Laporan Ujian Basis Data

Berikut adalah langkah-langkah dan hasil dari pengerjaan ujian basis data.

1. Membuat Basis Data dengan Tema Retail dan Pendidikan

Instalasi SQLite3

```
sudo apt-get update && sudo apt-get install -y sqlite3
```

Output:

```
ubuntu@sandbox:~ $ cd /home/ubuntu && sudo apt-get update &&
sudo apt-get install -y sqlite3
Get:1
http://security.ubuntu.com/ubuntu jammy-security InRelease [129
kB]
Hit:2 http://archive.ubuntu.com/ubuntu jammy
InRelease
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
[128 kB]
Get:4
http://archive.ubuntu.com/ubuntu jammy-backports InRelease [127
kB]
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
Packages [3295 kB]
Fetched 3679 kB in 1s (3021 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  sqlite3-doc
The following NEW packages will be installed:
  sqlite3
0 upgraded, 1 newly installed, 0 to remove and 4 not upgraded.
Need to get 769 kB of archives.
After this operation, 1873 kB of additional disk space will be
used.
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64
sqlite3 amd64 3.37.2-2ubuntu0.4 [769 kB]
Fetched 769 kB in 1s (1289 kB/s)
```

```
debconf: delaying package configuration, since apt-utils is not
installed
Selecting previously unselected package sqlite3.
(Reading database ... 50705 files and directories currently
installed.)
Preparing to unpack .../sqlite3_3.37.2-2ubuntu0.4_amd64.deb ...
Unpacking sqlite3 (3.37.2-2ubuntu0.4) ...
Setting up sqlite3 (3.37.2-2ubuntu0.4) ...
ubuntu@sandbox:~ $
```

Pembuatan Database Retail

```
sqlite3 retail.db ".databases"
```

Output:

```
 ubuntu@sandbox:~ $ cd /home/ubuntu && sqlite3 retail.db
".databases"
main: /home/ubuntu/retail.db r/w
ubuntu@sandbox:~ $
```

Pembuatan Tabel untuk Database Retail

```
 sqlite3 retail.db "CREATE TABLE products (product_id INTEGER
PRIMARY KEY, product_name TEXT NOT NULL, price REAL NOT NULL,
stock INTEGER NOT NULL); CREATE TABLE customers (customer_id
INTEGER PRIMARY KEY, customer_name TEXT NOT NULL, email TEXT
UNIQUE); CREATE TABLE orders (order_id INTEGER PRIMARY KEY,
customer_id INTEGER, order_date TEXT NOT NULL, total_amount REAL
NOT NULL, FOREIGN KEY (customer_id) REFERENCES
customers(customer_id));"
```

Output:

```
 ubuntu@sandbox:~ $ cd /home/ubuntu && sqlite3 retail.db "CREATE
TABLE products (product_id INTEGER PRIMARY KEY, product_name
TEXT NOT NULL, price REAL NOT NULL, stock INTEGER NOT NULL);
CREATE TABLE customers (customer_id INTEGER PRIMARY KEY,
customer_name TEXT NOT NULL, email TEXT UNIQUE); CREATE TABLE
orders (order_id INTEGER PRIMARY KEY, customer_id INTEGER,
order_date TEXT NOT NULL, total_amount REAL NOT NULL, FOREIGN
KEY (customer_id) REFERENCES customers(customer_id));"

ubuntu@sandbox:~ $
```

Pembuatan Database Pendidikan

```
sqlite3 education.db ".databases"
```

Output:

```
ubuntu@sandbox:~ $ cd /home/ubuntu && sqlite3 education.db
".databases"
main: /home/ubuntu/education.db r/w
ubuntu@sandbox:~ $
```

Pembuatan Tabel untuk Database Pendidikan

```
sqlite3 education.db "CREATE TABLE students (student_id INTEGER
PRIMARY KEY, student_name TEXT NOT NULL, major TEXT NOT NULL,
email TEXT UNIQUE); CREATE TABLE courses (course_id INTEGER
PRIMARY KEY, course_name TEXT NOT NULL, credits INTEGER NOT
NULL); CREATE TABLE enrollments (enrollment_id INTEGER PRIMARY
KEY, student_id INTEGER, course_id INTEGER, enrollment_date TEXT
NOT NULL, FOREIGN KEY (student_id) REFERENCES
students(student_id), FOREIGN KEY (course_id) REFERENCES
courses(course_id));"
```

Output:

```
ubuntu@sandbox:~ $ cd /home/ubuntu && sqlite3 education.db
"CREATE TABLE students (student_id INTEGER PRIMARY KEY,
student_name TEXT NOT NULL, major TEXT NOT NULL, email TEXT
UNIQUE); CREATE TABLE courses (course_id INTEGER PRIMARY KEY,
course_name TEXT NOT NULL, credits INTEGER NOT NULL); CREATE
TABLE enrollments (enrollment_id INTEGER PRIMARY KEY, student_id
INTEGER, course_id INTEGER, enrollment_date TEXT NOT NULL,
FOREIGN KEY (student_id) REFERENCES students(student_id),
FOREIGN KEY (course_id) REFERENCES courses(course_id));"

ubuntu@sandbox:~ $
```

2. Operasi INSERT Minimal 5 Data dan Menampilkan Semua Data

Insert Data ke Tabel Retail

Produk:

```
 sqlite3 retail.db "INSERT INTO products (product_name, price,
stock) VALUES (
'Laptop', 1200.00, 50); INSERT INTO products (product_name,
price, stock) VALUES (
'Mouse', 25.00, 200); INSERT INTO products (product_name, price,
stock) VALUES (
'Keyboard', 75.00, 150); INSERT INTO products (product_name,
price, stock) VALUES (
'Monitor', 300.00, 75); INSERT INTO products (product_name,
price, stock) VALUES (
'Webcam', 50.00, 100);"
```

Pelanggan:

```
 sqlite3 retail.db "INSERT INTO customers (customer_name, email)
VALUES (
'Alice Smith', 'alice.smith@example.com'); INSERT INTO customers
(customer_name, email) VALUES (
'Bob Johnson', 'bob.johnson@example.com'); INSERT INTO customers
(customer_name, email) VALUES (
'Charlie Brown', 'charlie.brown@example.com'); INSERT INTO
customers (customer_name, email) VALUES (
'Diana Prince', 'diana.prince@example.com'); INSERT INTO
customers (customer_name, email) VALUES (
'Eve Adams', 'eve.adams@example.com');"
```

Pesanan:

```
 sqlite3 retail.db "INSERT INTO orders (customer_id, order_date,
total_amount) VALUES (1, '2025-06-01', 1200.00); INSERT INTO
orders (customer_id, order_date, total_amount) VALUES (2,
'2025-06-02', 25.00); INSERT INTO orders (customer_id,
order_date, total_amount) VALUES (3, '2025-06-03', 75.00);
INSERT INTO orders (customer_id, order_date, total_amount)
VALUES (4, '2025-06-04', 300.00); INSERT INTO orders
(customer_id, order_date, total_amount) VALUES (5, '2025-06-05',
50.00);"
```

Menampilkan Semua Data dari Tabel Retail

Produk:

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
products;"
```

Output:

```
product_id  product_name  price   stock
----------  ------------  ------  -----
1           Laptop        1200.0  50
2           Mouse         25.0    200
3           Keyboard      75.0    150
4           Monitor       300.0   75
5           Webcam        50.0    100
```

Pelanggan:

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
customers;"
```

Output:

```
customer_id  customer_name  email
-----------  -------------  -------------------------
1            Alice Smith    alice.smith@example.com
2            Bob Johnson    bob.johnson@example.com
3            Charlie Brown  charlie.brown@example.com
4            Diana Prince   diana.prince@example.com
5            Eve Adams      eve.adams@example.com
```

Pesanan:

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
orders;"
```

Output:

```
order_id  customer_id  order_date  total_amount
--------  -----------  ----------  ------------
1         1            2025-06-01  1200.0
2         2            2025-06-02  25.0
```

```
3         3           2025-06-03  75.0
4         4           2025-06-04  300.0
5         5           2025-06-05  50.0
```

Insert Data ke Tabel Pendidikan

Mahasiswa:

```
sqlite3 education.db
"INSERT INTO students (student_name, major, email) VALUES (
'Sarah Connor', 'Computer Science', 'sarah.connor@example.com');
INSERT INTO students (student_name, major, email) VALUES (
'John Doe', 'Mathematics', 'john.doe@example.com'); INSERT INTO
students (student_name, major, email) VALUES (
'Jane Smith', 'Physics', 'jane.smith@example.com'); INSERT INTO
students (student_name, major, email) VALUES (
'Peter Jones', 'Chemistry', 'peter.jones@example.com'); INSERT
INTO students (student_name, major, email) VALUES (
'Mary Lee', 'Biology', 'mary.lee@example.com');"
```

Mata Kuliah:

```
sqlite3 education.db
"INSERT INTO courses (course_name, credits) VALUES (
'Introduction to Programming', 3); INSERT INTO courses
(course_name, credits) VALUES (
'Calculus I', 4); INSERT INTO courses (course_name, credits)
VALUES (
'General Physics', 4); INSERT INTO courses (course_name,
credits) VALUES (
'Organic Chemistry', 3); INSERT INTO courses (course_name,
credits) VALUES (
'Cell Biology', 3);"
```

Pendaftaran:

```
sqlite3 education.db "INSERT INTO enrollments (student_id,
course_id, enrollment_date) VALUES (1, 1, '2025-01-15'); INSERT
INTO enrollments (student_id, course_id, enrollment_date) VALUES
(2, 2, '2025-01-16'); INSERT INTO enrollments (student_id,
course_id, enrollment_date) VALUES (3, 3, '2025-01-17'); INSERT
INTO enrollments (student_id, course_id, enrollment_date) VALUES
(4, 4, '2025-01-18'); INSERT INTO enrollments (student_id,
course_id, enrollment_date) VALUES (5, 5, '2025-01-19');"
```

Menampilkan Semua Data dari Tabel Pendidikan

Mahasiswa:

```
 sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM students;"
```

Output:

```
 student_id  student_name  major
email
----------  ------------  ----------------
------------------------
1           Sarah Connor  Computer Science
sarah.connor@example.com
2           John Doe      Mathematics
john.doe@example.com
3           Jane Smith    Physics
jane.smith@example.com
4           Peter Jones   Chemistry
peter.jones@example.com
5           Mary Lee      Biology
mary.lee@example.com
```

Mata Kuliah:

```
 sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM courses;"
```

Output:

```
 course_id  course_name                  credits
---------  ---------------------------  -------
1          Introduction to Programming  3
2          Calculus I                   4
3          General Physics              4
4          Organic Chemistry            3
5          Cell Biology                 3
```

Pendaftaran:

```
 sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM enrollments;"
```

Output:

```
 enrollment_id  student_id  course_id  enrollment_date
-------------  ----------  ---------  ---------------
1              1           1          2025-01-15
2              2           2          2025-01-16
3              3           3          2025-01-17
4              4           4          2025-01-18
5              5           5          2025-01-19
```

3. Update Minimal 3 Data dan Menampilkan Hasil

Update Data di Tabel Retail

```
 sqlite3 retail.db "UPDATE products SET price = 1250.00 WHERE
product_id = 1; UPDATE customers SET email =
'alice.smith.new@example.com' WHERE customer_id = 1; UPDATE
orders SET total_amount = 1300.00 WHERE order_id = 1;"
```

Menampilkan Semua Data dari Tabel Retail Setelah Update

Produk:

```
 sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
products;"
```

Output:

```
 product_id  product_name  price   stock
----------  ------------  ------  -----
1           Laptop        1250.0  50
2           Mouse         25.0    200
3           Keyboard      75.0    150
4           Monitor       300.0   75
5           Webcam        50.0    100
```

Pelanggan:

```
 sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
customers;"
```

Output:

```
customer_id  customer_name  email
-----------  -------------  ---------------------------
1            Alice Smith    alice.smith.new@example.com
2            Bob Johnson    bob.johnson@example.com
3            Charlie Brown  charlie.brown@example.com
4            Diana Prince   diana.prince@example.com
5            Eve Adams      eve.adams@example.com
```

Pesanan:

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
orders;"
```

Output:

```
order_id  customer_id  order_date  total_amount
--------  -----------  ----------  ------------
1         1            2025-06-01  1300.0
2         2            2025-06-02  25.0
3         3            2025-06-03  75.0
4         4            2025-06-04  300.0
5         5            2025-06-05  50.0
```

Update Data di Tabel Pendidikan

```
sqlite3 education.db
"UPDATE students SET major = 'Data Science' WHERE student_id =
1; UPDATE courses SET credits = 5 WHERE course_id = 1; UPDATE
enrollments SET enrollment_date = '2025-02-01' WHERE
enrollment_id = 1;"
```

Menampilkan Semua Data dari Tabel Pendidikan Setelah Update

Mahasiswa:

```
sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM students;"
```

Output:

```
student_id  student_name  major         email
----------  ------------  ------------  ------------------------
```

```
1           Sarah Connor  Data Science  sarah.connor@example.com
2           John Doe      Mathematics   john.doe@example.com
3           Jane Smith    Physics       jane.smith@example.com
4           Peter Jones   Chemistry     peter.jones@example.com
5           Mary Lee      Biology       mary.lee@example.com
```

Mata Kuliah:

```
sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM courses;"
```

Output:

```
course_id  course_name                  credits
---------  ---------------------------  -------
1          Introduction to Programming  5
2          Calculus I                   4
3          General Physics              4
4          Organic Chemistry            3
5          Cell Biology                 3
```

Pendaftaran:

```
sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM enrollments;"
```

Output:

```
enrollment_id  student_id  course_id  enrollment_date
-------------  ----------  ---------  ---------------
1              1           1          2025-02-01
2              2           2          2025-01-16
3              3           3          2025-01-17
4              4           4          2025-01-18
5              5           5          2025-01-19
```

4. Operasi INSERT 2 Data Baru, DELETE Data Tersebut, dan Menampilkan Hasil

Insert 2 Data Baru ke Tabel Retail

```
sqlite3 retail.db "INSERT INTO products (product_name, price,
stock) VALUES (
'Printer', 250.00, 30); INSERT INTO products (product_name,
price, stock) VALUES (
'Scanner', 150.00, 20);"
```

Menampilkan Semua Data dari Tabel Retail

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
products;"
```

Output:

```
product_id  product_name  price   stock
----------  ------------  ------  -----
1           Laptop        1250.0  50
2           Mouse         25.0    200
3           Keyboard      75.0    150
4           Monitor       300.0   75
5           Webcam        50.0    100
6           Printer       250.0   30
7           Scanner       150.0   20
```

Delete Data yang Baru Diinsert dari Tabel Retail

```
sqlite3 retail.db "DELETE FROM products WHERE product_id IN (6,
7);"
```

Menampilkan Semua Data dari Tabel Retail Setelah Delete

```
sqlite3 retail.db ".mode column" ".headers on" "SELECT * FROM
products;"
```

Output:

```
 product_id  product_name  price   stock
----------  ------------  ------  -----
1           Laptop        1250.0  50
2           Mouse         25.0    200
3           Keyboard      75.0    150
4           Monitor       300.0   75
5           Webcam        50.0    100
```

Insert 2 Data Baru ke Tabel Pendidikan

```
 sqlite3 education.db
"INSERT INTO students (student_name, major, email) VALUES (
'David Lee', 'Art History', 'david.lee@example.com'); INSERT
INTO students (student_name, major, email) VALUES (
'Emily White', 'Music', 'emily.white@example.com');"
```

Menampilkan Semua Data dari Tabel Pendidikan

```
 sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM students;"
```

Output:

```
 student_id  student_name  major         email
----------  ------------  ------------  ------------------------
1           Sarah Connor  Data Science  sarah.connor@example.com
2           John Doe      Mathematics   john.doe@example.com
3           Jane Smith    Physics       jane.smith@example.com
4           Peter Jones   Chemistry     peter.jones@example.com
5           Mary Lee      Biology       mary.lee@example.com
6           David Lee     Art History   david.lee@example.com
7           Emily White   Music         emily.white@example.com
```

Delete Data yang Baru Diinsert dari Tabel Pendidikan

```
 sqlite3 education.db "DELETE FROM students WHERE student_id IN
(6, 7);"
```

Menampilkan Semua Data dari Tabel Pendidikan Setelah Delete

```
sqlite3 education.db ".mode column" ".headers on"
"SELECT * FROM students;"
```

Output:

```
student_id  student_name  major         email
----------  ------------  ------------  ------------------------
1           Sarah Connor  Data Science  sarah.connor@example.com
2           John Doe      Mathematics   john.doe@example.com
3           Jane Smith    Physics       jane.smith@example.com
4           Peter Jones   Chemistry     peter.jones@example.com
5           Mary Lee      Biology       mary.lee@example.com
```