
¹ The Young! History
of Database Systems...



```

$ SET SOURCEFORMAT"FREE"
IDENTIFICATION DIVISION.
PROGRAM-ID. Seq2Rel.
AUTHOR. MICHAEL COUGHLAN.
* Creates a Relative file from a sequential file.

ENVIRONMENT DIVISION.
INPUT-OUTPUT SECTION.
FILE-CONTROL.
  SELECT SupplierFile ASSIGN TO "RELSUPP.DAT"
    ORGANIZATION IS RELATIVE
    ACCESS MODE IS RANDOM
    RELATIVE KEY IS SupplierKey
    FILE STATUS IS Supplierstatus.

  SELECT SupplierFileSeq ASSIGN TO "SEQSUPP.DAT"
    ORGANIZATION IS LINE SEQUENTIAL.

DATA DIVISION.
FILE SECTION.

FD SupplierFile.
01 SupplierRecord.
  02 SupplierCode          PIC 99.
  02 SupplierName          PIC X(20).
  02 SupplierAddress        PIC X(50).

FD SupplierFileSeq.
01 SupplierRecordSeq.
  88 EndOfFile            VALUE HIGH-VALUES.
  02 SupplierCodeSeq       PIC 99.
  02 SupplierNameSeq       PIC X(20).
  02 SupplierAddressSeq    PIC X(50).

WORKING-STORAGE SECTION.
01 SupplierStatus          PIC X(2).
01 SupplierKey              PIC 99.

PROCEDURE DIVISION.

```

```

WORKING-STORAGE SECTION.
01 SupplierStatus          PIC X(2).
01 SupplierKey              PIC 99.

PROCEDURE DIVISION.
Begin.
  OPEN OUTPUT SupplierFile.
  OPEN INPUT SupplierFileSeq.

  READ SupplierFileSeq
    AT END SET EndOfFile TO TRUE
END-READ
PERFORM UNTIL EndOfFile
  MOVE SupplierCodeSeq TO SupplierKey
  MOVE SupplierRecordSeq TO SupplierRecord
  WRITE SupplierRecord
    INVALID KEY DISPLAY "Supplier status = "
SupplierStatus
  END-WRITE
  READ SupplierFileSeq
    AT END SET EndOfFile TO TRUE
END-READ
END-PERFORM.

CLOSE SupplierFile, SupplierFileSeq.
STOP RUN.

```

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DATA DIVISION.
FILE SECTION.

FD  SupplierFile.
01  SupplierRecord.
```

Query

Result

DBMS



60ies

hierarchical DBMS

navigational DBMS

no physical data
independence!

WAGGAT



70ies

Codd invents
Relational Model

„Codd made relations,

... all else
is the work of man.“

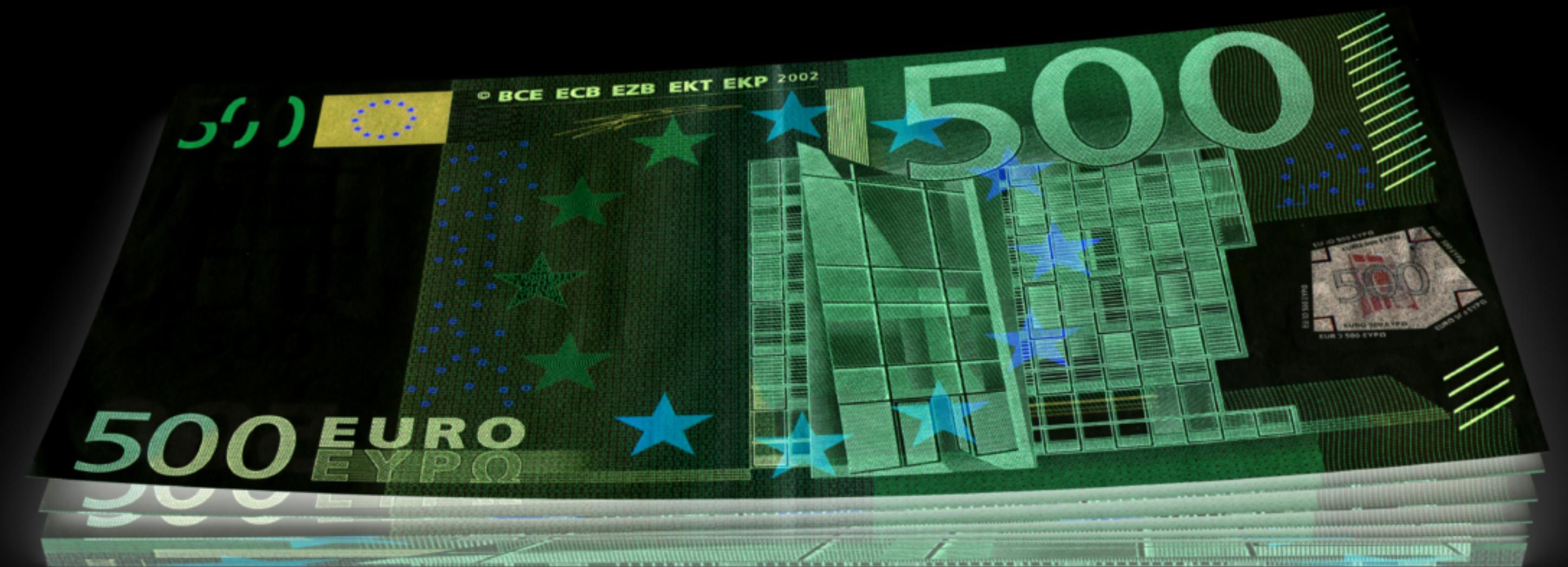
WHAT
HOW

Research Projects

IBM System R

80ies





IBM DB2

Oracle

SQL

90ies



Object-relational DBMS

= relational DBMS +
object extensions

Object-oriented DBMS

= real object-oriented
DBMS

parallel

Web

OLAP =
OnLine
Analytical
Processing

2000

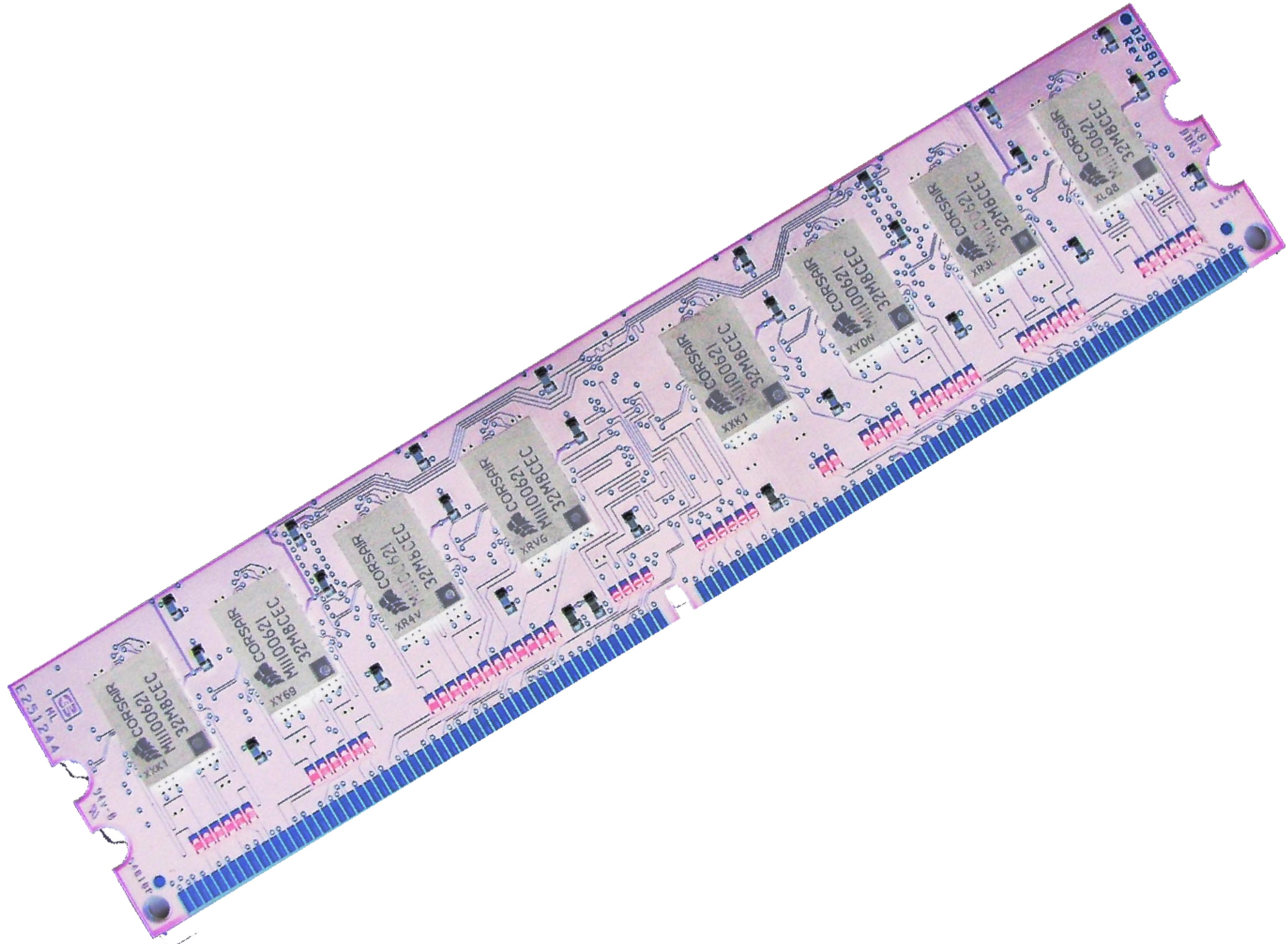


<XML/>

data stream management

Column Stores

name	street	city
peter	narrowstreet	new york
steve	macstreet	cuppertino
mike	longstreet	saarbruecken





Google

facebook®



Gute Fahrt.



2010

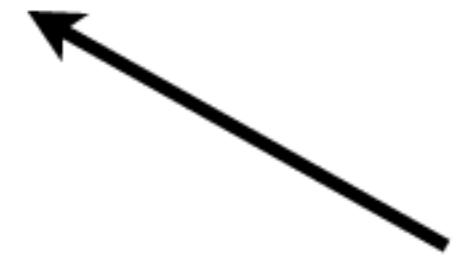


NoSQL

Big Data



1 MB



1 GB

1 TB
(actually does not fit on screen)

MapReduce



Analytics

1,700,000,000?

IBM
acquiring
Netezza

263,000,000?

Teradata
acquiring
Aster Data

HP
acquiring
Vertica

Teradata
acquiring
Kickfire

Ingres
acquiring
VectorWise

Software AG
acquiring
RTM

EMC
acquiring
Greenplum

Cisco
acquiring
Truviso

X

acquiring

Y

to be
continued...

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