

# Dæmi 1

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## Útskýring á lið eitt.

```
SELECT k.name AS kingdom_id, h.name AS house_id FROM atlas.kingdoms k FULL OUTER JOIN got.houses h ON k.name = h.region;
```

-Þessi fyrirspurn sækir lista yfir öll konungsríki og samsvarandi hús þeirra úr Game of Thrones heiminum. Það notar PostgreSQL skipunina FULL OUTER JOIN sem sér til þess að gögn úr báðum töflum séu teknar inn hvort sem match finnst eða ekki.

```
CREATE TABLE IF NOT EXISTS baratheon.tables_mapping ( kingdom_name TEXT, house_name TEXT, UNIQUE(kingdom_name, house_name) );
```

-CREATE TABLE IF NOT EXISTS = skipun sem PostgreSQL styður til að passa að tafla sé búin til aðeins ef hún er ekki til nú þegar.

-UNIQUE= skipunin passar að kingdom og house pörin sé einstök inni í töflunni.

```
WITH kingdom_house_mapping AS ( SELECT k.gid AS kingdom_id, h.id AS house_id FROM atlas.kingdoms k FULL OUTER JOIN got.houses h ON k.name = h.region ) INSERT INTO baratheon.tables_mapping (kingdom_id, house_id) SELECT kingdom_id, house_id FROM kingdom_house_mapping ON CONFLICT (house_id) DO NOTHING;
```

-Tilgangur kóðans er að setja inn gögnin í baratehon.tables\_mapping án þess að upp komi tvítekningar.

-ON CONFLICT DO NOTHING= sérstakur klási í PostgreSQL sér um að höndla conflicts.

```
SELECT * FROM baratheon.tables_mapping;
```

-Þessi skipun sækir töfluna tables\_mapping fyrir okkur.

Niðurstaðan er eftirfarandi og sýnir öll ríki og hús líka þau sem hafa ekki samsvörun:

The Riverlands,House Slynt of Harrenhal The Stormlands,House Baratheon of Storm's End The Vale,House Arryn of the Eyrie The Reach,House Leygood The Stormlands,House Cafferren of Fawnton The Westerlands,House Kyndall Dorne,House Drinkwater The Riverlands,House Erenford The North,House Bolton of the Dreadfort The Westerlands,House Lannister of Casterly Rock ,House Buckwell of the Antlers The Stormlands,House Buckler of Bronzegate The North,House Flint of Flint's Finger Dorne,House Blackmont of Blackmont Dorne,House Nymeros Martell of Sunspear The Riverlands,House Grey The Stormlands,House Durrandon The Reach,House Tyrell of Highgarden The North,House Flint of Widow's Watch The Westerlands,House Foote Iron Islands,House Kenning of Harlaw The Reach,House Fossoway of Cider Hall Iron Islands,House Saltcliffe of Saltcliffe The Westerlands,House Estren of Wyndhall Iron Islands,House Sparr of Great Wyk The Stormlands,House Staedmon of Broad Arch The Westerlands,House Lorch The North,House Boggs Iron Islands,House Goodbrother of Hammerhorn The Westerlands,House Jast The Westerlands,House Stackspear The Riverlands,House Mooton of Maidenpool The Reach,House Varner Iron Islands,House Merlyn of Pebbleton The Stormlands,House Mertyns of Mistwood The Westerlands,House Turnberry The Westerlands,House Yew ,House Gaunt Iron Islands,House Farwynd of Sealskin Point The Westerlands,House Payne The Reach,House Inchfield Dorne,House Jordayne of the Tor Iron Islands,House Harlaw of Grey Garden

The Reach,House Cockshaw Iron Islands,House Greyjoy of Pyke Iron Islands,House Tawney of Orkmont The Stormlands,House Grandison of Grandview Dorne,House Toland of Ghost Hill The North,House Locke of Oldcastle The North,House Dustin of Barrowton The Westerlands,House Farman of Faircastle The Reach,House Hightower of the Hightower The North,House Hornwood of Hornwood The North,House Norrey The Vale,House Royce of Runestone The Westerlands,House Lannister of Lannisport The Westerlands,House Lefford of the Golden Tooth The Vale,House Longthorpe of Longsister The Riverlands,House Goodbrook The Riverlands,House Nayland of Hag's Mire The Riverlands,House Charlton The Stormlands,House Cole The North,House Condon ,House Farring The Riverlands,House Smallwood of Acorn Hall Iron Islands,House Stonetree of Harlaw The North,House Flint of the mountains ,House Brune of the Dyre Den The Westerlands,House Swyft of Cornfield ,House Boggs of Crackclaw Point Iron Islands,House Shepherd Iron Islands,House Blacktyde of Blacktyde The Reach,House Tarly of Horn Hill The Stormlands,House Toyne The Vale,House Moore Iron Islands,House Codd The Reach,House Norcross The Riverlands,House Paege The Vale,House Baelish of the Fingers Iron Islands,House Harlaw of Harlaw Hall Iron Islands,House Ironmaker The Riverlands,House Haigh Iron Islands,House Harlaw of Harridan Hill The Reach,House Serry of Southshield ,House Rambton The Reach,House Mullendore of Uplands ,House Byrch The Riverlands,House Tully of Riverrun The Stormlands,House Trant of Gallowsgrey ,House Velaryon of Driftmark ,House Darklyn of Duskendale The North,House Stark of Winterfell The Riverlands,House Frey of the Crossing The Reach,House Ball The Reach,House Bushy The Riverlands,House Baelish of Harrenhal The Reach,House Wythers The Westerlands,House Yarwyck The Reach,House Hunt Iron Islands,House Humble Iron Islands,House Harlaw of Harlaw The Reach,House Osgrey of Standfast The Reach,House Gardener of Highgarden The Reach,House Fossoway of New Barrel The Westerlands,House Tarbeck of Tarbeck Hall The Westerlands,House Reyne of Castamere Dorne,House Dayne of Starfall The Vale,House Torrent of Littlefinger Dorne,House Uller of Hellholt The Westerlands,House Hetherspoon The North,House Thenn The Westerlands,House Casterly of Casterly Rock Iron Islands,House Wynch of Iron Holt ,House Corbray of Heart's Home The Reach,House Webber of Coldmoat The Reach,House Willum The North,House Woolfield The North,House Mollen The Reach,House Beesbury of Honeyholt The Westerlands,House Bettley The Reach,House Ambrose ,House Blount The Westerlands,House Broom Iron Islands,House Sharp The Riverlands,House Frey of Riverrun The Reach,House Tyrell of Brightwater Keep The Stormlands,House Foote of Nightsong ,House Redbeard ,House Cox of Saltpans ,House Targaryen of King's Landing The Reach,House Rowan of Goldengrove The North,House Woods ,House Fenn The Reach,House Lyberr The Reach,House Oakheart of Old Oak The Riverlands,House Deddings The Westerlands,House Brax of Hornvale Iron Islands,House Weaver The Reach,House Chester of Greenshield ,House Chyttering The Riverlands,House Blanetree The Riverlands,House Roote of Lord Harroway's Town The Stormlands,House Hasty The Reach,House Graceford of Holyhall The Westerlands,House Sarsfield of Sarsfield The Stormlands,House Estermont of Greenstone The Riverlands,House Blackwood of Raventree Hall The Reach,House Cuy of Sunhouse The Riverlands,House Darry of Darry Iron Islands,House Farwynd of the Lonely Light The Reach,House Bulwer of Blackcrown The Riverlands,House Bigglestone The Reach,House Redding ,House Darke The Stormlands,House Morrigen of Crow's Nest The North,House Tallhart of Torrhen's Square The North,House Mormont of Bear Island ,House Hollard The Stormlands,House Caron of Nightsong ,House Crabb ,House Celtigar of Claw Isle The Riverlands,House Hawick of Saltpans The North,House Cerwyn of Cerwyn The Reach,House Caswell of Bitterbridge ,House Chelsted The Reach,House Crane of Red Lake Dorne,House Allyrion of Godsgate The Riverlands,House Piper of Pinkmaiden ,House Vypren The Stormlands,House Horpe The Westerlands,House Plumm The Vale,House Redfort of Redfort The Stormlands,House Bolling Iron Islands,House Stonehouse of Old Wyk The Vale,House Egen The Stormlands,House Seaworth of Cape Wrath The Riverlands,House Grell The Reach,House Costayne of Three Towers The Westerlands,House Crakehall of Crakehall The Riverlands,House Lychester Dorne,House Manwoody of Kingsgrave The Reach,House Meadows of Grassy Vale The Westerlands,House Greenfield of

Greenfield The Riverlands,House Bracken of Stone Hedge The Vale,House Belmore of Strongsong The North,House Cassel ,House Reed of Greywater Watch ,House Bywater The Westerlands,House Westerling of the Crag ,House Kettleblack The Riverlands,House Ryger of Willow Wood Dorne,House Fowler of Skyreach The Reach,House Ashford of Ashford The Reach,House Florent of Brightwater Keep ,House Pyle The Vale,House Sunderland of the Three Sisters The North,House Slate of Blackpool The Riverlands,House Vance of Atranta The Reach,House Vyrwel of Darkdell The Vale,House Upcliff The Riverlands,House Vance of Wayfarer's Rest The Westerlands,House Moreland The Stormlands,House Musgood Iron Islands,House Myre of Harlaw The Reach,House Hastwyck The Riverlands,House Mallister of Seagard The Stormlands,House Connington of Griffin's Roost The Vale,House Lynderly of the Snakewood The Reach,House Lowther The Vale,House Grafton of Gulltown ,House Massey of Stonedance The Riverlands,House Mudd of Oldstones The Reach,House Redwyne of the Arbor The Reach,House Conklyn The Reach,House Uffering The Vale,House Hardyng The North,House Wells Iron Islands,House Hoare of Orkmont The North,House Karstark of Karhold Iron Islands,House Goodbrother of Shatterstone ,House Staunton of Rook's Rest The Reach,House Peake of Starpike Dorne,House Wells The Stormlands,House Peasebury of Poddingfield ,House Mallery The North,House Towers ,House Rollingford The Stormlands,House Wylde of Rain House The Reach,House Hewett of Oakenshield The Stormlands,House Swann of Stonehelm The North,House Stout of Goldgrass The Riverlands,House Whent of Harrenhal ,House Stokeworth of Stokeworth The North,House Greenwood The Westerlands,House Marbrand of Ashemark The Reach,House Merryweather of Longtable The Westerlands,House Ruttiger The North,House Poole ,House Manning ,House Templeton The Reach,House Rhysling The Reach,House Risley The Stormlands,House Gower The Riverlands,House Wayn ,House Thorne ,House Baratheon of Dragonstone ,House Hardy The Riverlands,House Heddle The Stormlands,House Penrose of Parchments The Westerlands,House Prester of Feastfires The Westerlands,House Clifton The Reach,House Blackbar of Bandallon The Westerlands,House Clegane ,House Greengood The Vale,House Waxley of Wickenden The Westerlands,House Vikary ,House Brune of Brownhollow The Riverlands,House Wode Dorne,House Yronwood of Yronwood The Riverlands,House Butterwell ,House Baratheon of King's Landing ,House Blackfyre of King's Landing The Stormlands,House Lonmouth The Riverlands,House Qoherys of Harrenhal ,House Longwaters Dorne,House Dalt of Lemonwood The Westerlands,House Peckledon Iron Islands,House Drumm of Old Wyk The Vale,House Tollett of the Grey Glen Dorne,House Dayne of High Hermitage The Stormlands,House Dondarrion of Blackhaven The North,House Glover of Deepwood Motte Dorne,House Gargalen of Salt Shore The North,House Harclay The Reach,House Norridge The Stormlands,House Wagstaff The Westerlands,House Banefort of Banefort ,House Bar Emmon of Sharp Point The Vale,House Borrell of Sweetsister Iron Islands,House Harlaw of the Tower of Glimmering The Vale,House Hunter of Longbow Hall The North,House Liddle The Riverlands,House Lannister of Darry Iron Islands,House Botley of Lordsport The Vale,House Coldwater of Coldwater Burn The Stormlands,House Fell of Felwood The North,House Manderly of White Harbor The Stormlands,House Errol of Haystack Hall Dorne,House Qorgyle of Sandstone The Westerlands,House Kenning of Kayce The Vale,House Royce of the Gates of the Moon ,House Hayford of Hayford Dorne,House Santagar of Spottswood ,House Rosby of Rosby The Westerlands,House Spicer of Castamere The Westerlands,House Lydden of Deep Den ,House Rykker of Duskendale The Riverlands,House Lothston of Harrenhal The Riverlands,House Strong of Harrenhal The Stormlands,House Tarth of Evenfall Hall The Stormlands,House Selmy of Harvest Hall The Vale,House Shett of Gull Tower Dorne,House Vaith of the Red Dunes The Vale,House Waynwood of Ironoaks The North,House Umber of the Last Hearth Iron Islands,House Volmark The North,House Wull ,House Hogg of Sow's Horn ,House Strickland ,House Quagg The Reach,House Grimm of Greyshield The North,House Ryswell of the Rills ,House Sunglass of Sweetport Sound The Reach,House Bridges The Vale,House Elesham of the Paps The Riverlands,House Harlton The Westerlands,House Sarwyck The North,House Woodfoot of Bear Island The Vale,House Breakstone The Riverlands,House Keath The Riverlands,House Justman ,House Harte The Vale,House Pryor of Pebble The

Reach,House Roxton of the Ring The North,House Crowl of Deepdown The North,House Magnar of Kingshouse The Reach,House Cordwayner of Hammerhal The Stormlands,House Tudbury The Reach,House Footly of Tumbleton The Vale,House Melcolm of Old Anchor The Reach,House Orme The Westerlands,House Ferren Iron Islands,House Orkwood of Orkmont The Westerlands,House Falwell The Vale,House Arryn of Gulltown The North,House Amber The Reach,House Westbrook The Westerlands,House Drox ,House Edgerton The Westerlands,House Hawthorne The Stormlands,House Herston The Reach,House Durwell The Riverlands,House Terrick The Riverlands,House Towers of Harrenhal The Westerlands,House Serrett of Silverhill Dorne,House Wyl of the Boneway The Westerlands,House Myatt The North,House Lightfoot The North,House Ironsmith Iron Islands,House Greyiron of Orkmont The North,House Waterman The North,House Moss The Reach,House Kidwell of Ivy Hall Iron Islands,House Goodbrother of Corpse Lake The Westerlands,House Westford The North,House Long The Westerlands,House Hamell The Westerlands,House Lantell Iron Islands,House Goodbrother of Crow Spike Keep The North,House Fisher of the Stony Shore ,House Cressey The North,House Greystark of Wolf's Den The Riverlands,House Hook The North,House Ryder of the Rills ,House Darkwood ,House Follard The Riverlands,House Chambers The Vale,House Donniger Iron Islands,House Sunderly of Saltcliffe ,House Cray Dorne,House Ladybright The Reach,House Osgrey of Leafy Lake The Westerlands,House Garner The Reach,House Sloane The Stormlands,House Kellington The Reach,House Oldflowers The North,House Overton The Westerlands,House Doggett The Vale,House Shett of Gulltown The Riverlands,House Lolliston The North,House Forrester The Reach,House Woodwright The Reach,House Dunn The Reach,House Middlebury The Reach,House Shermer of Smithyton The Reach,House Graves The Stormlands,House Swygert The North,House Bole The North,House Branch The Riverlands,House Shawney ,House Cargyll ,House Wendwater The North,House Burley The North,House Whitehill The Vale,House Wydman The Reach,House Hutcheson The Westerlands,House Parren The Reach,House Yelshire The North,House Ashwood ,House Blackmyre The Westerlands,House Lannett The Westerlands,House Lanny Iron Islands,House Netley The Riverlands,House Nutt ,House Peat The Riverlands,House Perryn The Reach,House Pommingham The Vale,House Ruthermont The Riverlands,House Fisher The North,House Branfield The Stormlands,House Wensington The North,House Knott The Riverlands,House Harroway of Harrenhal The North,House Flint of Breakstone Hill Iron Islands,House Goodbrother of Dowlund Dorne,House Shell The North,House Glenmore The Riverlands,House Teague The Vale,House Brightstone Dorne,House Dryland Dorne,House Briar Dorne,House Brook Dorne,House Brownhill ,House Langward Dorne,House Holt Dorne,House Lake The Vale,House Shell The Reach,House Appleton of Appleton The North,House Lake The Vale,House Lipps ,House Pyne ,House Cave Iron Islands,House Goodbrother of Orkmont The Stormlands,House Rogers of Amberly The North,House Holt Dorne,House Hull The North,House Frost The Vale,House Hersy of Newkeep The North,House Marsh The Reach,House Stackhouse ,House Dargood Dorne,House Wade The Westerlands,House Algood The North,House Stane of Driftwood Hall The Crownsland, Gift,

## Útskýring á lið 2

Nokkur atriði úr kóðanum til að skoða.

```
WITH gagntaek_vorpun AS ( SELECT l.gid AS location_id, l.name AS location_name, h.id AS house_id, h.name AS house_name, l.summary AS summary FROM atlas.locations l JOIN got.houses h ON l.name = ANY(h.seats) WHERE h.region = 'The North' )
```

-Hér býr kóðinn til kortlagningu (gagntaek\_vorpun) staðsetningar á hús út frá staðsetningarheiti sem gæti passað við hvaða sæti hússins sem er (ANY(h.sæti)).

```
X AS ( SELECT *, regexp_match(summary, house_name) FROM gagntaek_vorpun ), y AS ( SELECT CASE WHEN house_name LIKE concat('%',location_name) THEN 1 ELSE 0 END as better_match, * FROM x ), z AS ( SELECT row_number() OVER (PARTITION BY location_id ORDER BY better_match DESC) as rank, * FROM y )
```

Hér er verið að að vinna með þegar það koma tvívegis mötch og unnið úr hvernig eigi að velja betra matchið. Þá er þetta gert til að grípa tvítekningar.

```
g AS ( SELECT house_id, location_id FROM z WHERE rank = 1 )
```

- skipun sem velur besta matchið. Eða 1 frekar en 0.

```
INSERT INTO baratheon.tables_mapping (house_id, location_id) SELECT house_id, location_id FROM g ON CONFLICT (house_id) DO UPDATE SET location_id = excluded.location_id;
```

-Varpar inn í baratheon.tables\_mapping töfluna og leysir árekstra með því að uppfæra núverandi færslur ef house\_id er þegar til í töflunni.

```
SELECT h.name AS house_name, h.id AS house_id, l.name AS location_name, l.gid AS location_id FROM gagntaek_vorpun otm JOIN got.houses h ON otm.house_id = h.id JOIN atlas.locations l ON otm.location_id = l.id WHERE h.region = 'The North';
```

-Sýnir endalegar upplýsingar fyrir norðrið það sem hver staður passar við eitt hús.

Kom tvítekning í kóðanum þar sem tvær staðsetningar mötchuðu við sama hús sem ekki náðist að leysa úr. Reynt var að útfæra kóða sem myndi velja að substringið sem væri lengra myndi veljast sem match en ekki tókst það. Þannig að dæmið náð ekki að keyra.

## Útskýring á lið 3

```
WITH northern_houses AS ( SELECT id, unnest(sworn_members) AS member_id FROM got.houses WHERE region = 'The North' ),
```

-Þessi CTE finnur alla þá sem eru sworn members í húsum sem eru staðsett í norðrinu.

unnest(sworn\_members) = þessi postgresSQL stækkar fylki í sett af línur. Hér er það notað til að búa til röð fyrir hvern meðlim sem er í sworn\_members fylkinu í hverju norðrinu. WHERE region = 'The North' = passar að þetta sé aðeins í norðrinu.

```
northern_characters AS ( SELECT nh.member_id, split_part(c.name, ' ', array_length(string_to_array(c.name, ' '), 1)) AS family_name FROM northern_houses nh JOIN got.characters c ON nh.member_id = c.id ),
```

-Setur hvert aukenni manneskju við ættarnafn.

-split\_part(c.name, ' ', array\_length(string\_to\_array(c.name, ' '), 1)) Nokkrar PostgreSQL kallanir sem það telur bilin í nafninu, breytir nafninu í fylki og velur síðan síðasta þátt fylkisins sem ættarnafn.

```
family_counts AS ( SELECT family_name, COUNT(*) AS member_count FROM northern_characters GROUP BY family_name HAVING COUNT(*) > 5 )
```

-Tekur saman gögnin til að telja meðlimi í hverri fjölskyldu og sýnar út fjölskyldur með fleiri en fimm meðlimi.

```
SELECT family_name, member_count FROM family_counts ORDER BY member_count DESC,  
family_name ASC;
```

-Gefur út lista yfir fjölskyldur, raðað eftir fjölda meðlima (lækkandi) og í stafrófsröð eftir ættarnafni (hækkandi)

Niðurstaðan þegar þetta er keyrt skilar stærtstu ættum fjölskylda í norðri stærsta fjölskyldan kemur fyrst fer svo í lækkandi röð.

Stark,36 Karstark,13 Manderly,8 Mormont,8 Glover,7 Ryswell,7 Flint,6 Hornwood,6 Tallhart,6 Umber,6

## Dæmi 2

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Taflan `baratheon.v_pov_characters_human_readable` skilar nafni persónunnar en ef það er fleira en eitt nafn þá er valið fyrsta nafnið.

Þessi skipun sér til þess: `COALESCE(NULLIF(c.titles[1], ''), c.name)`

Til að finna út hvort persónan eigi faðir er notað eftir farandi skipun: `COALESCE(father_c.name, 'Unknown') AS father,`

og móðir `COALESCE(mother_c.name, 'Unknown') AS mother,`

Ef það á enga foreldra kemur upp 'Unknown' í töfluna.

Til að komast að því hvort persónan eigi maka er notað eftirfarandi: `COALESCE(spouse_c.name, 'Unknown') AS spouse,`

Til að finna út hvenær persónan fæddist:

```
CASE WHEN c.born IS NOT NULL AND c.born ~ '\d+.*AC' THEN CAST((regexp_match(c.born,  
'(\d+)[ ]*AC'))[1] AS INT) WHEN c.born IS NOT NULL AND c.born ~ '\d+.*BC' THEN -  
CAST((regexp_match(c.born, '(\d+)[ ]*BC'))[1] AS INT) ELSE NULL END AS born,
```

og til að finna út hvenær persónan lést:

```
CASE WHEN c.died IS NOT NULL AND c.died ~ '\d+.*AC' THEN CAST((regexp_match(c.died,  
'(\d+)[ ]*AC'))[1] AS INT) WHEN c.died IS NOT NULL AND c.died ~ '\d+.*BC' THEN -  
CAST((regexp_match(c.died, '(\d+)[ ]*BC'))[1] AS INT) ELSE NULL END AS died,
```

Til að reikna út aldurinn:

```
CASE WHEN c.died IS NOT NULL AND c.born IS NOT NULL THEN (CAST((regexp_match(c.died,  
'(\d+)'))[1] AS INT) - CAST((regexp_match(c.born, '(\d+)'))[1] AS INT)) WHEN c.died IS  
NULL AND c.born IS NOT NULL THEN (300 - CAST((regexp_match(c.born, '(\d+)'))[1] AS INT))  
ELSE NULL END AS age,
```

En ef dánarár er ekki til staðar þá er reiknað aldurinn út frá 300 AC.

Skilar tvíundarbreytu um hvort persónan sé á lífi eða ekki:

```
CASE WHEN c.died IS NULL THEN TRUE ELSE FALSE END AS alive,
```

Býr til lista yfir yfir bókarheiti sem persónan kemur fyrir í, í rétttri röð eftir útgáfuárum:

```
ARRAY_AGG(b.name ORDER BY b.released ASC) AS books
```

Veljum hvaða flokka á að birta í töflunni 'baratheon.v\_pov\_characters\_human\_readable':

```
SELECT full_name, CASE WHEN gender = 'Male' THEN 'M' WHEN gender = 'Female' THEN 'F' ELSE NULL END AS gender, father, mother, spouse, born, died, age, alive, books FROM pov_characters ORDER BY alive DESC, age DESC;
```

Par sem breytt er 'Male' í M og 'Female' í F.

Til að geta birt myndina er svo keyrt eftirfarandi:

```
SELECT * FROM baratheon.v_pov_characters_human_readable ORDER BY alive DESC, age DESC;
```

## Dæmi 3

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### 1. Flatarmáls konungsríkja

**PostgreSQL function baratheon.get\_kingdom\_size(int kingdom\_id) sem reiknar út flatarmál konungsríkis út frá landfræðilegum gögnum. Gefið niðurstöðu í ferkílómetrum (þ.e. km<sup>2</sup>) með engum aukastöfum.**

- `CREATE OR REPLACE FUNCTION baratheon.get_kingdom_size(kingdom_id INT) RETURNS INTEGER AS $$` býr til function sem tekur inn INT breytu og skilar INT breytu
- `DECLARE kingdom_area_km2 INTEGER` býr til breytu `kingdom_area_km2` til að geyma flatarmálið
- `IF NOT EXISTS (SELECT 1 FROM atlas.kingdoms WHERE gid = kingdom_id)` athugar hvort að gildið fyrir `kingdom_id` sé löglegt og kastar villu með skilaboðum ef ekki með `RAISE EXCEPTION 'Ólöglegt kingdom_id: %', kingdom_id;`
- `SELECT ROUND(ST_Area(geog::geography) / 1000000.0)` Reiknar flatarmál konungsríkisins í ferkílómetrum með `ST_Area` á `geog` dálkinum og breytir í fermetra
- `INTO kingdom_area_km2` setur niðurstöðuna í breytuna
- `RETURN kingdom_area_km2` Skilar flatarmálinu sem heiltölu.

**Hvað gerist ef þú setur inn ólöglegt gildi fyrir `kingdom_id`?, Er hægt að koma í veg fyrir það?** Ef að sett er inn ólöglegt gildi á `kingdom_id` er `RAISE EXCEPTION` skipunin í fallinu er notuð til að senda skilaboðin "Ólöglegt kingdom\_id: [gildið]"

**SQL fyrirspurn sem notar fallið til að finna heildar flatarmál þriðja stærsta konungsríkisins.**

- `SELECT gid, name, baratheon.get_kingdom_size(gid) AS kingdom_area_km2` Velur dálkana `gid`, `name`, og útreiknað flatarmál frá fallinu okkar
- `FROM atlas.kingdoms` tekur gögn frá `atlas.kingdoms` töflunni
- `ORDER BY kingdom_area_km2 DESC` raðar niðurstöðunum eftir `kingdom_area_km2` í lækkandi röð
- `OFFSET 2 LIMIT 1` Sleppir fyrstu tveimur niðurstöðum og skilar því þriðja stærsta

### 2. Fjöldi staðsetninga og staðsetningar af ákveðnum tegundum

**SQL fyrirspurn sem finnur sjaldgæfustu staðsetningategund utan The Seven Kingdoms**

- `WITH tegundir AS` býr til tímabundna töflu
- `SELECT type, COUNT(*) AS count` notar dálkin `type` úr töflunni `atlas.locations` (`FROM atlas.locations`) til að telja fjölda staða fyrir hverja tegund
- `WHERE geog IS NOT NULL` tekur út staði sem að hafa ekki `geog` og `AND geog NOT IN (SELECT geog FROM atlas.kingdoms)` útilokar staði sem að eru í the seven kingdoms með því að bera saman við `geog` í töflunni `atlas.kingdoms`
- `SELECT MIN(count) AS minnst FROM tegundir` Velur lægsta talningu úr `tegundir` töflunni
- `SELECT r.type, l.name FROM atlas.locations l` Velur dálkinn `type` úr `tegundir` og heiti staðanna `name` úr `atlas.locations`
- `JOIN tegundir r ON l.type = r.type` tengir `locations` við `tegundir`
- `WHERE r.count = (SELECT minnst FROM minnst);` notar töfluna `minnst` sem að var búin til til að velja þá tegund sem er sjaldgæfust