Is Interoperability Achievable With ODBC?

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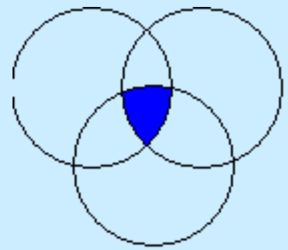
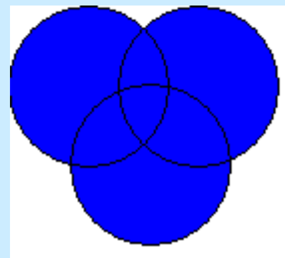
Motivation



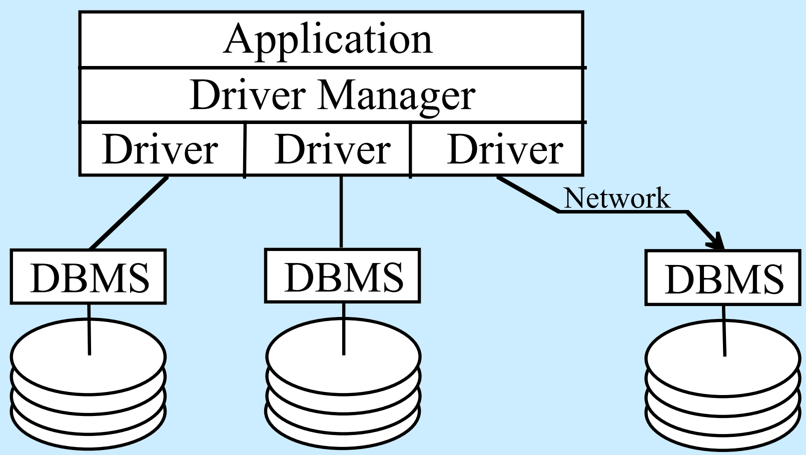


- Why Standards?
  - – Least common denominator
  - – No further changes / developments
  - + Common base for applications
- Why Interoperability?
  - Client-Server architecture
  - Increased flexibility

Accessing Databases

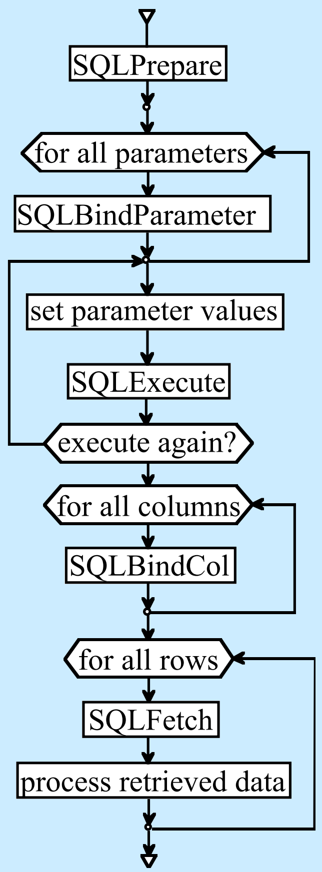
- SQL as Query Language
- Environment
  - Embedded SQL
  - PL/SQL
  - Call-level Interface like ODBC

Architecture of ODBC



- Data independence
- Driver independence
- Network transparence

Execution of Statements



- Open connection
- Prepare statement
- Bind parameters
- Execute statement
- Retrieve results

Data Types

Data Type	**Oracle**	**MS Access**	**Programming Language**
BIT		BIT	BOOLEAN
TINYINT		UNSIGNED BYTE	SHORTINT
BIGINT			
LONG VAR BINARY	LONG RAW	LONGBINARY	binary file
VAR BINARY	RAW		ARRAY x OF BYTE
BINARY			ARRAY x OF BYTE
LONG VAR CHAR	LONG	MEMO	text file
CHAR	CHAR	TEXT	ARRAY x OF CHAR
NUMERIC	NUMBER	CURRENCY	
DECIMAL			
INTEGER		LONG	LONGINT
SMALLINT		SHORT	INTEGER
FLOAT	FLOAT		REAL
REAL			
DOUBLE PRECISION		DOUBLEFLOAT	LONGREAL
DATE			record
TIME			record
TIMESTAMP	DATE	DATETIME	record
VARCHAR	VARCHAR2		ARRAY x OF CHAR

Database Dependencies

ODBC Types:

CREATE TABLE Tab1 (name CHAR(32),
salary INTEGER)

Database Types:

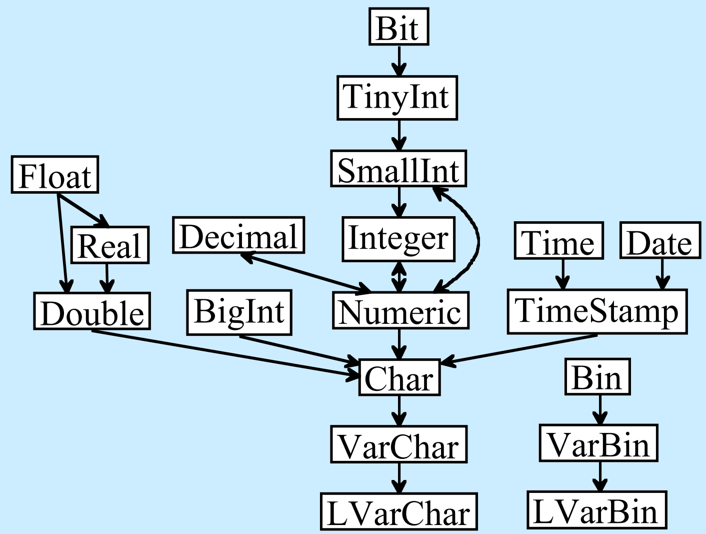
Oracle: CREATE TABLE Tab1 (name **CHAR(32)**,
salary **NUMBER(7, 0)**)

MS Access: CREATE TABLE Tab1 (name **TEXT**,
salary **LONG**)

Mapping of Data Types

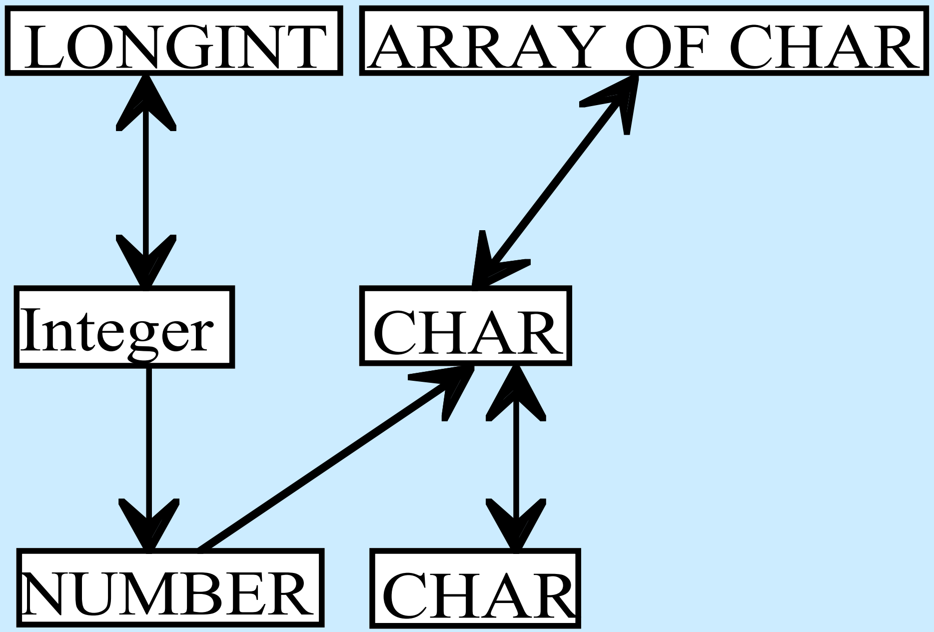
- Transparent mapping of ODBC types to Database types

Determine best-fitting data type



PROCEDURE Map (c: Connection;
odbcType: Type; VAR mapType: Type): BOOLEAN;

Loss of Information



Application Type

ODBC Type

Database Type

Conclusions

- ODBC # Interoperability
- Interoperability is not for free.
- Reasonable standards vs. industry standards
- How to improve?