



Program Studi : Teknik Informatika

Laporan Praktikum : Basis Data 2

Praktikum 9

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**STT Terpadu Nurul Fikri
Tahun 2018**

Inheritance

Tugas Pendahuluan

1. Jelaskan apa yang dimaksud Object Oriented Database

Object Oriented Database merupakan model basisdata dimana informasi disimpan dalam bentuk object dan salah satu jenis database dimana data direpresentasikan dalam bentuk object serta sebuah sistem database yang menggabungkan semua konsep penting dari object oriented

2. Sebutkan vendor database apa saja yang telah berbasis Object Oriented

- PostgreSQL
- Oracle
- SQL Server
- IBM DB2

3. Jelaskan keuntungan dari fitur inheretance pada Object Oriented Database

- Mengizinkan satu class objek untuk didefinisikan
- Membagi data dalam lingkup hirarki
- Mendukung reusabilitas kode
- Record record pada tabel turunan dapat diakses dari tabel induk
- Dapat menggunakan fungsi atau kode yang telah dibuat dan ditambah dengan atribut dan method baru
- Tidak mengulangi query
- Tabel turunan mewarisi kolom kolom dari tabel induknya

Keuntungan lainnya inheritance terbagi menjadi beberapa macam yaitu :

- Single inheritance
- Multiple inheritance
- Repeated inheritance
- Selective inheritance

Percobaan 1 :

1. Buatlah database dbcampus

```
apsql@mazharrasyad: ~  
mzharrasyad@mzharrasyad:~$ sudo su - apsql  
apsql@mzharrasyad:~$ /home/apsql/pg105/bin/pg_ctl -D /home/apsql/datapg/ -l log  
file start  
waiting for server to start..... done  
server started  
apsql@mzharrasyad:~$ /home/apsql/pg105/bin/createdb dbcampus -U apsql -p5555 -h  
localhost  
Password:  
apsql@mzharrasyad:~$ /home/apsql/pg105/bin/psql dbcampus -U apsql -p5555 -h loc  
alhost  
Password for user apsql:  
psql (10.5)  
Type "help" for help.  
dbcampus=# \q
```

2. Buat table member

```
apsql@mazharrasyad: ~  
GNU nano 2.5.3      File: /tmp/psql.edit.6566.sql      Modified  
  
create table member(  
id serial primary key,  
nama_lengkap varchar(50),  
email varchar(40),  
password varchar(8),  
tmp_lahir varchar(30),  
tgl_lahir date  
);  
  
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos  
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line
```

3. Tampilkan skema table member

```
apsql@mazharrasyad: ~
dbcampus=# \d member
Table "public.member"
Column | Type | Collation | Nullable | Default
-----+-----+-----+-----+-----
id      | integer |          | not null | nextval('member_id_seq'::regclass)
nama_lengkap | character varying(50) |          |          |
email   | character varying(40) |          |          |
password | character varying(8) |          |          |
tmp_lahir | character varying(30) |          |          |
tgl_lahir | date |          |          |
Indexes:
    "member_pkey" PRIMARY KEY, btree (id)
Number of child tables: 1 (Use \d+ to list them.)
dbcampus=#
```

4. Buat table mahasiswa turunan dari table member

```
apsql@mazharrasyad: ~
GNU nano 2.5.3 File: /tmp/psql.edit.6566.sql Modified
create table mahasiswa(
nim varchar(10) unique,
gelar varchar(20)
)
inherits(member);
```

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line

5. Tampilkan skema table mahasiswa.

```
apsql@mazharrasyad: ~
dbcampus=# \d mahasiswa
Table "public.mahasiswa"
Column | Type | Collation | Nullable | Default
-----+-----+-----+-----+-----
id      | integer |          | not null | nextval('member_id_seq'::regclass)
nama_lengkap | character varying(50) |          |          |
email   | character varying(40) |          |          |
password | character varying(8) |          |          |
tmp_lahir | character varying(30) |          |          |
tgl_lahir | date |          |          |
nim     | character varying(10) |          |          |
gelar   | character varying(20) |          |          |
Indexes:
    "mahasiswa_nim_key" UNIQUE CONSTRAINT, btree (nim)
Inherits: member
dbcampus=#
```

6. Buat table dosen turunan dari table member

```
apsql@mazharrasyad: ~
GNU nano 2.5.3 File: /tmp/psql.edit.3442.sql Modified
create table dosen(
nidn varchar(10) unique,
gelar varchar(20)
)
inherits(member);
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line
```

7. Jalankan perintah melihat skema table dosen

```
apsql@mazharrasyad: ~
dbcampus=# \d dosen

Table "public.dosen"
Column | Type          | Collation | Nullable | Default
-----+-----+-----+-----+-----
id      | integer       |           | not null | nextval('member_id_seq'::regclass)
nama_lengkap | character varying(50) |           |          |
email   | character varying(40) |           |          |
password | character varying(8) |           |          |
tmp_lahir | character varying(30) |           |          |
tgl_lahir | date          |           |          |
nidn    | character varying(10) |           |          |
gelar   | character varying(20) |           |          |
Indexes:
    "dosen_nidn_key" UNIQUE CONSTRAINT, btree (nidn)
Inherits: member
dbcampus=#
```

8. Isi data mahasiswa, minimal 5 data mahasiswa

```
apsql@mazharrasyad: ~
GNU nano 2.5.3 File: /tmp/psql.edit.3442.sql Modified
insert into mahasiswa values
(1,'Muhammad Herfian','herfianajjah@gmail.com','123456','Depok','1998-02-28','0110217103','S.Kom'),
(2,'Muhammad Adil','adilajjah@gmail.com','1234567','Jakarta','1999-03-29','0110217104','S.Kom'),
(3,'Muhammad Akbar','akbarajjah@gmail.com','12345678','Depok','1997-02-28','0110217105','S.Kom'),
(4,'Muhammad Naufal','naufalajjah@gmail.com','12345679','Jakarta','1996-03-29','0110217106','S.Kom'),
(5,'Muhammad Fikri','fikriajjah@gmail.com','12345670','Bekasi','2000-04-30','0110217107','S.Kom');

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^Y Prev Page
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line ^V Next Page
```

9. Isi data dosen, minimal 3 data dosen

```
apsql@mazharrasyad: ~
GNU nano 2.5.3 File: /tmp/psql.edit.3442.sql Modified
insert into dosen values
(1,'Pak Indra','indradosen@gmail.com','654321','Depok','1978-02-28','1101102171','S.Kom'),
(2,'Pak Hendra','hendradosen@gmail.com','754321','Jakarta','1979-03-29','1101102172','S.Kom'),
(3,'Pak Edo','edodosen@gmail.com','854321','Bekasi','1980-04-30','1101102173','S.Kom');

^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^Y Prev Page
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line ^V Next Page
```

10. Tampilkan seluruh data dosen

```
apsql@mazharrasyad: ~
dbcampus=# select * from dosen;
 id | nama_lengkap | email | password | tmp_lahir | tgl_lahir | nidn | gelar
-----+-----+-----+-----+-----+-----+-----+-----
  1 | Pak Indra | indradosen@gmail.com | 654321 | Depok | 1978-02-28 | 1101102171 | S.Kom
  2 | Pak Hendra | hendradosen@gmail.com | 754321 | Jakarta | 1979-03-29 | 1101102172 | S.Kom
  3 | Pak Edo | edodosen@gmail.com | 854321 | Bekasi | 1980-04-30 | 1101102173 | S.Kom
(3 rows)

dbcampus=#
```

11. Tampilkan seluruh data mahasiswa

```
apsql@mazharrasyad: ~
dbcampus=# select * from mahasiswa;
 id | nama_lengkap | email | password | tmp_lahir | tgl_lahir | nim | gelar
-----+-----+-----+-----+-----+-----+-----+-----
  1 | Muhammad Herfian | herfianajjah@gmail.com | 123456 | Depok | 1998-02-28 | 0110217103 | S.Kom
  2 | Muhammad Adil | adilajjah@gmail.com | 1234567 | Jakarta | 1999-03-29 | 0110217104 | S.Kom
  3 | Muhammad Akbar | akbarajjah@gmail.com | 12345678 | Depok | 1997-02-28 | 0110217105 | S.Kom
  4 | Muhammad Naufal | naufalajjah@gmail.com | 12345679 | Jakarta | 1996-03-29 | 0110217106 | S.Kom
  5 | Muhammad Fikri | fikriajjah@gmail.com | 12345670 | Bekasi | 2000-04-30 | 0110217107 | S.Kom
(5 rows)

dbcampus=#
```

12. Tampilkan seluruh data member

```
apsql@mazharrasyad: ~
dbcampus=# select * from member;
 id | nama_lengkap | email | password | tmp_lahir | tgl_lahir
-----+-----+-----+-----+-----+-----
  1 | Muhammad Herfian | herfianajjah@gmail.com | 123456 | Depok | 1998-02-28
  2 | Muhammad Adil | adilajjah@gmail.com | 1234567 | Jakarta | 1999-03-29
  3 | Muhammad Akbar | akbarajjah@gmail.com | 12345678 | Depok | 1997-02-28
  4 | Muhammad Naufal | naufalajjah@gmail.com | 12345679 | Jakarta | 1996-03-29
  5 | Muhammad Fikri | fikriajjah@gmail.com | 12345670 | Bekasi | 2000-04-30
  1 | Pak Indra | indradosen@gmail.com | 654321 | Depok | 1978-02-28
  2 | Pak Hendra | hendradosen@gmail.com | 754321 | Jakarta | 1979-03-29
  3 | Pak Edo | edodosen@gmail.com | 854321 | Bekasi | 1980-04-30
(8 rows)

dbcampus=#
```

13. Apa kesimpulan anda dari percobaan 1 ini ? jelaskan

Kesimpulannya dalam inheretance terdapat 2 kelas yaitu subclass dan superclass. Pada contoh diatas superclassnya adalah table member dan sisanya adalah subclass dari tabel member yaitu tabel mahasiswa dan dosen. Oleh karena itu pada tabel mahasiswa dan dosen akan memiliki kolom-kolom pada tabel member dapat dilihat pada gambar-gambar diatas.

Sebagai contoh jika ingin memasukkan data pada tabel mahasiswa dan dosen maka kolom yang ada pada tabel member harus juga diisi namun tidak berlaku sebaliknya yaitu belum tentu jika ingin mengisi tabel member maka tidak harus mengisi tabel mahasiswa dan dosen karena berlaku aturan inheretance

- Buat table departemen

```
apsql@mazharrasyad: ~
GNU nano 2.5.3      File: /tmp/psql.edit.7031.sql      Modified

create table departemen(
id serial primary key,
nama varchar(30)
);

^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line
```

- Buat table departemen turunan dari table member dan berelasi dengan departemen

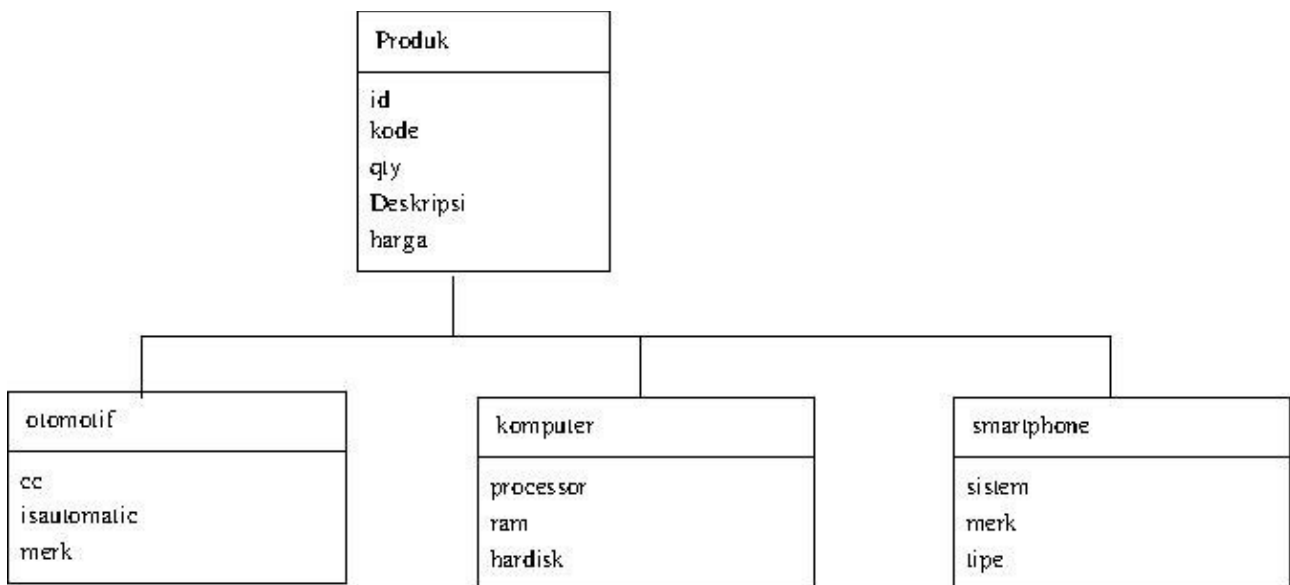
```
apsql@mazharrasyad: ~
GNU nano 2.5.3      File: /tmp/psql.edit.7031.sql      Modified

create table staf(
nip varchar(10) unique,
gaji double precision,
iddept integer references departemen(id)
)
inherits(member);

^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line
```


Mandiri !!!

1. Perhatikan diagram hirarki object berikut ini:



2. Pada database dbkoperasi buatlah table-table sesuai dengan hirarki object diatas

```
apsql@mazharrasyad: ~
apsql@mazharrasyad:~$ /home/apsql/pg105/bin/createdb dbkoperasi -U apsql -p5555
-h localhost
Password:
apsql@mazharrasyad:~$ /home/apsql/pg105/bin/psql dbkoperasi -U apsql -p5555 -h l
ocalhost
Password for user apsql:
psql (10.5)
Type "help" for help.

dbkoperasi=#
```

```
apsql@mazharrasyad: ~
GNU nano 2.5.3      File: /tmp/psql.edit.4185.sql      Modified

create table produk(
id serial primary key,
kode varchar(50),
qty int,
deskripsi text,
harga double precision
);

create table otomotif(
cc double precision,
isautomatic varchar(50),
merk varchar(50)
) inherits (produk);

create table komputer(
processor varchar(50),
ram varchar(50),
hardisk varchar(50)
) inherits(produk);

create table smartphone(
sistem varchar(50),
merk varchar(50),
tipe varchar(50)
) inherits (produk);

^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line
```

3. Setiap table masing-masing di isi dengan 3 data

```
apsql@mazharrasyad: ~
GNU nano 2.5.3      File: /tmp/psql.edit.4185.sql      Modified

insert into otomotif values
(1,'01',1,'Otomotif A',1000000,100,'Ya','Honda'),
(2,'02',2,'Otomotif B',2000000,200,'Tidak','Yamaha'),
(3,'03',3,'Otomotif C',3000000,300,'Ya','Suzuki');

insert into komputer values
(4,'K1',4,'Komputer D',4000000,'Intel','1 GB','100 GB'),
(5,'K2',5,'Komputer E',5000000,'AMD','2 GB','200 GB'),
(6,'K3',6,'Komputer F',6000000,'Intel','3 GB','300 GB');

insert into smartphone values
(7,'S1',7,'Smartphone G',7000000,'Lolipop','Samsung','Android'),
(8,'S2',8,'Smartphone H',8000000,'Oreo','Asus','IOS'),
(9,'S3',9,'Smartphone I',9000000,'KitKat','Coolpad','Android');

^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify    ^C Cur Pos
^X Exit      ^R Read File  ^\ Replace    ^U Uncut Text ^T To Spell   ^_ Go To Line
```

4. Tampilkan masing2 dari table-table diatas

- Tabel Produk

```
apsql@mazharrasyad: ~
dbkoperasi=# select * from produk;
id | kode | qty | deskripsi | harga
-----+-----+-----+-----+-----
1  | O1   | 1   | Otomotif A | 1000000
2  | O2   | 2   | Otomotif B | 2000000
3  | O3   | 3   | Otomotif C | 3000000
4  | K1   | 4   | Komputer D | 4000000
5  | K2   | 5   | Komputer E | 5000000
6  | K3   | 6   | Komputer F | 6000000
7  | S1   | 7   | Smartphone G | 7000000
8  | S2   | 8   | Smartphone H | 8000000
9  | S3   | 9   | Smartphone I | 9000000
(9 rows)

dbkoperasi=#
```

- Tabel Otomotif

```
apsql@mazharrasyad: ~
dbkoperasi=# select * from otomotif;
id | kode | qty | deskripsi | harga | cc | isautomatic | merk
-----+-----+-----+-----+-----+-----+-----+-----
1  | O1   | 1   | Otomotif A | 1000000 | 100 | Ya          | Honda
2  | O2   | 2   | Otomotif B | 2000000 | 200 | Tidak       | Yamaha
3  | O3   | 3   | Otomotif C | 3000000 | 300 | Ya          | Suzuki
(3 rows)

dbkoperasi=#
```

- Tabel Komputer

```
apsql@mazharrasyad: ~
dbkoperasi=# select * from komputer;
id | kode | qty | deskripsi | harga | processor | ram | hardisk
-----+-----+-----+-----+-----+-----+-----+-----
4  | K1   | 4   | Komputer D | 4000000 | Intel      | 1 GB | 100 GB
5  | K2   | 5   | Komputer E | 5000000 | AMD        | 2 GB | 200 GB
6  | K3   | 6   | Komputer F | 6000000 | Intel      | 3 GB | 300 GB
(3 rows)

dbkoperasi=#
```

- Tabel Smartphone

```
apsql@mazharrasyad: ~
dbkoperasi=# select * from smartphone;
id | kode | qty | deskripsi | harga | sistem | merk | tipe
-----+-----+-----+-----+-----+-----+-----+-----
7  | S1   | 7   | Smartphone G | 7000000 | Lolipop  | Samsung | Android
8  | S2   | 8   | Smartphone H | 8000000 | Oreo     | Asus   | IOS
9  | S3   | 9   | Smartphone I | 9000000 | KitKat   | Coolpad | Android
(3 rows)

dbkoperasi=#
```

Referensi

- <https://sis.binus.ac.id/2017/08/31/odbms/>
- <http://innodious.blogspot.com/2014/06/object-oriented-database.html>
- <http://nilamahandika.blogspot.com/2010/06/object-oriented-database.html>
- [https://www.academia.edu/30567492/Program Studi Teknik Informatika Laporan Praktikum Basis Data 2 Object Oriented Database Inheretance](https://www.academia.edu/30567492/Program_Studi_Teknik_Informatika_Laporan_Praktikum_Basis_Data_2_Object_Oriented_Database_Inheretance)