

# **LAPORAN TUGAS KECIL IF3140 Manajemen Basis Data**



**DIBUAT OLEH :**

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### 3a. employee\_manager

- **CREATING USER employee\_manager.**

```
tucil_security_mbd=# CREATE USER employee_manager WITH ENCRYPTED PASSWORD 'if3140';
```

- **GRANTING SELECT AND UPDATE TO employee\_manager**

```
postgres=# \c tucil_security_mbd
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# grant select, update on employees to employee_manager;
GRANT
tucil_security_mbd=# |
```

- **MEMBUKTIKAN OPERASI SELECT**

```
tucil_security_mbd=# \c tucil_security_mbd employee_manager;
Password for user employee_manager:
You are now connected to database "tucil_security_mbd" as user "employee_manager".
tucil_security_mbd=> SELECT (firstname, lastname) FROM employees LIMIT 5;
      row
-----
(Diane,Murphy)
(Mary,Patterson)
(Jeff,Firrelli)
(William,Patterson)
(Gerard,Bondur)
(5 rows)
```

- **MEMBUKTIKAN OPERASI UPDATE**

```
tucil_security_mbd=> UPDATE employees SET lastname = 'MurphyModified' WHERE employees.lastname = 'Murphy';
UPDATE 1
```

```
tucil_security_mbd=> SELECT (firstname, lastname) FROM employees WHERE employees.lastname = 'Murphy' LIMIT 5;
      row
-----
(0 rows)

tucil_security_mbd=> SELECT (firstname, lastname) FROM employees WHERE employees.lastname = 'MurphyModified' LIMIT 5;
      row
-----
(Diane,MurphyModified)
(1 row)

tucil_security_mbd=> |
```

### 3b. Head\_office

- **CREATE employee\_customer relationship**

```
tucil_security_mbd=> \c tucil_security_mbd postgres;
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# CREATE VIEW emp_cust_relation AS
tucil_security_mbd=# select customerName, TRIM(CONCAT(employees.firstname, ' ', employees.lastname)) as employeeName from customers, employees where
salesRepEmployeeNumber = employeeNumber;
CREATE VIEW
tucil_security_mbd=# \dv
List of relations
Schema | Name | Type | Owner
-----+-----+-----+-----
public | emp_cust_relation | view | postgres
(1 row)
```

#### - CREATE head\_office role and GRANTING PRIVILEGE

```
tucil_security_mbd=# CREATE USER head_office with encrypted password 'if3140';
CREATE ROLE
tucil_security_mbd=# GRANT SELECT on emp_cust_relation to head_office;
GRANT
```

#### - PROVING THAT head\_office can access emp\_cust\_relation

```
tucil_security_mbd=# \c tucil_security_mbd head_office;
Password for user head_office:
You are now connected to database "tucil_security_mbd" as user "head_office".
```

```
tucil_security_mbd=> SELECT * from emp_cust_relation LIMIT 10;
      customername      | employeeName
-----+-----
Atelier graphique      | Gerard Hernandez
Signal Gift Stores     | Leslie Thompson
Australian Collectors, Co. | Andy Fixter
La Rochelle Gifts      | Gerard Hernandez
Baane Mini Imports     | Barry Jones
Mini Gifts Distributors Ltd. | Leslie Jennings
Blauer See Auto, Co.   | Barry Jones
Mini Wheels Co.        | Leslie Jennings
Land of Toys Inc.      | George Vanauf
Euro+ Shopping Channel | Gerard Hernandez
(10 rows)
```

### 3c. Sales

#### - CREATE ROLE SALES

```
tucil_security_mbd=> \c tucil_security_mbd postgres;
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# CREATE USER sales WITH ENCRYPTED PASSWORD 'if3140';
CREATE ROLE
```

## - CREATE VIEW num\_of\_product\_sold

```
tucil_security_mbd=# CREATE VIEW num_of_product_sold AS
tucil_security_mbd=# SELECT products.productName, SUM(orderdetails.quantityOrdered)
tucil_security_mbd=# FROM products JOIN orderdetails on products.productCode = orderdetails.productCode
tucil_security_mbd=# JOIN orders on orderdetails.orderNumber = orders.orderNumber AND orders.status = 'Shipped'
tucil_security_mbd=# GROUP BY products.productName;
CREATE VIEW
tucil_security_mbd=# SELECT * FROM num_of_product_sold;
      productname      | sum
-----+-----
1958 Setra Bus          | 874
1940 Ford Delivery Sedan | 771
America West Airlines B757-200 | 829
1969 Ford Falcon        | 921
1992 Ferrari 360 Spider red | 1720
1998 Chrysler Plymouth Prowler | 958
1974 Ducati 350 Mk3 Desmo | 898
1917 Grand Touring Sedan | 768
1948 Porsche 356-A Roadster | 949
1962 City of Detroit Streetcar | 945
1957 Ford Thunderbird   | 621
HMS Bounty              | 763
1971 Alpine Renault 1600s | 945
1912 Ford Model T Delivery Wagon | 881
1996 Moto Guzzi 1100i    | 954
1969 Dodge Charger      | 951
```

## - CREATE USER SALES

```
tucil_security_mbd=# SELECT NOW() + INTERVAL '6 months';
      ?column?
-----
2023-05-03 17:57:42.330694+07
(1 row)

tucil_security_mbd=# CREATE USER Sales ENCRYPTED PASSWORD 'if3140' VALID UNTIL '2023-05-03 17:57:42.330694+07';
CREATE ROLE
tucil_security_mbd=# |
```

## - GRANT ACCESS to num\_of\_product\_sold

```
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# GRANT SELECT on num_of_product_sold to sales;
GRANT
```

## - PROVING Sales can access num\_of\_product\_sold view

```
tucil_security_mbd=# \c tucil_security_mbd sales;
Password for user sales:
You are now connected to database "tucil_security_mbd" as user "sales".
tucil_security_mbd=> select * from num_of_product_sold;
```

```
tucil_security_mbd=> select * from num_of_product_sold;
      productname      | sum
-----+-----
1958 Setra Bus         | 874
1940 Ford Delivery Sedan | 771
America West Airlines B757-200 | 829
1969 Ford Falcon       | 921
1992 Ferrari 360 Spider red | 1720
1998 Chrysler Plymouth Prowler | 958
1974 Ducati 350 Mk3 Desmo | 898
1917 Grand Touring Sedan | 768
1948 Porsche 356-A Roadster | 949
1962 City of Detroit Streetcar | 945
1957 Ford Thunderbird   | 621
HMS Bounty            | 763
1971 Alpine Renault 1600s | 945
1912 Ford Model T Delivery Wagon | 881
1996 Moto Guzzi 1100i   | 954
```

3d. HRD

#### - CREATE USER HRD

```
tucil_security_mbd=# CREATE USER hrd ENCRYPTED PASSWORD 'if3140';
CREATE ROLE
tucil_security_mbd=# |
```

#### - CREATE VIEW

```
tucil_security_mbd=# CREATE VIEW name_first_line_address AS
tucil_security_mbd=# SELECT CONCAT(employees.firstname, employees.lastname), addressline1
tucil_security_mbd=# FROM employees, offices WHERE employees.officeCode = offices.officeCode;
CREATE VIEW
tucil_security_mbd=# SELECT * FROM name_first_line_address limit 5;
      concat      | addressline1
-----+-----
MaryPatterson     | 100 Market Street
JeffFirrelli      | 100 Market Street
WilliamPatterson   | 5-11 Wentworth Avenue
GerardBondur       | 43 Rue Jouffroy Dabbans
AnthonyBow         | 100 Market Street
(5 rows)
```

#### - GRANT READ ACCESS TO USER HRD

```
tucil_security_mbd=> \c tucil_security_mbd postgres;
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# GRANT SELECT ON name_first_line_address TO hrd;
GRANT
```

```
tucil_security_mbd=# GRANT SELECT ON name_first_line_address TO hrd;
GRANT
```



- **PROVING THAT HRD CAN ACCESS THE VIEW**

```
tucil_security_mbd=# \c tucil_security_mbd hrd;
Password for user hrd:
You are now connected to database "tucil_security_mbd" as user "hrd".
```

```
tucil_security_mbd=> SELECT * FROM name_first_line_address limit 5;
      concat      |      addressline1
-----+-----
Mary Patterson   | 100 Market Street
Jeff Firrelli    | 100 Market Street
William Patterson | 5-11 Wentworth Avenue
Gerard Bondur    | 43 Rue Jouffroy Dabbans
Anthony Bow      | 100 Market Street
(5 rows)
```

### 3e. Business\_intelligence

- **CREATE USER business\_intelligence**

```
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# DROP USER "Business Intelligence"
tucil_security_mbd=# ;
DROP ROLE
tucil_security_mbd=# CREATE USER business_intelligence ENCRYPTED PASSWORD 'if3140';
CREATE ROLE
```

- **GRANT ACCESS TO USER business\_intelligence**

```
tucil_security_mbd=# GRANT SELECT ON customers, orders, orderdetails, products, productlines to business_intelligence;
GRANT
```

- **PROVE THAT business\_intelligence user can access given privileges.**

- **productlines**

```
tucil_security_mbd=> select image from productlines;
      image
-----
(7 rows)
```

## - products

```
tucil_security_mbd=> select productcode, productname from products limit 5;
```

productcode	productname
S10_1678	1969 Harley Davidson Ultimate Chopper
S10_1949	1952 Alpine Renault 1300
S10_2016	1996 Moto Guzzi 1100i
S10_4698	2003 Harley-Davidson Eagle Drag Bike
S10_4757	1972 Alfa Romeo GTA

(5 rows)

## - Order details

```
tucil_security_mbd=> select * from orderdetails limit 10;
```

ordernumber	productcode	quantityordered	priceeach	orderlinenumber
10100	S18_1749	30	136.00	3
10100	S18_2248	50	55.09	2
10100	S18_4409	22	75.46	4
10100	S24_3969	49	35.29	1
10101	S18_2325	25	108.06	4
10101	S18_2795	26	167.06	1
10101	S24_1937	45	32.53	3
10101	S24_2022	46	44.35	2
10102	S18_1342	39	95.55	2
10102	S18_1367	41	43.13	1

(10 rows)

## - Orders

```
tucil_security_mbd=> select * from orderdetails limit 10;
```

ordernumber	productcode	quantityordered	priceeach	orderlinenumber
10100	S18_1749	30	136.00	3
10100	S18_2248	50	55.09	2
10100	S18_4409	22	75.46	4
10100	S24_3969	49	35.29	1
10101	S18_2325	25	108.06	4
10101	S18_2795	26	167.06	1
10101	S24_1937	45	32.53	3
10101	S24_2022	46	44.35	2
10102	S18_1342	39	95.55	2
10102	S18_1367	41	43.13	1

(10 rows)

## - Customers

```
tucil_security_mbd=> select * from customers limit 10;
```

customerid	customername	contactlastname	contactfirstname	phone	addressline1	addressline2	city
103	Atelier graphique	Schmitt	Carine	40.32.2555	54, rue Royale		Nantes
112	Signal Gift Stores	King	Jean	7025551838	8489 Strong St.		Las Vegas
114	Australian Collectors, Co.	Ferguson	Peter	03 9520 4555	636 St Kilda Road	Level 3	Melbourne
119	La Rochelle Gifts	Labrun	Janine	40.67.8555	67, rue des Cinquante Otages		Nantes
121	Baane Mini Imports	Bergulfsen	Jonas	07-98 9555	Erling Skakkes gate 78		Stavern
124	Mini Gifts Distributors Ltd.	Nelson	Susan	4155551450	5677 Strong St.		San Rafael
125	Havel & Zbyszek Co	Piestrzeniewicz	Zbyszek	(26) 642-7555	ul. Filtrowa 68		Warsaw
128	Blauer See Auto, Co.	Keitel	Roland	+49 69 66 90 2555	Lyonerstr. 34		Frankfurt
129	Mini Wheels Co.	Murphy	Julie	6505555787	5557 North Pendale Street		San Francisco
131	Land of Toys Inc.	Lee	Kwai	2125557818	897 Long Airport Avenue		New York

(10 rows)

### 3f. Accountant

#### - CREATE USER ACCOUNTANT

```
tucil_security_mbd=# CREATE USER accountant ENCRYPTED PASSWORD 'if3140'
tucil_security_mbd=# \du
```

Role name	List of roles Attributes	Member of
business_intelligence		{}
employee_manager		{}
head_office		{}
hrd		{}
postgres	Superuser, Create role, Create DB, Replication, Bypass RLS	{}
sales	Password valid until 2023-05-03 17:57:42.330694+07	{}

```
tucil_security_mbd=# ;
CREATE ROLE
tucil_security_mbd=# /du
tucil_security_mbd=# \du
```

Role name	List of roles Attributes	Member of
accountant		{}
business_intelligence		{}
employee_manager		{}
head_office		{}
hrd		{}
postgres	Superuser, Create role, Create DB, Replication, Bypass RLS	{}
sales	Password valid until 2023-05-03 17:57:42.330694+07	{}

#### - CREATE VIEW PAYMENT untuk data dari bulan september

```
tucil_security_mbd=# CREATE VIEW payment_from_september AS
tucil_security_mbd=# SELECT * FROM payments where paymentdate >= '2021-09-01'::date;
CREATE VIEW
tucil_security_mbd=# SELECT * FROM payment_from_september;
 customernumber | checknumber | paymentdate | amount
-----+-----+-----+-----
(0 rows)

tucil_security_mbd=#
```

#### - GRANT SELECT ACCESS TO accountant

```
tucil_security_mbd=> \c tucil_security_mbd postgres;
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# GRANT SELECT ON payment_from_september TO accountant;
GRANT
```



- **PROVE THAT accountant can access the view**

```
tucil_security_mbd=# \c tucil_security_mbd accountant;
Password for user accountant:
You are now connected to database "tucil_security_mbd" as user "accountant".
tucil_security_mbd=> SELECT * FROM payment_from_september;
 customernumber | checknumber | paymentdate | amount
-----+-----+-----+-----
(0 rows)

tucil_security_mbd=> |
```

### 3g. Procurement

- **CREATE USER procurement**

```
tucil_security_mbd=# CREATE USER procurement ENCRYPTED PASSWORD 'if3140';
CREATE ROLE
```

- **GRANT RWU ACCESS to procurement**

```
tucil_security_mbd=# GRANT SELECT, UPDATE, INSERT ON products to procurement;
GRANT
```

- **PROVING THE RWU Access of procurement**

```
tucil_security_mbd=# \c tucil_security_mbd procurement;
Password for user procurement:
You are now connected to database "tucil_security_mbd" as user "procurement".
```

- **SELECT**

```
tucil_security_mbd=> SELECT productcode, productname, quantityinstock FROM products LIMIT 5;
 productcode | productname | quantityinstock
-----+-----+-----
S10_1678 | 1969 Harley Davidson Ultimate Chopper | 7933
S10_1949 | 1952 Alpine Renault 1300 | 7305
S10_2016 | 1996 Moto Guzzi 1100i | 6625
S10_4698 | 2003 Harley-Davidson Eagle Drag Bike | 5582
S10_4757 | 1972 Alfa Romeo GTA | 3252
(5 rows)
```

- **UPDATE**

```
tucil_security_mbd=> UPDATE products
tucil_security_mbd-> SET quantityinstock = quantityinstock - 1
tucil_security_mbd-> WHERE productcode = 'S10_1678';
UPDATE 1
```

- **INSERT**

```
tucil_security_mbd=> INSERT INTO "products" ("productcode", "productname", "productline", "productscale", "productvendor", "productdescription", "quantityinstock", "buyprice", "msrp") VALUES
tucil_security_mbd-> ('S72_3225', 'test_product_2', 'Ships', '1:70', 'Test', 'TEST', 2, 2.1, 2.3);
INSERT 0 1
```

### 3h. Courier

- **CREATE USER courier**

```
tucil_security_mbd=> \c tucil_security_mbd postgres;
Password for user postgres:
You are now connected to database "tucil_security_mbd" as user "postgres".
tucil_security_mbd=# CREATE USER courier ENCRYPTED PASSWORD 'if3140';
CREATE ROLE
```

- **GRANT SELECT ACCESS ON customers**

```
tucil_security_mbd=# GRANT SELECT on customers to courier;
GRANT
```

- **GRANT SELECT and UPDATE on orders**

```
tucil_security_mbd=# GRANT SELECT, UPDATE on orders to courier
tucil_security_mbd=# ;
GRANT
```

```
tucil_security_mbd=> SELECT SESSION_USER, CURRENT_USER;
 session_user | current_user
-----+-----
 courier      | courier
(1 row)
```

- **PROVING SELECT ON customers**

```
tucil_security_mbd=> SELECT customernumber, customername from customers limit 5;
customernumber |      customername
-----+-----
          103 | Atelier graphique
          112 | Signal Gift Stores
          114 | Australian Collectors, Co.
          119 | La Rochelle Gifts
          121 | Baane Mini Imports
(5 rows)
```

## - PROVING SELECT AND UPDATE on orders

```
tucil_security_mbd=> SELECT ordernumber, shippeddate, status, customernumber FROM orders WHERE status != 'Shipped' limit 5;
ordernumber | shippeddate | status | customernumber
-----+-----+-----+-----
       10164 | 2019-10-23 | Resolved |          452
```

```
tucil_security_mbd=> SELECT ordernumber, shippeddate, status, customernumber FROM orders WHERE customernumber=452 limit 5;
ordernumber | shippeddate | status | customernumber
-----+-----+-----+-----
       10164 | 2019-10-23 | Shipped |          452
       10170 | 2019-11-07 | Shipped |          452
       10392 | 2021-03-12 | Shipped |          452
```

## 2. ACCESS MATRIX

1.

	employees	offices	customers	orders	payments	order Details	products	product Lines
Employee Manager	ru							
Sales				r		r	r	
Business Intelligence			r	r		r	r	r
Courier (internal)			r	ru				
Procurement							rwu	
Accountant					r (view)			

## USING VIEW TO HELP ROLE BASED ACCESS CONTROL

### emp\_customer\_relation

```
(select customerName, TRIM(CONCAT(employee.firstname, ' ', employee.lastname)) as  
employeeName  
From customers, employees  
Where salesRepEmployeeNumber = employeeNumber;)
```

### num\_of\_product\_sold

```
CREATE VIEW num_of_product_sold AS  
  
SELECT products.productName, SUM(orderdetails.quantityOrdered)  
  
FROM products JOIN orderdetails on products.productCode = orderdetails.productCode  
  
JOIN orders on orderdetails.orderNumber = orders.orderNumber AND orders.status =  
'Shipped'  
  
GROUP BY products.productName;
```

### name\_first\_line\_address

```
SELECT TRIM(CONCAT(employee.firstname, ' ', employee.lastname)) as employeeName,  
addressLine1  
  
FROM employees, offices WHERE employees.officeCode = offices.officeCode;
```

### payment\_from\_september

```
SELECT * FROM payments WHERE paymentDate >= '2021-09-01'::date;
```

	emp_customer_rela tion	num_of_product_sol d	name_first_line_add ress	payment_from_sept ember
Head Office	r			

Sales		r		
HRD			r	
Accountant				r