

PRAKTIKUM SISTEM DATABASE II

(Tugas 3)



Disusun Oleh:

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**PROGRAM STUDI S-1 TEKNIK INFORMATIKA
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
UNIVERSITAS PADJADJARAN
JATINANGOR**

2022

1. Apa perbedaan dari Indexing, Primary Key, dan Unique?
 - a. **Indexing** : index masih diperbolehkan memiliki nilai yang berduplikat di kolom yang sama, berbeda dengan primary key dan unique dimana nilai dalam satu kolom tidak boleh ada yang sama.
 - b. **Primary Key** : tidak diperbolehkan memiliki nilai NULL
 - c. **Unique** : diperbolehkan memiliki nilai NULL

2. Buatlah contoh kasus penggunaan Index dan View masing - masing 2 kasus, tuliskan kasusnya lalu sertakan query dan screenshot!
 - a. Index
 - i. Menampilkan produk yang dibeli oleh customer yang berasal dari Amerika Serikat beserta deskripsi produknya

Query:

```
SELECT CONCAT(CONCAT(c.CUST_FIRST_NAME, ' '),
c.CUST_LAST_NAME) AS "FULL_NAME",
        c.NLS_TERRITORY AS "COUNTRY_OF_ORIGIN",
        p.TRANSLATED_NAME AS "PRODUCT_ORDERED",
        p.TRANSLATED_DESCRIPTION AS
"PRODUCT_DESCRIPTION"

FROM OEHR_CUSTOMERS c
JOIN OEHR_ORDERS o
      ON (c.CUSTOMER_ID = o.CUSTOMER_ID)
JOIN OEHR_ORDER_ITEMS i
      ON (o.ORDER_ID = i.ORDER_ID)
JOIN OEHR_PRODUCT_DESCRIPTIONS p
      ON (i.PRODUCT_ID = p.PRODUCT_ID)

WHERE (c.NLS_TERRITORY = 'AMERICA');
```

Output Query:

FULL_NAME	COUNTRY_OF_ORIGIN	PRODUCT_ORDERED	PRODUCT_DESCRIPTION
Matthew Cruse	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Harriett Sutherland	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Matthew Harrosh	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Meenakshi Mason	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Christian Cagi	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Isheerya Roberts	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Ela Fewcott	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Frederica Lyon	AMERICA	LCD Monitor 9"PM	Liquid Cristal Display 9 inch passive monitor
Frederica Romero	AMERICA	Monitor 13"BI	CRT Monitor 17 inch (16 viewable) high resolution, Exceptional image performance and the benefit of additional screen space
Markus Rampling	AMERICA	Monitor 13"BI/F	Monitor 17 inch (16 viewable) high resolution, flat screen
Golden Montal	AMERICA	Monitor 13"BI/F	Monitor 17 inch (16 viewable) high resolution, flat screen
Markus Rampling	AMERICA	Monitor 19"SD/M	Monitor 19 (18 Viewable) short depth, Monochrome
Meenakshi Mason	AMERICA	Monitor 19"SD/M	Monitor 19 (18 Viewable) short depth, Monochrome
Markus Rampling	AMERICA	Monitor 19"SD/M	Monitor 19 (18 Viewable) short depth, Monochrome
Markus Rampling	AMERICA	Monitor 21"HL/M	Monitor 21 inch (20 viewable) high resolution, monochrome
Meenakshi Mason	AMERICA	Monitor 21"HL/M	Monitor 21 inch (20 viewable) high resolution, monochrome
Markus Rampling	AMERICA	Monitor 21"HL/M	Monitor 21 inch (20 viewable) high resolution, monochrome
Golden Montal	AMERICA	Monitor 21"HL/M	Monitor 21 inch (20 viewable) high resolution, monochrome
Frederica Romero	AMERICA	Monitor 21"SD	Monitor 21 inch (20 viewable) short depth
Constantin Welles	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Matthew Cruse	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Christian Cagi	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Snig Landis	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Meenakshi Mason	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Christian Cagi	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg
Markus Rampling	AMERICA	Monitor Hinge - HD	Monitor Hinge, heavy duty, maximum monitor weight 30 kg

Before Indexing:

Operation	Options	Object	Rows	Time	Cost	Bytes	Filter Predicates *	Access Predicates
SELECT STATEMENT			563	1	15	122,171		
HASH JOIN			563	1	15	122,171		"T"."PRODUCT_ID" = "P"."PRODUCT_ID"
NESTED LOOPS			563	1	15	122,171		
NESTED LOOPS								
STATISTICS COLLECTOR								
HASH JOIN			563	1	10	24,209		"O"."ORDER_ID" = "T"."ORDER_ID"
NESTED LOOPS			563	1	10	24,209		
STATISTICS COLLECTOR								
HASH JOIN			89	1	7	3,115		"C"."CUSTOMER_ID" = "O"."CUSTOMER_ID"
NESTED LOOPS			89	1	7	3,115		
STATISTICS COLLECTOR								
TABLE ACCESS	STORAGE FULL	OEHR_CUSTOMERS	40	1	5	1,080	"C"."NLS_TERRITORY" = 'AMERICA'	"C"."NLS_TERRITORY" = 'AMERICA'
TABLE ACCESS	BY INDEX RANGE BATCHED	OEHR_ORDERS	2	1	2	16		
INDEX	RANGE SCAN	OEHR_ORD_CUSTOMER_IX	105	1	1		"O"."CUSTOMER_ID">0	"C"."CUSTOMER_ID" = "O"."CUSTOMER_ID"
TABLE ACCESS	BY INDEX RANGE BATCHED	OEHR_ORDERS	105	1	2	840		
INDEX	RANGE SCAN	OEHR_ORD_CUSTOMER_IX	105	1	1			"O"."CUSTOMER_ID">0
INDEX	RANGE SCAN	OEHR_ORDER_ITEM_LK	6	1	2	48		"O"."ORDER_ID" = "T"."ORDER_ID"
INDEX	STORAGE FAST FULL SCAN	OEHR_ORDER_ITEM_LK	664	1	2	5,312		
INDEX	RANGE SCAN	OEHR_PROD_DESC_PROD_IX						"P"."PRODUCT_ID" = "T"."PRODUCT_ID"
TABLE ACCESS	BY INDEX RANGE	OEHR_PRODUCT_DESCOPTIONS	1	1	5	124		
TABLE ACCESS	STORAGE FULL	OEHR_PRODUCT_DESCOPTIONS	288	1	5	50,172		

Create Index:

```
CREATE INDEX CUST_COUNTRY
ON OEHR_CUSTOMERS(NLS_TERRITORY);
```

After Indexing:

Operation	Options	Object	Rows	Time	Cost	Bytes	Filter Predicates *	Access Predicates
SELECT STATEMENT			563	1	15	122,171		
HASH JOIN			563	1	15	122,171		"T"."PRODUCT_ID" = "P"."PRODUCT_ID"
NESTED LOOPS			563	1	15	122,171		
NESTED LOOPS								
STATISTICS COLLECTOR								
HASH JOIN			563	1	9	24,209		"O"."ORDER_ID" = "T"."ORDER_ID"
NESTED LOOPS			563	1	9	24,209		
STATISTICS COLLECTOR								
HASH JOIN			89	1	5	3,115		"C"."CUSTOMER_ID" = "O"."CUSTOMER_ID"
NESTED LOOPS			89	1	5	3,115		
STATISTICS COLLECTOR								
TABLE ACCESS	BY INDEX RANGE BATCHED	OEHR_CUSTOMERS	40	1	3	1,080		
INDEX	RANGE SCAN	CUST_COUNTRY	40	1	1		"C"."NLS_TERRITORY" = 'AMERICA'	
TABLE ACCESS	BY INDEX RANGE BATCHED	OEHR_ORDERS	2	1	2	16		
INDEX	RANGE SCAN	OEHR_ORD_CUSTOMER_IX	105	1	1		"O"."CUSTOMER_ID">0	"C"."CUSTOMER_ID" = "O"."CUSTOMER_ID"
TABLE ACCESS	BY INDEX RANGE BATCHED	OEHR_ORDERS	105	1	2	840		
INDEX	RANGE SCAN	OEHR_ORD_CUSTOMER_IX	105	1	1			"O"."CUSTOMER_ID">0
INDEX	RANGE SCAN	OEHR_ORDER_ITEM_LK	6	1	2	48		"O"."ORDER_ID" = "T"."ORDER_ID"
INDEX	STORAGE FAST FULL SCAN	OEHR_ORDER_ITEM_LK	664	1	2	5,312		
INDEX	RANGE SCAN	OEHR_PROD_DESC_PROD_IX						"P"."PRODUCT_ID" = "T"."PRODUCT_ID"
TABLE ACCESS	BY INDEX RANGE	OEHR_PRODUCT_DESCOPTIONS	1	1	5	124		
TABLE ACCESS	STORAGE FULL	OEHR_PRODUCT_DESCOPTIONS	288	1	5	50,172		

- ii. Menampilkan produk yang bisa di pesan dengan garansi 1 bulan

Query:

```
SELECT * FROM OEHR_PRODUCT_INFORMATION
WHERE PRODUCT_STATUS = 'orderable' AND
WARRANTY_PERIOD = '+01-00';
```

Output:

PRODUCT_ID	PRODUCT_NAME	PRODUCT_DESCRIPTION	CATEGORY_ID	WEIGHT_CLASS	WARRANTY_PERIOD	SUPPLIER_ID	PRODUCT_STATUS	LIST_PRICE	MIN_PRICE	CATALOG_URL
3045	Monitor 21"D	CRT Monitor 21 inch (20 viewable). Digital Optician technology supports resolutions up to 1600 x 1200 at 75Hz. Dimensions (HxWxD): 8.5 x 18.5 x 7x inch. The introduction of ultra-thin monitor powered Platina Series monitors offer crisp images and the convenience of a digital audio player jack. Just plug in your digital audio player and listen to tunes without powering up your PC.	11	5	+01-00	102051	orderable	999	875	http://www.supp-102051.com/ruf/rufp102045.html
3331	Monitor 21"HR	21 inch monitor (20 inch viewable) high-resolution. This monitor is ideal for business, desktop publishing, and graphics-intensive applications. Enjoy the productivity that a large monitor can bring via more workspace for running applications.	11	5	+01-00	102083	orderable	879	785	http://www.supp-102083.com/ruf/rufp103331.html
3350	Plasma Monitor 19"LE/VGA	19 inch low energy plasma monitor, VGA resolution.	11	3	+01-00	102048	orderable	740	630	http://www.supp-102048.com/ruf/rufp103350.html
3054	Plasma Monitor 19"GA	19 inch standard plasma monitor, XGA resolution. This virtually flat, high-resolution screen delivers outstanding image quality with reduced glare.	11	3	+01-00	102040	orderable	600	519	http://www.supp-102040.com/ruf/rufp103054.html
2411	GP 1280x1024	Graphics Processor, resolution 1280 x 1024 pixels. High-end 3D performance at a mid-range price: 31 million Gouraud shaded triangles per second. Optimized 2D drivers for MCAD and DCC applications, with user-customizable settings. 64MB DDR SDRAM unified frame buffer supporting true color at all supported standard resolutions.	15	1	+01-00	102061	orderable	98	78	http://www.supp-102061.com/ruf/rufp102411.html
2751	MB - 5450	PC type motherboard, 450 Series.	15	2	+01-00	102072	orderable	66	54	http://www.supp-102072.com/ruf/rufp102751.html
3090	RAM - 48 MB	Random Access Memory, SDRAM - 48 MB capacity.	14	1	+01-00	102084	orderable	765	170	http://www.supp-102084.com/ruf/rufp102090.html
3304	KB 101/EN	Standard PC/AT Enhanced Keyboard (101/102-Key). Input locale: English (US).	16	1	+01-00	102044	orderable	48	41	http://www.supp-102044.com/ruf/rufp103304.html
2289	KB 101/ES	Standard PC/AT Enhanced Keyboard (101/102-Key). Input locale: Spanish.	16	1	+01-00	102055	orderable	48	38	http://www.supp-102055.com/ruf/rufp102289.html
3310	KB 101/FR	Standard PC/AT Enhanced Keyboard (101/102-Key). Input locale: French.	16	1	+01-00	102056	orderable	48	39	http://www.supp-102056.com/ruf/rufp103310.html
2058	Mouse +MP	Combination of a mouse and a wrist pad for more comfortable typing and mouse operation.	16	1	+01-00	102058	orderable	23	19	http://www.supp-102058.com/ruf/rufp102058.html
3172	Mouse C/E	Ergonomic, cordless mouse. With track ball for maximum comfort and ease of use.	16	1	+01-00	102099	orderable	41	35	http://www.supp-102099.com/ruf/rufp103172.html
2211	Wrist Pad	A foam strip to support your wrists when using a keyboard.	16	1	+01-00	102072	orderable	4	3	http://www.supp-102072.com/ruf/rufp102211.html
2405	CD-ROM 600x1/24x	600 MB internal read only CD-ROM drive, reading speed 24x.	17	2	+01-00	102052	orderable	117	103	http://www.supp-102052.com/ruf/rufp102405.html
2266	DVD 15x	DVD-ROM drive, speed 15x.	17	3	+01-00	102099	orderable	333	270	http://www.supp-102099.com/ruf/rufp102266.html
3077	DVD 8x	DVD - ROM drive, 8x speed. 888 probably become obsolete pretty soon...	17	3	+01-00	102099	orderable	274	237	http://www.supp-102099.com/ruf/rufp103077.html
3082	Modem - 56/19.2K	Modem - 56KB per second, V.90 PCI Global compliant. External, for power supply TGV.	17	1	+01-00	102048	orderable	81	72	http://www.supp-102048.com/ruf/rufp103082.html

Before Indexing:

Query Plan									
Operation	Options	Object	Rows	Time	Cost	Bytes	Filter Predicates *	Access Predicates	
SELECT STATEMENT			5	1	5	1095			
TABLE ACCESS	STORAGE FULL	OEHR_PRODUCT_INFORMATION	5	1	5	1095	"WARRANTY_PERIOD" = INTERVAL '+000000001-00 YEARS' TO MONTH AND "PRODUCT_STATUS" = 'orderable'	"WARRANTY_PERIOD" = INTERVAL '+000000001-00 YEARS' TO MONTH AND "PRODUCT_STATUS" = 'orderable'	

Create Index:

```
CREATE INDEX PROD_STAT
ON OEHR_PRODUCT_INFORMATION( PRODUCT_STATUS );
```

```
CREATE INDEX PROD_WARRANTY
ON OEHR_PRODUCT_INFORMATION(WARRANTY_PERIOD);
```

After Indexing:

Query Plan									
Operation	Options	Object	Rows	Time	Cost	Bytes	Filter Predicates *	Access Predicates	
SELECT STATEMENT			5	1	5	1095			
TABLE ACCESS	BY INDEX ROWID BATCHED	OEHR_PRODUCT_INFORMATION	5	1	5	1095			
BITMAP CONVERSION	TO ROWIDS								
BITMAP AND									
BITMAP CONVERSION	FROM ROWIDS								
INDEX	RANGE SCAN	PROD_WARRANTY	10	1	1		"WARRANTY_PERIOD" = INTERVAL '+000000001-00 YEARS' TO MONTH		
BITMAP CONVERSION	FROM ROWIDS								
INDEX	RANGE SCAN	PROD_STAT	10	1	1		"PRODUCT_STATUS" = 'orderable'		

- b. View
 - i. Menampilkan karyawan yang menghasilkan gaji diatas 10000

Create View:

```
CREATE VIEW EmpType1 AS
SELECT EMPLOYEE_ID, CONCAT(CONCAT(FIRST_NAME, ' '),
LAST_NAME) AS "EMPLOYEE_NAME", JOB_ID AS "JOB"
FROM OEHR_EMPLOYEES
WHERE SALARY > 10000
ORDER BY SALARY DESC;
```

Calling Query:

```
SELECT * FROM EmpType1
```

Output:

EMPLOYEE_ID	EMPLOYEE_NAME	JOB
100	Steven King	AD_PRES
101	Neena Kochhar	AD_VP
102	Lex De Haan	AD_VP
145	John Russell	SA_MAN
146	Karen Partners	SA_MAN
201	Michael Hartstein	HR_MGR
205	Shelley Higgins	AC_MGR
147	Alberto Emurzo	SA_MAN
108	Nancy Greenberg	FI_MGR
148	Lisa Ozer	SA_REP
149	Gerald Cambrault	SA_MAN
114	Den Raphaely	PLU_MGR
124	Elton Abel	SA_REP
149	Flore Chutney	SA_MAN
142	Clara Vahney	SA_REP

- ii. Menampilkan alamat lengkap dari lokasi suatu departemen yang berada di Amerika Serikat

Create View:

```
CREATE VIEW DeptInUSA AS
SELECT  d.DEPARTMENT_NAME,
        l.STREET_ADDRESS,
        l.POSTAL_CODE,
        l.CITY,
        l.STATE_PROVINCE
FROM OEHR_DEPARTMENTS d
JOIN OEHR_LOCATIONS l
    ON (d.LOCATION_ID = l.LOCATION_ID)
WHERE l.COUNTRY_ID = 'US';
```

Calling Query:

```
SELECT * FROM DeptInUSA;
```

Output:

DEPARTMENT_NAME	STREET_ADDRESS	POSTAL_CODE	CITY	STATE_PROVINCE
IT	2014 Jabberwocky Rd	26192	Southlake	Texas
Shipping	2011 Interiors Blvd	99236	South San Francisco	California
Administration	2004 Charade Rd	98199	Seattle	Washington
Purchasing	2004 Charade Rd	98199	Seattle	Washington
Executive	2004 Charade Rd	98199	Seattle	Washington
Finance	2004 Charade Rd	98199	Seattle	Washington
Accounting	2004 Charade Rd	98199	Seattle	Washington
Treasury	2004 Charade Rd	98199	Seattle	Washington
Corporate Tax	2004 Charade Rd	98199	Seattle	Washington
Control And Credit	2004 Charade Rd	98199	Seattle	Washington
Shareholder Services	2004 Charade Rd	98199	Seattle	Washington
Benefits	2004 Charade Rd	98199	Seattle	Washington
Manufacturing	2004 Charade Rd	98199	Seattle	Washington
Construction	2004 Charade Rd	98199	Seattle	Washington
Contracting	2004 Charade Rd	98199	Seattle	Washington
Operations	2004 Charade Rd	98199	Seattle	Washington
IT Support	2004 Charade Rd	98199	Seattle	Washington
NOC	2004 Charade Rd	98199	Seattle	Washington
IT Helpdesk	2004 Charade Rd	98199	Seattle	Washington
Government Sales	2004 Charade Rd	98199	Seattle	Washington
Retail Sales	2004 Charade Rd	98199	Seattle	Washington
Recruiting	2004 Charade Rd	98199	Seattle	Washington
Payroll	2004 Charade Rd	98199	Seattle	Washington