

Grundlagen der Informatik III

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Java und Datenbanken

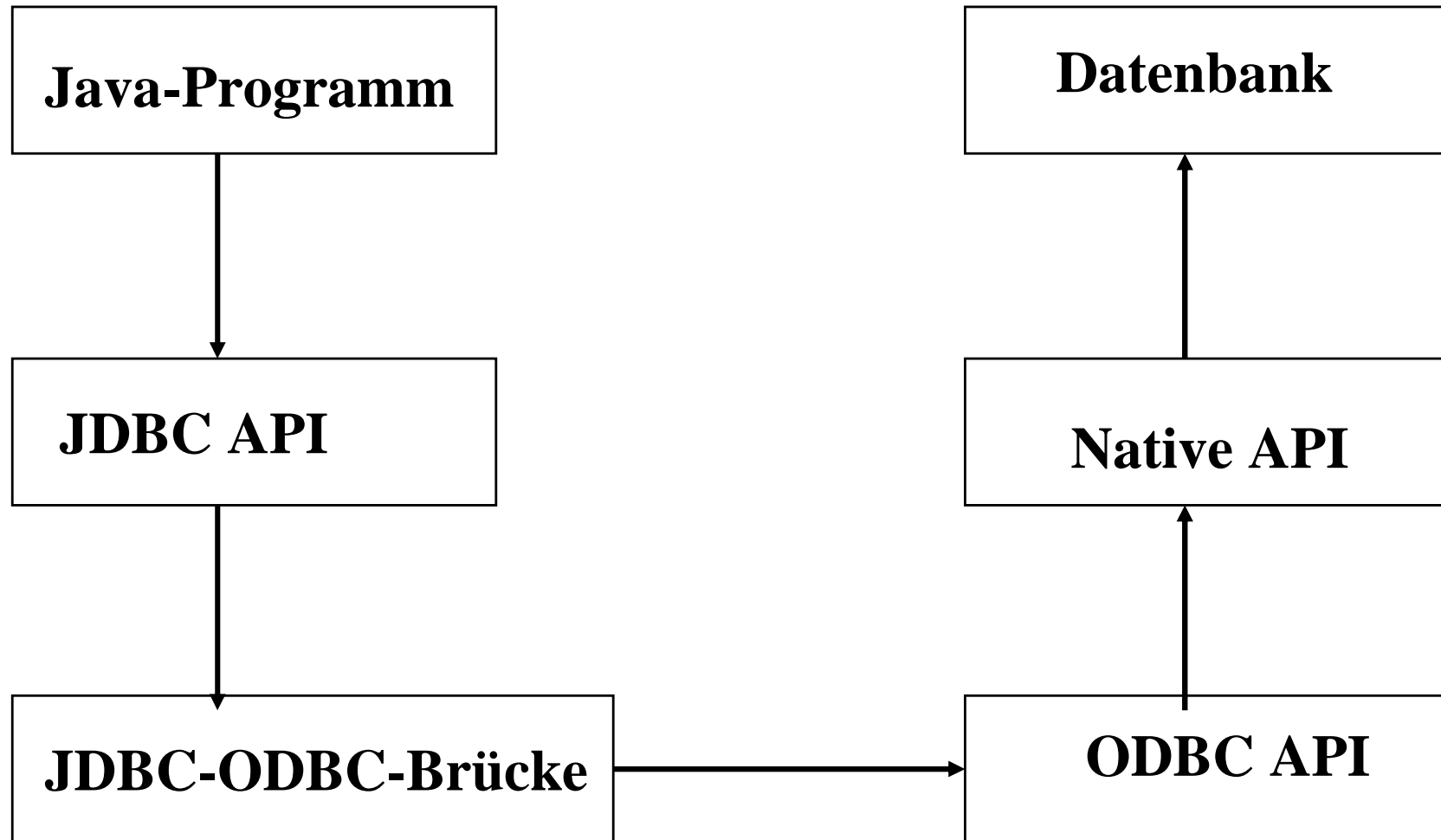
Methoden

- **JDBC mit ODBC-Brücke (Typ 1)**
- **JDBC zu nativer API (Typ 2)**
- **JDBC zu Treiber-Server (Typ 3)**
- **JDBCpur (Typ 4)**

Quelle: Java 5, Markt & Technik

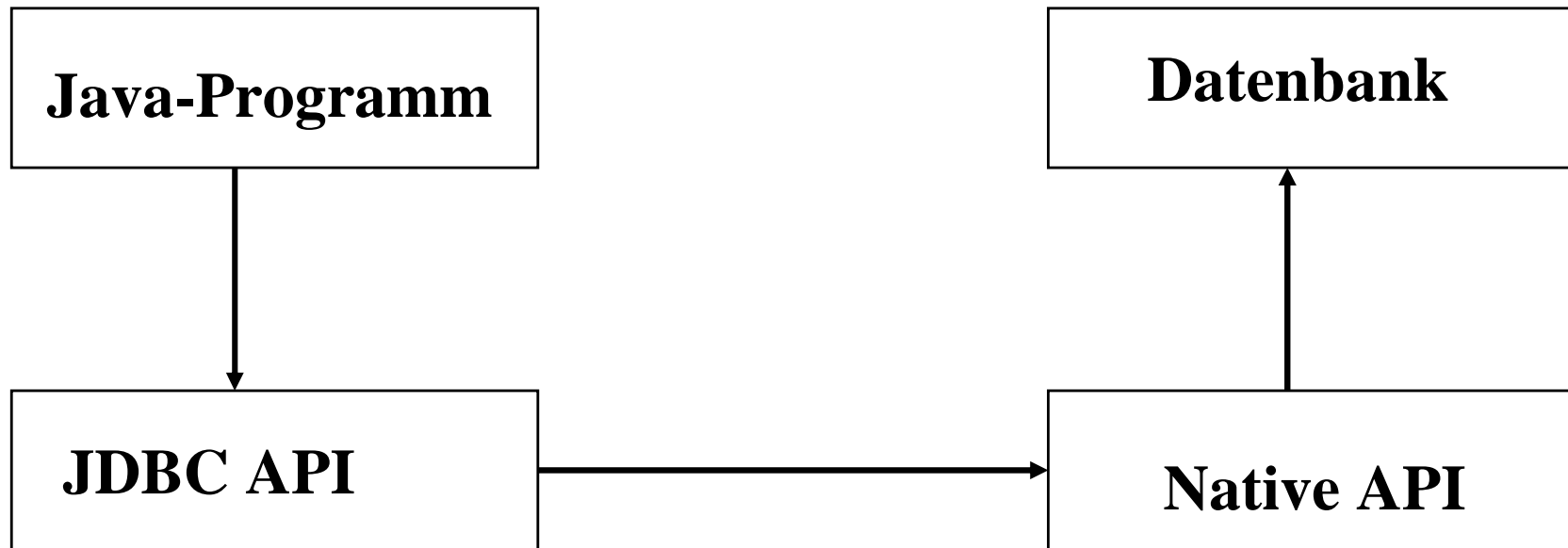
Open Database Connectivity

JDBC mit ODBC-Brücke, bis zu 20x langsamer



Spezielle Treiber sind erforderlich, veraltet

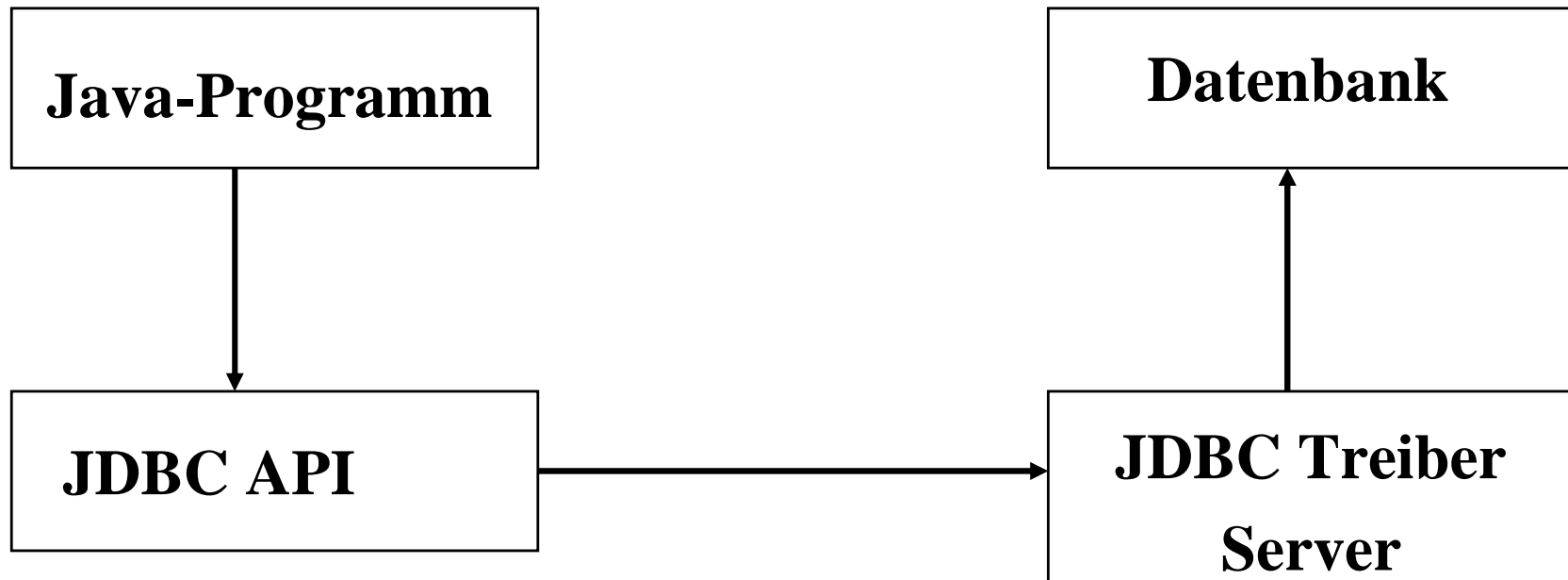
JDBC zu nativer API (Typ 2)



Erläuterung mit Beispiel

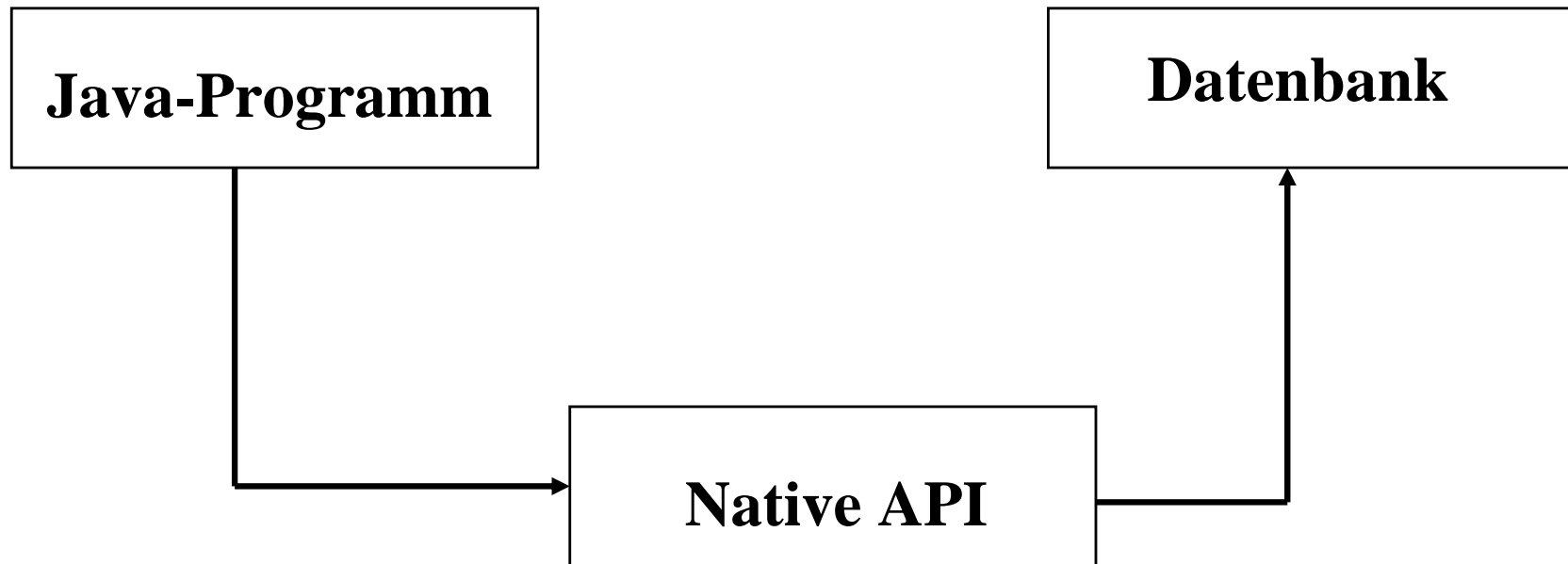
Spezielle Treiber sind erforderlich

JDBC zu Treiber-Server (Typ 3)



Zentrale Softwareschicht beim Server
Gut für Applets

JDBCpur (Typ 4)



Nur Java-Source wird benötigt.
Gut für Applets

Aufbau JDBC

■ Import

- import java.sql.*;

■ Anmeldeinformationen

- sDbDrv = "org.firebirdsql.jdbc.FBDriver"
- sDbUrl="jdbc:firebirdsql:localhost/3050:D:\\dbs\\emp.fdb";
- sTable="employee";
- sUsr="sysdba";
- sPwd="masterkey";
- Connection cn = null;
- Statement st = null;
- ResultSet rs = null;

Aufbau JDBC

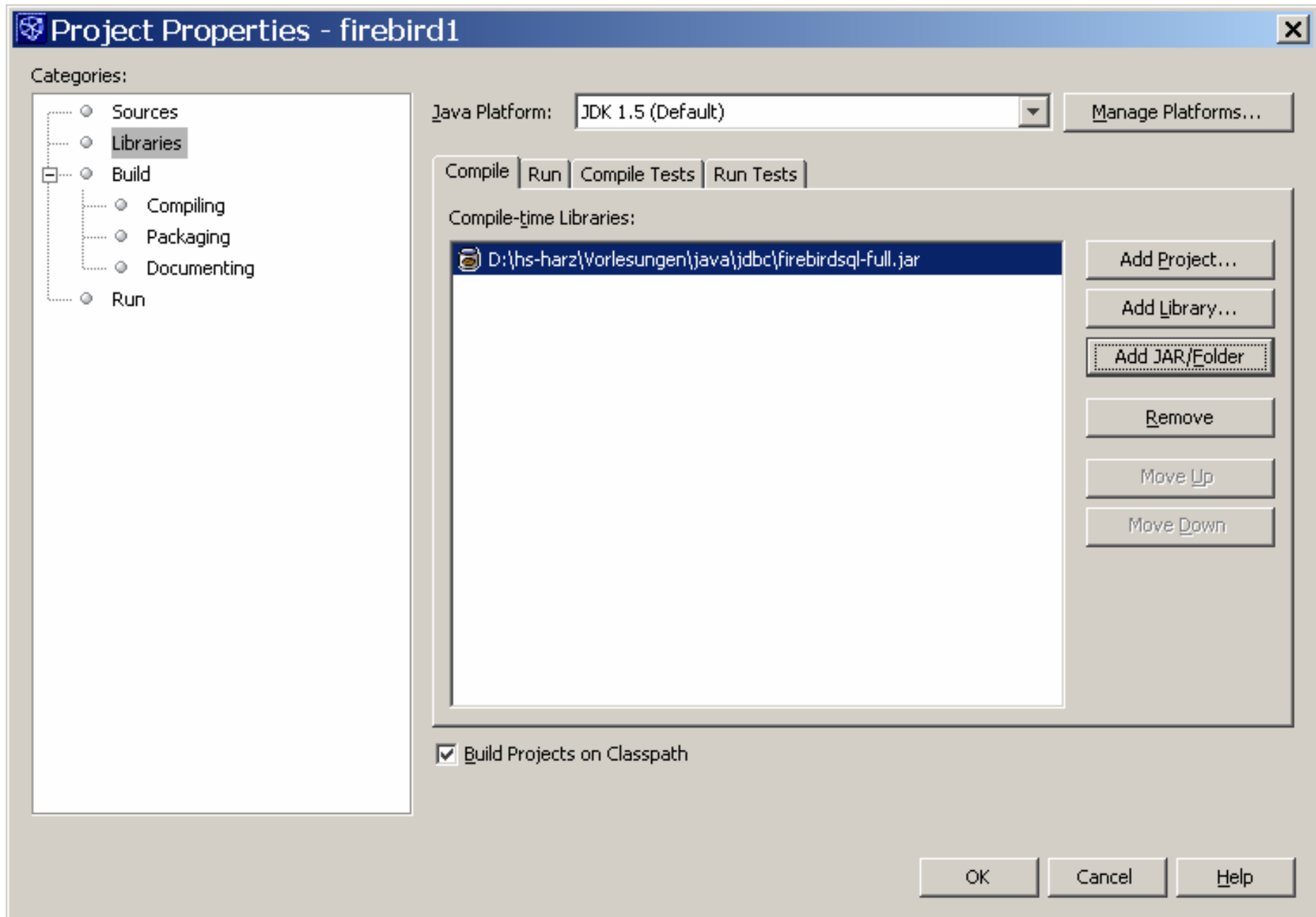
■ Aufbau der Verbindung

- `Class.forName(sDbDrv);`
- `cn = DriverManager.getConnection(sDbUrl, sUsr, sPwd);`
- `st = cn.createStatement();`
- `rs = st.executeQuery("select * from " + sTable+" WHERE SALARY > 70000.0");`

Aufbau JDBC

■ Auswertung

```
ResultSetMetaData rsmd = rs.getMetaData();  
int i, n;  
n = rsmd.getColumnCount(); // Anzahl der Spalten  
for( i=1; i<=n; i++ )  
    System.out.print( rsmd.getColumnName( i ) );  
  
    System.out.println( " " );  
  
while( rs.next() ) {  
    for( i=1; i<=n; i++ ) // Tupel ausgeben  
        System.out.print( rs.getString( i ) );  
}
```



Ergebnis

EMP_NO	LAST_NAME	FIRST_NAME	DEPT_NO	SALARY
2	Nelson	Robert	600	105900.0
4	Young	Bruce	621	97500.0
5	Lambert	Kim	130	102750.0
9	Forest	Phil	622	75060.0
11	Weston	K. J.	130	86292.9375
20	Papadopoulos	Chris	671	89655.0
24	Fisher	Pete	671	81810.1875
45	Ramanathan	Ashok	621	80689.5
46	Steadman	Walter	900	116100.0
72	Sutherland	Claudia	140	100914.0
85	MacDonald	Mary S.	100	111262.5
105	Bender	Oliver H.	000	212850.0
107	Cook	Kevin	670	111262.5
110	Ichida	Yuki	115	6000000.0
118	Yamamoto	Takashi	115	7480000.0
121	Ferrari	Roberto	125	9.9E7
134	Glon	Jacques	123	390500.0
141	Osborne	Pierre	121	110000.0

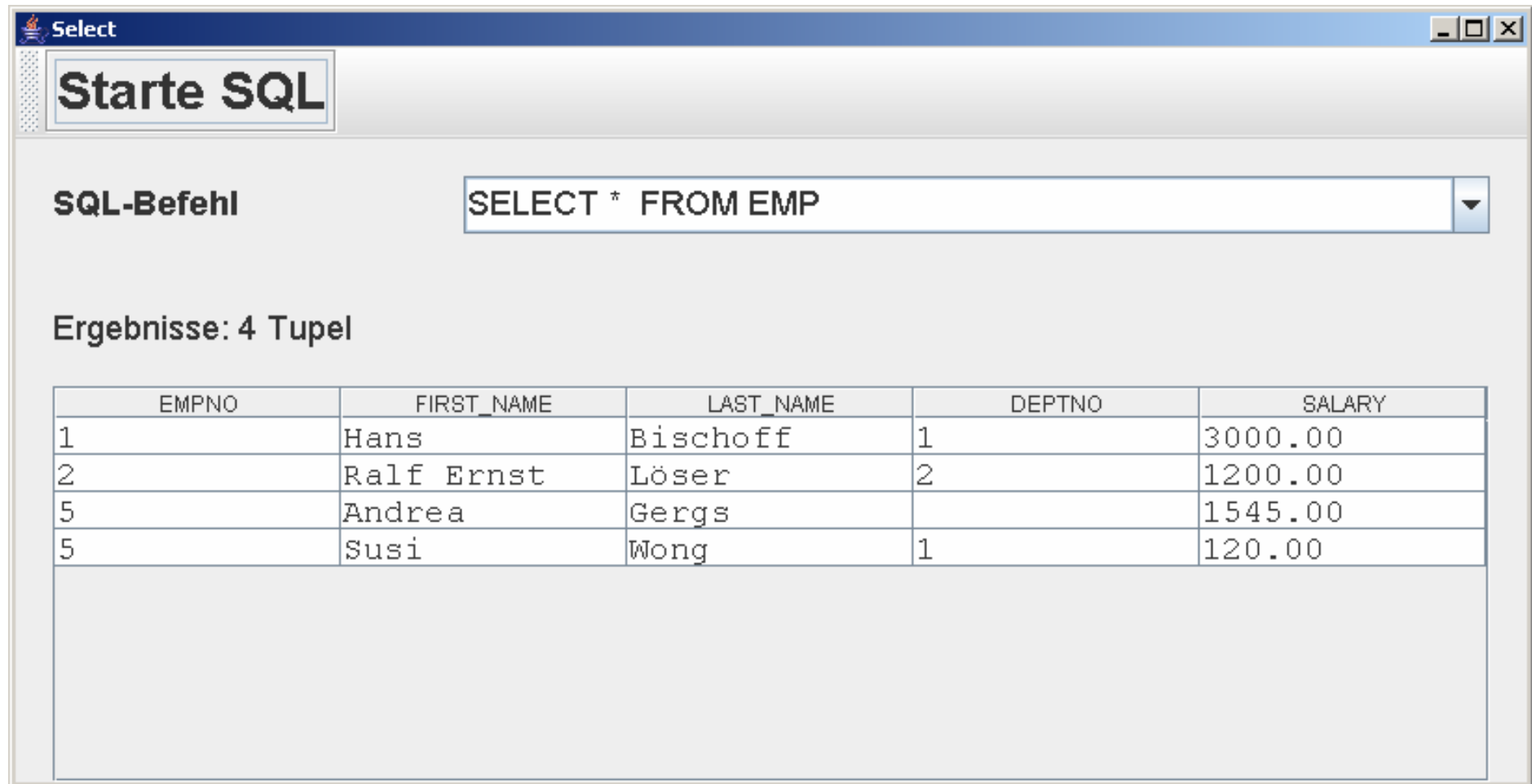
•SELECT EMP_NO, Last_name, First_name, DEPT_NO, SALARY FROM " + sTable+" WHERE SALARY > 70000.0

Beispiel mit test.gdb

- **Startfenster**
- **Fenster Select_Frame**
- **Fenster Insert_Frame**
- **Fenster Group_Frame**



Beispiel Select_Frame



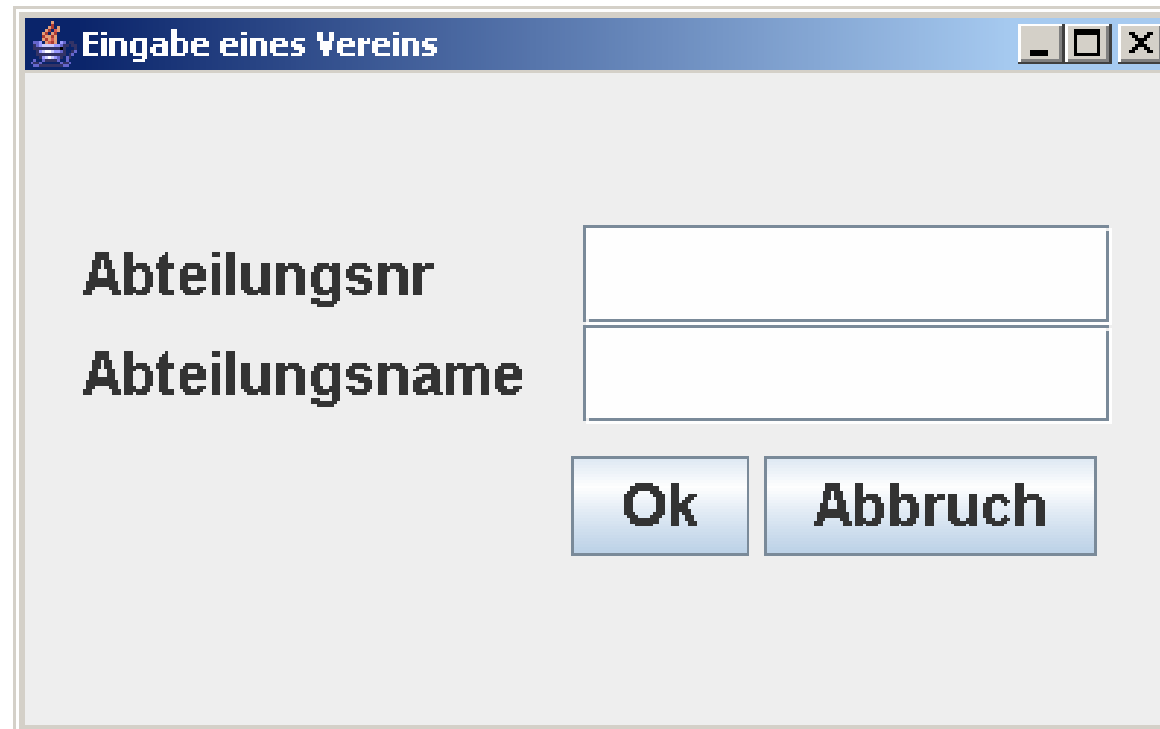
The screenshot shows a window titled "Select" with a "Starte SQL" button. Below the button, the "SQL-Befehl" field contains the query "SELECT * FROM EMP". The results are displayed as a table with 4 rows and 5 columns: EMPNO, FIRST_NAME, LAST_NAME, DEPTNO, and SALARY.

Ergebnisse: 4 Tupel

EMPNO	FIRST_NAME	LAST_NAME	DEPTNO	SALARY
1	Hans	Bischoff	1	3000.00
2	Ralf Ernst	Löser	2	1200.00
5	Andrea	Gergs		1545.00
5	Susi	Wong	1	120.00

Beispiel Insert_Frame

```
sql = "INSERT INTO DEPT (DEPTNO, DEPTNAME) "  
      +"VALUES("+sDeptNr+ ", '"+ sDeptname+"");";  
int anz = st.executeUpdate( sql ); // Returnwert Anzahl der betroffenen Datensätze
```



The image shows a Java dialog box titled "Eingabe eines Vereins". It contains two text input fields. The first field is labeled "Abteilungsnr" and the second is labeled "Abteilungsname". Below the input fields are two buttons: "Ok" and "Abbruch". The dialog box has a standard Windows-style title bar with minimize, maximize, and close buttons.

Beispiel Group_Frame

The screenshot shows a Java Swing window titled "Anzeige eines Mitarbeiters". It contains five text input fields for employee data: "Mitarbeiternummer" (1), "Vorname" (Hans), "Nachname" (Bischoff), "Abteilung" (1), and "Gehalt" (3000.00). At the bottom, there are three buttons: "Up", "Down", and "Abbruch".

Mitarbeiternummer	1
Vorname	Hans
Nachname	Bischoff
Abteilung	1
Gehalt	3000.00

Buttons: Up, Down, Abbruch

The screenshot shows a Java Swing window titled "Anzeige eines Mitarbeiters". It contains five text input fields for employee data: "Mitarbeiternummer" (2), "Vorname" (Ralf Ernst), "Nachname" (Löser), "Abteilung" (2), and "Gehalt" (1200.00). At the bottom, there are three buttons: "Up", "Down", and "Abbruch".

Mitarbeiternummer	2
Vorname	Ralf Ernst
Nachname	Löser
Abteilung	2
Gehalt	1200.00

Buttons: Up, Down, Abbruch