods
- Method inheritance and override

Application Generation Capabilities
- Master-detail relationships of arbitrary complexity
- Application menus
- Query, insert, update, delete
- Query-by-example
- Resource locking
- Transaction logic
- Graphical user interfaces
- Integrity constraints
- Extensible default applications
- Default query capabilities
- Exact-match relational operators
- Wildcards text search
- Case-insensitive or case-sensitive queries
Procedural Capabilities
  Integrated procedural language, PL/SQL
  Editing and debugging of PL/SQL
  Library management for reusing PL/SQL
  Oracle7 stored procedure support
  Timers
  Extensions through 3GL programs:
    Ada, C++, COBOL, FORTRAN, Java, Pascal, PL/I

Form Security
  Role-based application security
  Restricted design access to forms, menus, libraries
  Separate runtime engine
GUI Applications

Toolbars
Dynamic lists
Drop-down lists
MDI
Mouse support
Drag and drop
Dialog boxes
Combo boxes
List boxes
Check boxes
Push buttons
Iconic buttons
Radio groups
Text items
Multi-line text items
Images
Interactive charts
Scroll bars
Menu styles: full-screen, bar-style, pull-down
Menu items: check, radio, separator
Modal Windows
Non-modal Windows
Lists of values
Alerts
Boilerplate text
Boilerplate graphics: lines, arcs, rectangles, rounded rectangles, polygons, ellipses
Colors
Patterns
Fonts
Reports Features

Default Report Styles
   Tabular
   Form
   Form letter
   Master-Detail
   Mailing label
   Matrix
   Simple matrix
   Matrix break
   Nested matrix

Powerful Data Control
   Unlimited number of queries
   Group filters
   Dynamic graphical data
   Calculated columns
   Support for DDL and DML
Extensive Aggregation Capabilities

Average
Count
First
Last
Maximum
Minimum
Percent total
Standard deviation
Sum
Variance

Windows Enhancements

Bitmap and ASCII reports from one runtime executable
Batch reporting engine
Run reports in background
Report scheduling
Cancel reports during execution

Common Graphical Painter for:

Data model
Layout model
Parameter screen
Procedural Capabilities

- Integrated procedural language, PL/SQL
- Report level triggers
- Formatting triggers
- Runtime input validation
- Data filters
- Computations
- Oracle Procedure Builder for editing and debugging PL/SQL
- Library management for reusing PL/SQL
- Support for Oracle7 stored procedures
- Extensions through 3GL programs:
  - Ada, C, C++, COBOL, FORTRAN, Java, Pascal, PL/I

Printer Portability

- Develop reports independently of printer specifications
- Print reports to both PostScript and non-PostScript printers

Report Security

- Restricted access to reports, queries, libraries
- Separate runtime engine
Graphics Features

Charting Capabilities
Cross-tabular charts
Strip charts
Column charts
Bar charts
Line charts
Pie charts
Mixed charts
Scatter charts
Double-Y charts
High-Low-Close charts
Table charts
Gantt charts
Chart templates

Multimedia Capabilities
Images
Sounds
Record and play back
Procedural Capabilities

Integrated procedural language, PL/SQL
Library management for reusing PL/SQL
Procedure execution on:
  - Timers
  - Open/Close document
  - Mouse clicks
  - Post-query execution
  - Custom-query execution
  - Chart row creation
Support for Oracle7 stored procedures
Support for Oracle7 alerts
Foreign function call interface to DLLs
Extensions through 3GL programs:
  - Ada, C, C++, COBOL, FORTRAN, Java, Pascal, PL/I
Programmatic Control

Create and modify application objects including:
  Charts
  Queries
  Timers

Modify chart attributes including:
  Chart type
  Pie slice explosion
  Drill-down relationships
  Format triggers
  Field mapping
  Label formats
  Label fonts
  Title
  Axis labels
  Axis scaling
  Grid lines
  Tick marks
  Legend location
  Legend label stacking
  Number of categories

Create or clone any graphical object including:
  Images
  Rectangles
  Arcs
  Lines
  Polygons
  Groups

Change object graphical attributes such as:
  Color
  Pattern
  Size
  Position
  Rotation
Database Connectivity Features SQL Support

SQL Support
Core ODBC Data manipulation statements:
Select (with support for Order By, Group By, and Having)
Insert
Update
Delete
Core ODBC Data definition statements:
Create Table
Create Index
Create View
Alter Table
Drop Table
Drop Index
Drop View
Grant
Revoke
Transaction processing:
Commit
Rollback

Commit Processing
AutoCommit mode selectable

Data Access
Data Dictionary through views
Upper/lower/mixed case identifiers
Read only and read-write access
PL/SQL Support

Developer/2000 Support Modes
- Primary Key - Updatable and Non-Updatable
- Cursor - Close at commit
- Locking - Delayed

PL/SQL supported datatypes
- BINARY INTEGER, NUMBER and its subtypes
- CHAR and its subtypes, VARCHAR2, VARCHAR
- LONG, RAW, LONG RAW
- BOOLEAN
- DATE

PL/SQL supported statements
- DECLARE, BEGIN, END
- COMMIT WORK, ROLLBACK
- OPEN, CURSOR, FETCH, CLOSE, GOTO
- SELECT INTO, UPDATE, INSERT, DELETE, NULL

Cursor management
- DECLARE, OPEN, CLOSE
- explicit/implicit attributes (%FOUND, %NOTFOUND, %ROWCOUNT, %ISOPEN)

Functions
- SUM, AVG, MAX, MIN, COUNT, ABS, FLOOR
- SIGN, SQRT, ROUND, ASCII, LOWER, UPPER
- LTRIM, RTRIM, SOUNDEX

Exceptions - All

Stored procedures
User Productivity

Automatic datatype conversions between Developer/2000-Oracle SQL datatypes and MS SQL Server datatypes
Character set translation between client and server-side character sets
Oracle's NLS support allows for applications to be developed in and for most major languages and character sets

Oracle Open Gateways:
Supporting Over 30 Databases
Ingres Visual Programming

Ingres / Menu

- forms-based front-end to entire Ingres system
- invoked by
  ingmenu dbname
- execute predefined queries, reports, graphs
- invoke frontends QBF, RBF, VIGRAPh, ABF, VIFRED
- enter terminal monitor ISQL, IQUEL
- perform forms-based data definition
Ingres Table Utility

Forms-based interface for data definition
  • create base tables
  • destroy base tables
  • help on base table definitions
  • help on view definitions

Views are created in ISQL / IQUEL

Tables cannot be updated in Ingres - must be deleted and recreated
Ingres ISQL and IQUEL

Forms-based interfaces
- screen "editor" for commands
- execution window

Development tool
- can save queries to a file (from editor window)
- can scroll through output (from execution window)
- can terminate execution of a query after examination of the first screen of results
Ingres / Query

QBF - Query By Forms

No knowledge of SQL or QUEL required

Performs
• retrievals
• updates
• appends

Varied functions of QBF
• Given a table name, constructs and uses a default form for table query or data entry
• Given the name of a pre-defined join, uses a default form for master/detail table(s) data query or entry
• Given a form name, uses that form for data query or entry to the table(s) or pre-defined join(s) associated with the form
Ingres Join Definition

Master / master join definition (or detail / detail)
  • ordinary natural join (yields one table)

Master / detail join definition
  • left outer natural join
    - outer join on master (all master occurrences)
    - natural join on detail (matching master must exist)
  • presented in master/detail form
    - master appears in "row" form - one per screen
    - detail appears in "column" form, scrolling on same screen as corresponding master
**Ingres / Forms**

VIFRED - Visual Forms Editor

Create forms for use with
- QBF (usually defaults are adequate)
- user-developed applications

Can either
- start from scratch
- edit existing form
- edit default form from QBF

Once created, can be used with
- any number of applications
- any number of tables
Ingres VIFRED Form Fields

In QBF, fixed relationship between form fields and database fields

In VIFRED

• each form has a name
• each form field has an internal name field
• each form field also has a title know to the user

Can establish

• position on the screen
• tabbing order for data entry
• "trim" or printed text on the screen
• titles
• data window
• attributes
  - internal name
  - display attributes
  - validation checks
  - error messages
Ingres / Reports

RBF - Report By Forms

Report Writer Facility
• content / layout controlled by report specifications
• RBF creates report specifications

Process:
1. Create report specifications (RBF)
2. Compile specifications (SReport)
3. Execute report on demand (Report)

Report writer different that VIFRED
• output only
• supports control breaks

Usually create a VIEW with joins, calculations, and all report entries prior to invoking RBF