Outline

This is a database to track the plants grown in one's backyard garden. There could be many raised beds and hundreds of seeds to track. I hope it can be used to streamline planting and maximize productivity of the garden so you can figure out what to plant each month. You can follow to the link to each of the table to interact with the database and use the planning page to schedule the garden plants.

Database Outline

Entities:

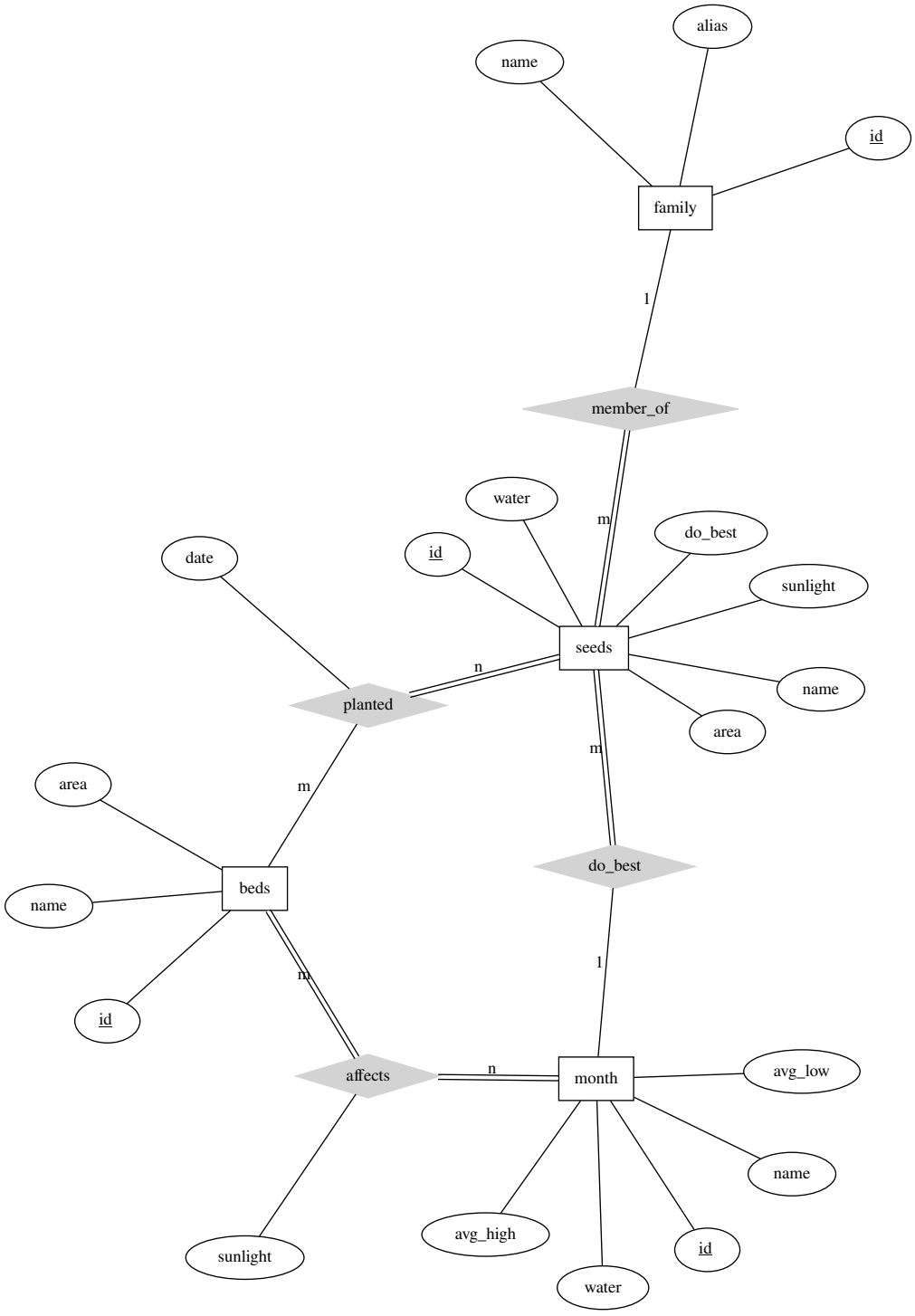
- Beds - id, name, area
- Seeds - id, name, do_best, sunlight, area, water
- Month - id, name, avg_high, avg_low, water
- Family - id, name, alias

Relationship:

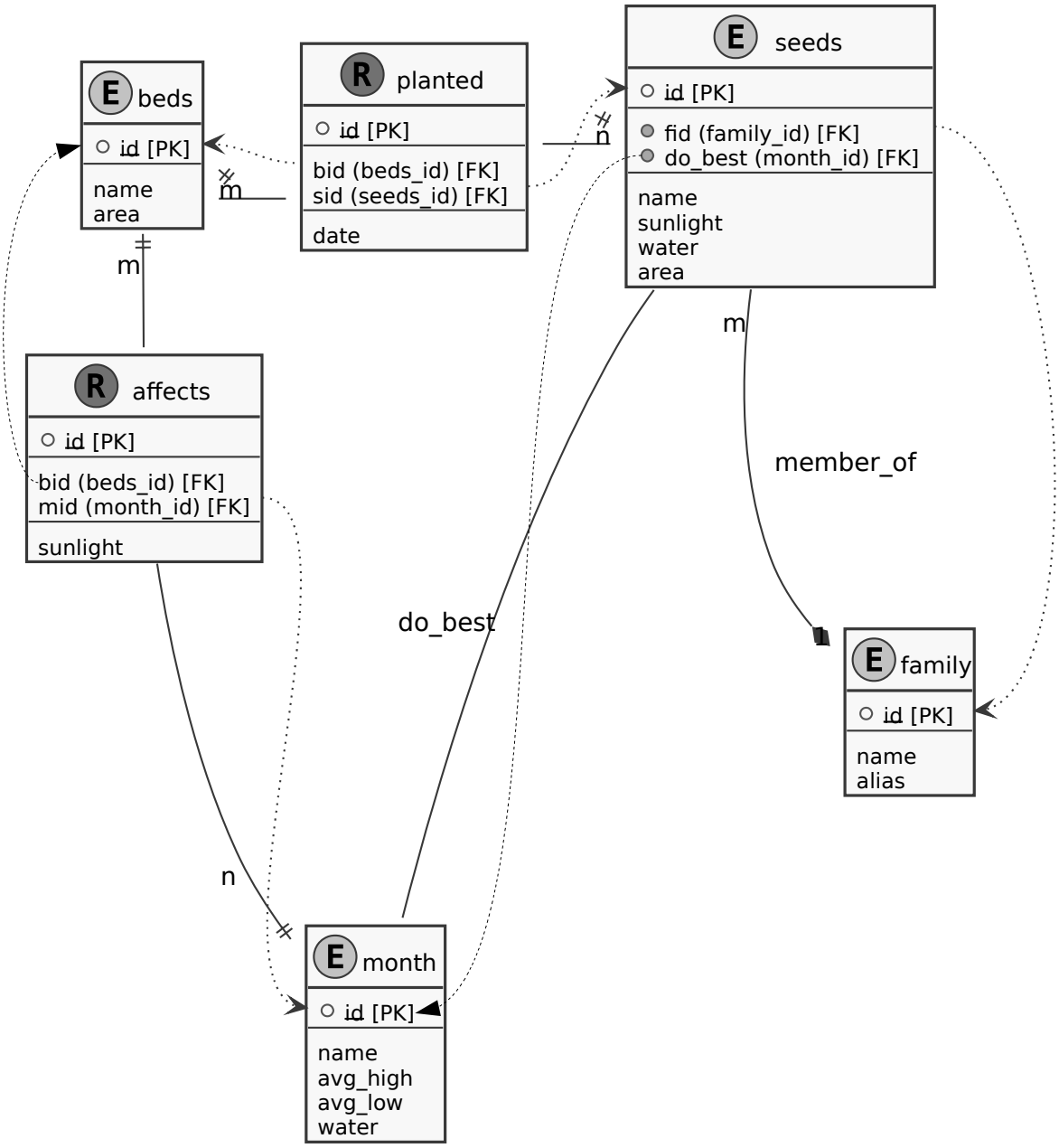
- many-to-many: seeds can be planted in at least one suitable beds and a bed can contain multiple different plants. This can also be used to track plants and not plant the same thing in the same bed year after year.
- one-to-many: each seed must come from a plant family and a family can have multiple seeds.
- one-to-many: each seed is best planted in a specific month but a month can be the best time for many plants to grow.
- many-to-many: each month affects the sunlight each bed gets over the course of the year.

[Database Outline] continued on next page...

ER Diagram


alias
name
id
family
1
member_of
water
m
do_best
id
date
sunlight
seeds
n
name
planted
area
m
area
m
do_best
beds
name
1
n
id
affects
n
month
avg_low
name
avg_high
id
sunlight
water

Schema



Data Definition Queries

```
DROP TABLE IF EXISTS `affects`;
DROP TABLE IF EXISTS `planted`;
DROP TABLE IF EXISTS `seeds`;
DROP TABLE IF EXISTS `beds`;
DROP TABLE IF EXISTS `month`;
DROP TABLE IF EXISTS `family`;

-- create tables  and relations
```

[Data Definition Queries] continued on next page...

```
create table beds (
     id int auto_increment primary key,
     name varchar(255) not null,
     area int not null
) ENGINE=InnoDB;

create table family (
     id int auto_increment primary key,
     name varchar(255) not null,
     alias varchar(255) not null
) ENGINE=InnoDB;


create table month (
     id int auto_increment primary key,
     name varchar(255) not null,
     avg_high int not null,
     avg_low int not null,
     water float not null
) ENGINE=InnoDB;

create table seeds (
     id int auto_increment primary key,
     fid int not null,
     name varchar(255) not null,
     do_best int not null,
     sunlight varchar(255) not null,
     water float not null,
     area int not null,
     foreign key (fid) references family(id),
     foreign key (do_best) references month(id)
) ENGINE=InnoDB;

create table planted (
     id int auto_increment primary key,
     sid int not null,
     bid int not null,
     date_planted date not null,
     unique key (sid, bid),
     foreign key (sid) references seeds(id),
     foreign key (bid) references beds(id)
) ENGINE=InnoDB;

create table affects (
     id int auto_increment primary key,
     mid int not null,
     bid int not null,
     sunlight int not null,
     unique key (mid, bid),
     foreign key (mid) references month(id),
     foreign key (bid) references beds(id)
) ENGINE=InnoDB;
```

[Data Definition Queries] continued on next page...

```
-- populate family groups
insert into family(name, alias)
values
('Solanaceae', 'nightshade'),
('Fabaceae', 'legumes'),
('Brassicacae', 'mustard'),
('Cucurbitaceae', 'melon'),
('Liliaceae', 'onion');

insert into beds(name, area)
values
('alpha', '10000'),
('beta', '1222'),
('chi', '232323'),
('delta', '454545');

-- populate month data
insert into month(name, avg_high, avg_low, water)
values
('jan', '47', '33', '6.46'),
('feb', '51', '35', '5.71'),
('mar', '56', '37', '4.59'),
('apr', '60', '39', '3.98'),
('may', '67', '44', '2.30'),
('jun', '73', '48', '1.46'),
('jul', '81', '51', '0.57'),
('aug', '82', '51', '0.73'),
('sep', '77', '48', '1.47'),
('oct', '65', '41', '3.02'),
('nov', '52', '38', '6.94'),
('dec', '46', '33', '7.43');

insert into seeds(fid, name, do_best, sunlight, water, area)
values
((select id from family where name='Solanaceae'), 'tomato',
     (select id from month where name='jan'),
     '8', '0.2', '432'),
((select id from family where name='Fabaceae'), 'pea',
     (select id from month where name='may'),
     '6', '0.4', '9'),
((select id from family where name='Brassicacae'), 'brocalli',
     (select id from month where name='jun'),
     '7', '0.5', '216'),
((select id from family where name='Cucurbitaceae'), 'cucumber',
     (select id from month where name='jul'),
     '8', '0.3', '432'),
((select id from family where name='Liliaceae'), 'onion',
     (select id from month where name='aug'),
     '4', '0.3', '15');
```

[Data Definition Queries] continued on next page...

```
insert into planted(sid, bid, date_planted)
values
((select id from seeds where name='pea'),
     (select id from beds where name='alpha'), '2017-4-12');

insert into affects (mid, bid, sunlight)
values
((select id from month where name='jan'),
     (select id from beds where name='alpha'), '10');
```

Data Manipulation Queries

```
-- retrieve all seeds
SELECT s.id, s.name, f.name as fid, m.name as do_best, s.sunlight, s.water, s.area
FROM seeds s INNER JOIN family f ON s.fid=f.id
INNER JOIN month m ON s.do_best=m.id ;

-- retrieve seed by id
SELECT s.id, s.name, f.name as fid, m.name as do_best, s.sunlight, s.water, s.area
FROM seeds s INNER JOIN family f ON s.fid=f.id
INNER JOIN month m ON s.do_best=m.id
WHERE s.id = [:seed_id];

-- filter all seeds by conditions
SELECT s.id, s.name, f.name as fid, m.name as do_best, s.sunlight, s.water, s.area
FROM seeds s INNER JOIN family f ON s.fid=f.id
INNER JOIN month m ON s.do_best=m.id
WHERE name=[name_filter] AND do_best=[month filter] AND sunlight=[sun filter]
AND water=[water filter] AND area=[area filter] AND family=[family filter];

--add a seed
INSERT INTO seeds (`fid`,`name`,`do_best`,`sunlight`,`water`,`area`)
values
([family name], [name], [do_best], [sunlight], [water], [area]);

--update a seed
UPDATE seeds SET fid=[fid], name=[name], do_best=[month], sunlight=[sun],
water=[water], area=[area] WHERE id=[seed id]

-- retrieve a bed
SELECT * FROM beds b WHERE b.id=[bed_id];

--retieve all beds
SELECT * FROM beds b;

--retrieve all beds on conditions
SELECT * FROM beds b WHERE name=[name] AND area=[area];

--insert into bed
INSERT INTO beds (`name`,`area`) values ([name],[area]);
```

```
--update a bed
UPDATE beds SET name=[name], area=[area] WHERE id=[bed id];

--retrieve a month
SELECT * FROM month b WHERE b.id=[month id];

--retireve all months
SELECT * FROM month b;

--retrieve all on conditions
SELECT * FROM month b WHERE name=[name] AND avg_high=[high]
AND avg_low=[low] AND water=[water];

--insert into month
INSERT INTO month (`name`,`avg_high`, `avg_low`,`water`) values
([name], [avg_high], [avg_low], [water]);

--update a month
UPDATE month SET name=[name], avg_high=[high], avg_low=[low], water=[water]
WHERE id=[id];

--retrieve a family
SELECT * FROM family b WHERE b.id=[family id]

--retrieve all family
SELECT * FROM family b

--retrieve family on conditons
SELECT * FROM family b WHERE name=[name] AND alias=[alias];

--insert to family
INSERT INTO family (`name`,`alias`) values ([name],[alias]);

--update a family
UPDATE family SET name=?, alias=? WHERE id=[family id];

--select affect by id
SELECT a.id, b.name as bid, m.name as mid, sunlight FROM affects a
INNER JOIN beds b ON a.bid=b.id
INNER JOIN month m ON a.mid=m.id
WHERE a.id=[affect id];

--retrieve all affects
SELECT a.id, b.name as bid, m.name as mid, sunlight FROM affects a
INNER JOIN beds b ON a.bid=b.id
INNER JOIN month m ON a.mid=m.id;

--select affects on conditions
select * from (SELECT a.id, b.name as bid, m.name as mid, sunlight
FROM affects a INNER JOIN beds b ON a.bid=b.id
INNER JOIN month m ON a.mid=m.id) as tmp1
WHERE bid=[bed name] AND mid=[month name] AND sunlight=[sun];
```

[Data Manipulation Queries] continued on next page...

```
--insert affect
INSERT INTO affects (`bid`,`mid`,`sunlight`) values ([bed],[month],[sunlight]);

--update effect id
UPDATE affects SET bid=[bed name], mid=[month name]  sunlight=[sunlight]
WHERE id=[affect id];

--select a planted
SELECT p.id, b.name as bid, s.name as sid, date_planted
FROM planted p INNER JOIN beds b ON p.bid=b.id
INNER JOIN seeds s ON p.sid=s.id
WHERE p.id=[p_id];

--select all planted
SELECT p.id, b.name as bid, s.name as sid, date_planted
FROM planted p INNER JOIN beds b ON p.bid=b.id
INNER JOIN seeds s ON p.sid=s.id;

--select all on conditions
select * from (SELECT p.id, b.name as bid, s.name as sid, date_planted
FROM planted p INNER JOIN beds b ON p.bid=b.id
INNER JOIN seeds s ON p.sid=s.id) as tmp1
WHERE bid=[bed name] AND sid=[seed name] AND date_planted=[date_time];

--insert into planted
INSERT INTO planted (`bid`,`sid`,`date_planted`) values
([bed], [seed],[date_time]);

--update planted
UPDATE planted SET bid=[bed], sid=[seed], date_planted=[date_time]
WHERE id=[planted-id];

--retrieve all planning where sunlight is sufficient for the seed
SELECT a.id, b.name as bid, m.name as mid, s.name as seeds, f.name as family
FROM affects a INNER JOIN beds b ON a.bid=b.id
INNER JOIN month m ON a.mid=m.id
INNER JOIN seeds s ON s.do_best=m.id
INNER JOIN family f ON s.fid=f.id
where s.sunlight <a.sunlight;

--retrieve all planning on conditions
select * from (SELECT a.id, b.name as bid, m.name as mid,
s.name as seeds, f.name as family
FROM affects a INNER JOIN beds b ON a.bid=b.id
INNER JOIN month m ON a.mid=m.id
INNER JOIN seeds s ON s.do_best=m.id
INNER JOIN family f ON s.fid=f.id
where s.sunlight < a.sunlight) as tmp1
WHERE bid=[bed name] AND mid=[month name]
AND seeds=[seed name] AND family=[family name];
```

[Data Manipulation Queries] continued on next page...