**Veritabanı Oluşturulması**

Projemizde tablolarımızı oluşturduğumuz, gerekli aramaları ve değiştirmeleri gerçeklediğimiz platform PostgreSQL’dir. Toplam 7 adet tablomuz olup bunlar city, data, farmer, opposite, product, productdata ve region şeklindedir. Tabloların içerikleri sırasıyla

city: cityid(PK), regionid, cityname.

data: dataid(PK), farmerid, type, year, amount.

farmer: farmerid(PK), mail, name, cityid, password, lastname.

opposite: productid(PK), oppositeproductid(PK).

product: productid(PK), region, name, coefficient, type.

productdata: dataid(PK), productid, area, year, farmerid, ton.

region: regionid(PK), regionname.

Şeklindedir. Bunun yanı sıra 7 adet relation olup sırasıyla

farmer ⬄ city : works\_in

farmer ⬄ data : enters

farmer ⬄ productdata : enters

data ⬄ productdata : connected

region ⬄ product : grows

region ⬄ city : inside\_of

product ⬄ product : opposite

Şeklindedir. Son olarak sayfalarda kullandığımız SQL scriptleri sırasıyla

**index:**

SELECT year, SUM(workeramount) FROM tohumschema.data WHERE (year=today.year ) GROUP BY year

SELECT year, SUM(workeramount) FROM tohumschema.data GROUP BY year ORDER BY year

SELECT year, SUM(workeramount) FROM tohumschema.data GROUP BY year

SELECT year, SUM(area) FROM tohumschema.productdata GROUP BY year

SELECT d.name, *COUNT*(dt.productid) FROM tohumschema.productdata dt, tohumschema.product d WHERE d.productid = dt.productid GROUP BY d.name

SELECT f.name, s.opertype, s.logdatetime FROM tohumschema.systemlog s, tohumschema.farmer f WHERE ((s.opertype = '1' or s.opertype = '2' or s.opertype = '3' or s.opertype = '4' or s.opertype = '5') and f.farmerid = s.farmerid) ORDER BY s.logdatetime DESC;")

SELECT f.name, f.mail,s.opertype, s.logdatetime FROM tohumschema.systemlog s, tohumschema.farmer f WHERE ((opertype = '4' or opertype = '5') and f.farmerid = s.farmerid) ORDER BY logdatetime DESC;")

**user:**

select name from tohumschema.farmer where farmerid=id

**login:**

select farmerid,password from tohumschema.farmer where mail=email

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( id, 1, TIMESTAMP datatime.today() )

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( id, 1, TIMESTAMP datatime.today())

**register:**

select *\** from tohumschema.farmer where mail=email

INSERT into tohumschema.farmer ( mail, name, lastname, password, cityid) values(email, first\_name, last\_name, first\_password, city)"

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( farmerid, 2, TIMESTAMP datetime.today())

**fruits:**

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 group by p.name, p.coefficient, r.regionname, p.productid")  
  
"select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 and name=name group by p.name, p.coefficient, r.regionname, p.productid"   
  
"select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 and r.regionid=region group by p.name, p.coefficient, r.regionname, p.productid"   
  
select p.name, p.coefficient, r.regionname, pd.area, pd.ton from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 and p.productid=(select oppositeproductid from tohumschema.opposite where productid=(select productid from tohumschema.product where name=opposite))  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 and pd.year=year group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.area)>area

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 and p.coefficient=coefficient group by p.name, p.coefficient, r.regionname, p.productid   
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.ton)>ton

**vegetables:**

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=1 group by p.name, p.coefficient, r.regionname, p.productid

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 group by p.name, p.coefficient, r.regionname, p.productid")  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 and name=name group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 and r.regionid=region group by p.name, p.coefficient, r.regionname, p.productid

select p.name, p.coefficient, r.regionname, pd.area, pd.ton from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 and p.productid=(select oppositeproductid from tohumschema.opposite where productid=(select productid from tohumschema.product where name=opposite))

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 and pd.year=year group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.area)>area  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 and p.coefficient=coefficient group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=2 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.ton)>ton

**grains:**

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 group by p.name, p.coefficient, r.regionname, p.productid")  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 and name=name group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 and r.regionid=region group by p.name, p.coefficient, r.regionname, p.productid

select p.name, p.coefficient, r.regionname, pd.area, pd.ton from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 and p.productid=(select oppositeproductid from tohumschema.opposite where productid=(select productid from tohumschema.product where name=opposite))

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 and pd.year=year group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.area)>area  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 and p.coefficient=coefficient group by p.name, p.coefficient, r.regionname, p.productid   
  
 select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.ton)>ton

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=3 group by p.name, p.coefficient, r.regionname, p.productid

**legumes:**

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 group by p.name, p.coefficient, r.regionname, p.productid

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 and name=name group by p.name, p.coefficient, r.regionname, p.productid

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 and r.regionid=region group by p.name, p.coefficient, r.regionname, p.productid  
  
select p.name, p.coefficient, r.regionname, pd.area, pd.ton from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 and p.productid=(select oppositeproductid from tohumschema.opposite where productid=(select productid from tohumschema.product where name=opposite))   
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 and pd.year=year group by p.name, p.coefficient, r.regionname, p.productid   
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.area)>area  
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 and p.coefficient=coefficient group by p.name, p.coefficient, r.regionname, p.productid   
  
select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 group by p.name, p.coefficient, r.regionname, p.productid having *sum*(pd.ton)>ton

select p.name, p.coefficient, r.regionname, *sum*(pd.area), *sum*(pd.ton) from tohumschema.product as p, tohumschema.region as r, tohumschema.productdata as pd where p.productid=pd.productid and p.regionid=r.regionid and p.type=4 group by p.name, p.coefficient, r.regionname, p.productid

**medicines:**

SELECT year, SUM(medicineamount) FROM tohumschema.data GROUP BY year

SELECT year, SUM(medicineamount) FROM tohumschema.data WHERE ( year > " + str(  
 startdate) + " AND " + str(enddate) + " > year ) GROUP BY year

**machines:**

SELECT year, SUM(machineamount) FROM tohumschema.data GROUP BY year

SELECT year, SUM(machineamount) FROM tohumschema.data WHERE ( year > " + str(  
 startdate) + " AND " + str(enddate) + " > year ) GROUP BY year

**workers:**

SELECT year, SUM(workeramount) FROM tohumschema.data GROUP BY year

SELECT year, SUM(workeramount) FROM tohumschema.data WHERE ( year > " + str(  
 startdate) + " AND " + str(enddate) + " > year ) GROUP BY year

**profile/data:**

SELECT p.name, pd.area, pd.ton, d.medicineamount, d.workeramount, d.machineamount FROM tohumschema.data d JOIN tohumschema.productdata pd ON d.dataid=pd.dataid JOIN tohumschema.product p ON pd.productid=p.productid WHERE d.farmerid = id ORDER BY d.dataid DESC LIMIT 10

INSERT INTO tohumschema.data (farmerid, medicineamount,machineamount,workeramount,year) VALUES (id, medicine, machine, worker, year)

SELECT d.dataid FROM tohumschema.data d ORDER BY d.dataid DESC LIMIT 1

INSERT INTO tohumschema.productdata ( dataid, productid, farmerid, area, ton, year ) VALUES({},(SELECT productid FROM tohumschema.product WHERE name = did, name, session["id"], area, weight, year)

SELECT p.name, pd.area, pd.ton, d.medicineamount, d.workeramount, d.machineamount FROM tohumschema.data d JOIN tohumschema.productdata pd ON d.dataid=pd.dataid JOIN tohumschema.product p ON pd.productid=p.productid WHERE d.farmerid = " +  
str(session["id"]) + " ORDER BY d.dataid DESC LIMIT 10

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( session["id"], 4, datetime.today()))

**profile/overview:**

select f.name, f.lastname, c.cityname from tohumschema.farmer as f, tohumschema.city as c where f.cityid=c.cityid and f.farmerid=x

**profile/settings:**

select f.name, f.lastname, c.cityname, f.mail from tohumschema.farmer as f, tohumschema.city as c where f.cityid=c.cityid and f.farmerid=x

select f.name, f.lastname, f.mail, c.cityname, f.password from tohumschema.farmer as f, tohumschema.city as c where f.cityid=c.cityid and f.farmerid=x

update tohumschema.farmer set name = name where farmerid = x

update tohumschema.farmer set lastname = lastname where farmerid = x

update tohumschema.farmer set mail = email where farmerid = x

select cityid from tohumschema.city where cityname=city

update tohumschema.farmer set cityid = data2[0] where farmerid = x

update tohumschema.farmer set password = new\_password where farmerid = x

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( session[“id”], 3, TIMESTAMP datetime.today())

**profile/tips:**

select name, *sum*(area), *sum*(ton) from tohumschema.productdata join tohumschema.product on tohumschema.productdata.productid=tohumschema.product.productid where year=2020 group by productdata.productid, name order by sum(ton) desc limit 8")

**profile/growings:**

select productid from tohumschema.product where name=name

INSERT INTO tohumschema.growing (farmerid, productid, area, seeddate, harvestdate, status) VALUES session.get("id", None), productid, area, start\_date, end\_date)

select p.name, g.area, g.seeddate, g.harvestdate from tohumschema.product as p, tohumschema.growing as g where p.productid=g.productid and g.farmerid=id group by p.name, g.area, g.seeddate, g.harvestdate, p.productid"

INSERT INTO tohumschema.data (farmerid, medicineamount,machineamount,workeramount,year) VALUES (session["id"], medicine, machine, worker, year)

SELECT d.dataid FROM tohumschema.data d ORDER BY d.dataid DESC LIMIT 1

INSERT INTO tohumschema.productdata ( dataid, productid, farmerid, area, ton, year ) VALUES(did,(SELECT productid FROM tohumschema.product WHERE name = name), session["id"], area, ton, year )

DELETE FROM tohumschema.growing WHERE farmerid = session["id"] AND productid = (SELECT productid FROM tohumschema.product WHERE name = name) AND area = area AND seeddate = TIMESTAMP start\_date)

SELECT productid FROM tohumschema.product WHERE name = name

INSERT INTO tohumschema.systemlog ( farmerid, opertype, logdatetime ) VALUES ( session["id"], 5, TIMESTAMP datetime.today())

select p.name, g.area, g.seeddate, g.harvestdate, g.status from tohumschema.product as p, tohumschema.growing as g where p.productid=g.productid and g.farmerid= session.get("id", None)

group by p.name, g.area, g.seeddate, g.harvestdate, g.status, p.productid

select p.name, g.area, g.seeddate, g.harvestdate, g.status from tohumschema.product as p, tohumschema.growing as g where p.productid=g.productid and g.farmerid=session.get("id", None)

group by p.name, g.area, g.seeddate, g.harvestdate, g.status, p.productid

**Verilerin Toplama Aşaması**

Projemizde ana temamız olan tarım için gerekli bilgiler referans olarak TÜİK ve güvenilir siteler üzerinden alınmıştır ve bu siteleri rapor sonunda bulunan kaynakça bölümünden inceleyebilirsiniz. Ürünlerimiz için TÜİK tarım verilerinden projemiz için gerekli olanlar kullanılmıştır ve belirli bir aralık üzerinde düzenli tarih sırasında katalog edilmiştir. Tüm productlar için name ve type bilgileri TÜİK veritabanı Tarım altbaşlığı altındaki Bitkisel Üretim İstatistikleri başlığından alınmıştır coefficient bilgisi ise araştırmalar sonucu sitelerde bulduğumuz kaynaklardan kıyaslanıp oluşturulmuştur.

city verileri regionidlere göre o bölgede bulunan şehirlere göre katogori edilip plakası cityid ve ismi cityname olarak tutulmuştur.

region verileri toplam 7 bölgeye göre 7 regionid şeklinde bölünüp regionnameler sırasıyla (1-7) Marmara Bölgesi(1), Ege Bölgesi(2), Akdeniz Bölgesi(3) , İç Anadolu Bölgesi(4), Karadeniz Bölgesi(5), Doğu Anadolu Bölgesi(6) ve Güneydoğu Anadolu Bölgesi(7) şeklinde oluşturulup katagori edilmiştir.

farmer verileri sitemize kayıt olan farmerlardan toplanmış mail, name, lastname, password, cityid şeklinde elde edilen verileridir ve farmerid(PK) SERIAL INTEGER şeklinde her farmer girdisinde otomatik güncellenmektedir.

data verileri her farmer için içinde medicineamount, machineamount, workeramount ve year bulunduran ve dataid(PK) SERIAL INTEGER şeklinde her data verisi girildiğinde otomatik güncellenecek şekilde oluşturulmuştur.