

# Экзамен Базы данных и экспертные системы

## Монастырский С21-703

### Лабораторная работа 1

```
--1
DROP TABLE people; SET DATESTYLE TO GERMAN; CREATE TABLE people ( id integer
PRIMARY KEY, last_name varchar(32) NOT NULL, first_name varchar(32) NOT NULL,
second_name varchar(32), sex char NOT NULL, CHECK (sex in ('М','Ж')), birthday date
NOT NULL, death_date date, mother_id integer REFERENCES people(id), father_id
integer REFERENCES people(id) );
--2
DROP SEQUENCE people_id_seq; CREATE SEQUENCE people_id_seq START WITH 1 INCREMENT
BY 1 CACHE 5; INSERT INTO people VALUES (nextval('people_id_seq'),'Романов',
'Николай','Павлович','М','17.07.1796','14.03.1855',null,null); INSERT INTO people
VALUES (nextval('people_id_seq'),'Романова',
'Александра','Федоровна','Ж','13.07.1798','01.11.1860',null,null); INSERT INTO
people VALUES (nextval('people_id_seq'),'Романов',
'Александр','Николаевич','М','29.04.1818','13.03.1881', (SELECT id FROM people
WHERE (people.last_name = 'Романова' and people.first_name = 'Александра' and
people.second_name = 'Федоровна')), (SELECT id FROM people WHERE (people.last_name
= 'Романов' and people.first_name = 'Николай' and people.second_name =
'Павлович'))); INSERT INTO people VALUES (nextval('people_id_seq'),'Романова',
'Мария','Александровна','Ж','08.08.1824','03.06.1880',null,null); INSERT INTO
people VALUES (nextval('people_id_seq'),'Романов',
'Александр','Александрович','М','10.03.1845','01.11.1894', (SELECT id FROM people
WHERE people.last_name = 'Романова' and people.first_name = 'Мария' and
people.second_name = 'Александровна'), (SELECT id FROM people WHERE
people.last_name = 'Романов' and people.first_name = 'Александр' and
people.second_name = 'Николаевич')); SELECT * FROM people;
--3
SELECT p.last_name Last_name, p.first_name Firsrt_name ,p.second_name
Second_name,f.last_name fLast_name, f.first_name fFirsrt_name, f.second_name
fSecond_name, m.last_name mLast_name,m.first_name mFirst_name, m.second_name
mSecond_name from people p LEFT JOIN people f ON (p.sex = 'М' and p.father_id =
f.id) LEFT JOIN people m ON (m.sex='Ж' and p.mother_id=m.id); --4
UPDATE people SET birthday = birthday - interval '12 years',death_date = death_date
- interval '12 years' RETURNING *; --5
CREATE OR REPLACE PROCEDURE long_livers(age integer) as $$ DECLARE attr_e record; a
integer; BEGIN a:=0; FOR attr_e in (SELECT * FROM people WHERE EXTRACT(year FROM
age(death_date,birthday)) > age) LOOP raise info '% % %
',attr_e.first_name,attr_e.last_name,attr_e.second_name; a := a+1; END LOOP; raise
```

```

info '%', a; raise info '%', (SELECT max(EXTRACT(year FROM
age(death_date,birthday))) FROM people); raise info '%', (SELECT min(EXTRACT(year
FROM age(death_date,birthday))) FROM people); raise info '%', (SELECT
round(avg(EXTRACT(year FROM age(death_date,birthday))),2) FROM people); END $$
LANGUAGE plpgsql; call long_livers(45); --6
WITH RECURSIVE len(id,father_id,l) AS (SELECT id, father_id, 1 FROM people WHERE id
is NOT NULL UNION ALL SELECT people.id, people.father_id,len.l+1 FROM len JOIN
people on len.id = people.father_id) SELECT max(l) FROM len;

```

## Лабораторная работа 2

```
--lab2.pgred
```

```

{"version":"61400","data":{"id":"896bd2e7-2d97-44e6-bbb8-
83b90ff9b4db","offsetX":388.93036630829357,"offsetY":-218.38169685791928,"zoom":93.
33333333333333,"gridSize":15,"layers":[{"id":"c9efe17c-0bec-4aee-aa8e-
d3ba21d6a976","type":"diagram-links","isSvg":true,"transformed":true,"models":
{"7bae0265-71df-4bd6-9631-ce1677a41424":{"id":"7bae0265-71df-4bd6-9631-
ce1677a41424","locked":true,"type":"onetomany","source":"3bf79f08-e8b5-4948-9d97-
378a98bf3515","sourcePort":"ec93b7d2-9acc-403b-98da-
0cc5cc6e2a42","target":"d0cd97a7-0f02-43a0-9cc4-
603eae5a62b","targetPort":"26cb177f-ed5a-4d9d-825e-a3d80d8aad04","points":
[{"id":"52cfbee9-7f37-43e1-ad85-
ea9a1776b7c3","type":"point","x":204.99997025004262,"y":163.49999648961636},
{"id":"929c3184-1c40-4676-a01a-
7ccb5a4709b6","type":"point","x":204.99997025004262,"y":352},{id":"df1580e0-cc10-
49d0-b32a-
d5004660709c","type":"point","x":204.99997025004262,"y":616.5000079337082}], "labels
":
[], "width":1, "color":"gray", "curvyness":50, "selectedColor":"rgb(0,192,255)", "data":
{"local_table_uid":"d0cd97a7-0f02-43a0-9cc4-
603eae5a62b","local_column_attnum":4,"referenced_table_uid":"3bf79f08-e8b5-4948-
9d97-378a98bf3515","referenced_column_attnum":1}}, {"ed690931-9e4f-49b5-8f02-
8c8bee91742e":{"id":"ed690931-9e4f-49b5-8f02-
8c8bee91742e","locked":true,"type":"onetomany","source":"7fbbe1aa-ae22-4d2e-bdc6-
34e74f61a235","sourcePort":"90f59715-5c51-4686-b873-
fc6ff125608b","target":"f9071bcc-9e1e-474c-9c83-
fa779a55e73f","targetPort":"6ce0d9d6-0ad2-4fc8-9449-eacf851565ca","points":
[{"id":"5ec8f680-45f7-4889-9ea6-
bf6e4941b8f9","type":"point","x":429.9999702500426,"y":96.99999757952988},
{"id":"387b8bbd-7186-49a7-adeb-
815aef0b8c99","type":"point","x":429.9999702500426,"y":352},{id":"59aafe3d-6a94-
40e1-9bbc-
2b8c6ee6e8b1","type":"point","x":429.9999702500426,"y":493.99999703457314}], "labels

```

```
":  
[{"width":1,"color":"gray","curvyness":50,"selectedColor":"rgb(0,192,255)","data":  
{"local_table_uid":"f9071bcc-9e1e-474c-9c83-fa779a55e73f","local_column_attnum":2,"referenced_table_uid":"7fbbe1aa-ae22-4d2e-bdc6-34e74f61a235","referenced_column_attnum":1}},{"4d561263-21d3-44a2-ba0b-28eb83f5f4ca":{"id":"4d561263-21d3-44a2-ba0b-28eb83f5f4ca","locked":true,"type":"onetomany","source":"d0cd97a7-0f02-43a0-9cc4-603eaed5a62b","sourcePort":"84ae7582-1fcc-43d6-bf5d-4985c36c628e","target":"a44feb65-58a0-4043-ba99-638b350446f5","targetPort":"c79bf0fa-0496-4c55-b9a8-e588d8833eab","points":  
[{"id":"cc483a71-ac44-4efd-a8c5-c9969fdffcd6","type":"point","x":204.99997025004262,"y":541.5000079337082},  
{"id":"9d5f5ea3-b24c-4586-85ff-db3f94108f8b","type":"point","x":317.4999702500426,"y":753},{"id":"6a9fd360-4ecd-4940-ad27-51eb3201960e","type":"point","x":317.4999702500426,"y":995.0000035740542}],{"labels":  
:  
[{"width":1,"color":"gray","curvyness":50,"selectedColor":"rgb(0,192,255)","data":  
{"local_table_uid":"a44feb65-58a0-4043-ba99-638b350446f5","local_column_attnum":6,"referenced_table_uid":"d0cd97a7-0f02-43a0-9cc4-603eaed5a62b","referenced_column_attnum":1}},{"395614bd-919c-4261-95e4-9097b920a43d":{"id":"395614bd-919c-4261-95e4-9097b920a43d","locked":true,"type":"onetomany","source":"f9071bcc-9e1e-474c-9c83-fa779a55e73f","sourcePort":"0734642d-2350-4607-95e7-10d96f25e7c7","target":"a44feb65-58a0-4043-ba99-638b350446f5","targetPort":"d371b914-813f-470a-9fe9-50f51641b95b","points":  
[{"id":"3d468f74-5cf5-462c-9648-dad55450e603","type":"point","x":429.9999702500426,"y":468.9999861354381},  
{"id":"a134cfc1-f157-4bfd-bd1f-d7abcbba38af","type":"point","x":317.4999702500426,"y":753},{"id":"43817f88-d9cb-4c9d-96c4-13b88e87fda0","type":"point","x":317.4999702500426,"y":1120.0000253723242}],{"labels":  
:  
[{"width":1,"color":"gray","curvyness":50,"selectedColor":"rgb(0,192,255)","data":  
{"local_table_uid":"a44feb65-58a0-4043-ba99-638b350446f5","local_column_attnum":11,"referenced_table_uid":"f9071bcc-9e1e-474c-9c83-fa779a55e73f","referenced_column_attnum":1}}},{id":"239e3622-5d0f-4d44-96d9-581cd5ceec72","type":"diagram-nodes","isSvg":false,"transformed":true,"models":  
{"3bf79f08-e8b5-4948-9d97-378a98bf3515":{"id":"3bf79f08-e8b5-4948-9d97-378a98bf3515","type":"table","selected":false,"x":5,"y":71.5,"ports":  
[{"id":"ec93b7d2-9acc-403b-98da-0cc5cc6e2a42","type":"onetomany","x":174.99997025004262,"y":163.49999648961636,"name":"coll-port-1","alignment":"right","parentNode":"3bf79f08-e8b5-4948-9d97-378a98bf3515","links":["7bae0265-71df-4bd6-9631-ce1677a41424"],"subtype":"one"}]},{"name":"Untitled","color":"rgb(0,192,255)","portsInOrder":[],"portsOutOrder":["ec93b7d2-9acc-403b-98da-0cc5cc6e2a42"],"otherInfo":
```

```

{"data":{"columns":
[{"name":"client_id","atttypid":23,"attlen":null,"attnum":1,"attndims":0,"atttypmod":
-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnspname":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sy
s_column":false,"colconstype":"n","genexpr":null,"relname":"Client","is_view_only":
false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":
null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":true,"is_primary_key":tr
ue,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","money","numeric","oid","
real","regclass","regcollation","regconfig","regdictionary","regnamespace","regoper
","regoperator","regproc","regprocedure","regrole","regtype","smallint"],"cid":"c13
"},
{"name":"name","atttypid":1043,"attlen":"255","attnum":2,"attndims":0,"atttypmod":-
1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"x","attiden
tity":"","defval":null,"typename":"character varying","displaytypename":"character
varying","cltype":"character
varying","elemoid":1043,"typnspname":"pg_catalog","defaultstorage":"x","description
":null,"indkey":"1","isdup":false,"collspcname":"pg_catalog.\"default\\",\"is_fk\":fa
lse,\"seclabels\":null,\"is_sys_column\":false,\"colconstype\":\"n\",\"genexpr\":null,\"relnam
e\":\"Client\",\"is_view_only\":false,\"seqrelid\":null,\"seqtypid\":null,\"seqstart\":null,\"s
eqincrement\":null,\"seqmax\":null,\"seqmin\":null,\"seqcache\":null,\"seqcycle\":null,\"is_p
k\":false,\"is_primary_key\":false,\"attprecision\":null,\"edit_types":
[\"\\char\\",\"character\",\"character varying\",\"character
varying\",\"information_schema.character_data\",\"information_schema.yes_or_no\",\"name\",
\"regclass\",\"text\"],\"cid\":\"c14\",\"min_val_attlen\":1,\"max_val_attlen\":2147483647},
{"name":"requisites","atttypid":25,"attlen":null,"attnum":3,"attndims":0,"atttypmod":
-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"x","attiden
tity":"","defval":null,"typename":"text","displaytypename":"text","cltype":"text","el
emoid":25,"typnspname":"pg_catalog","defaultstorage":"x","description":null,"indkey
":"1","isdup":false,"collspcname":"pg_catalog.\"default\\",\"is_fk\":false,\"seclabels
\":null,\"is_sys_column\":false,\"colconstype\":\"n\",\"genexpr\":null,\"relname\":\"Client\",
\"is_view_only\":false,\"seqrelid\":null,\"seqtypid\":null,\"seqstart\":null,\"seqincrement\":n
ull,\"seqmax\":null,\"seqmin\":null,\"seqcache\":null,\"seqcycle\":null,\"is_pk\":false,\"is_p
rimary_key\":false,\"attprecision\":null,\"edit_types":
[\"\\char\\",\"character\",\"character
varying\",\"name\",\"regclass\",\"text\"],\"cid\":\"c15\"}],\"name\":\"Client\",\"description\":null
,\"relpersistence\":false,\"fillfactor\":null,\"toast_tuple_target\":null,\"parallel_worke
rs\":null,\"coll_inherits\":
[],\"hastoahtable\":true,\"toast_autovacuum_enabled\":\"x\",\"autovacuum_enabled\":\"x\",
\"primary_key\":
[{\"oid\":41147,\"name\":\"Client_pkey\",\"col_count\":1,\"spcname\":\"pg_default\",
\"comment\":n

```

```
ull,"condeferrable":false,"condeferred":false,"conislocal":true,"fillfactor":null,"
columns":[{"column":"client_id","cid":"c12"}],"include":
[[],"cid":"c11"}],"foreign_key":[],"partition_keys":[],"partitions":
[[],"partition_type":"range","is_partitioned":false,"schema":"C21-703-
7","rlspolicy":false,"forcerlspolicy":false,"unique_constraint":
[{"oid":41149,"name":"uni_client_requisites","col_count":2,"spcname":"pg_default","
comment":null,"condeferrable":false,"condeferred":false,"conislocal":true,"fillfact
or":null,"columns":[{"column":"requisites","cid":"c17"}],
{"column":"name","cid":"c18"}],"include":[],"cid":"c16"}]},"note":"","metadata":
{"data_failed":false,"is_promise":false}}},"d0cd97a7-0f02-43a0-9cc4-603eaed5a62b":
{"id":"d0cd97a7-0f02-43a0-9cc4-
603eaed5a62b","type":"table","selected":false,"x":5,"y":449.5,"ports":
[{"id":"26cb177f-ed5a-4d9d-825e-
a3d80d8aad04","type":"onetomany","x":174.99997025004262,"y":616.5000079337082,"name
":"coll-port-4","alignment":"right","parentNode":"d0cd97a7-0f02-43a0-9cc4-
603eaed5a62b","links":["7bae0265-71df-4bd6-9631-ce1677a41424"],"subtype":"many"},
{"id":"84ae7582-1fcc-43d6-bf5d-
4985c36c628e","type":"onetomany","x":174.99997025004262,"y":541.5000079337082,"name
":"coll-port-1","alignment":"right","parentNode":"d0cd97a7-0f02-43a0-9cc4-
603eaed5a62b","links":["4d561263-21d3-44a2-ba0b-
28eb83f5f4ca"],"subtype":"one"}],"name":"Untitled","color":"rgb(0,192,255)","portsI
nOrder":[],"portsOutOrder":["26cb177f-ed5a-4d9d-825e-a3d80d8aad04","84ae7582-1fcc-
43d6-bf5d-4985c36c628e"],"otherInfo":{"data":{"columns":
[{"name":"contract_id","atttypid":23,"attlen":null,"attnum":1,"attndims":0,"atttypm
od":-1,"attacl":
[[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnspace":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sy
s_column":false,"colconstype":"n","genexpr":null,"relname":"Contract","is_view_only
":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax
":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":true,"is_primary_key":
true,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","money","numeric","oid","
real","regclass","regcollation","regconfig","regdictionary","regnamespace","regoper
","regoperator","regproc","regprocedure","regrole","regtype","smallint"],"cid":"c73
"}},
{"name":"expiration_date","atttypid":1082,"attlen":null,"attnum":2,"attndims":0,"at
ttypmod":-1,"attacl":
[[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"date","displaytypename":"date","cltype":"date","el
emoid":1082,"typnspace":"pg_catalog","defaultstorage":"p","description":null,"indk
ey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_colum
n":false,"colconstype":"n","genexpr":null,"relname":"Contract","is_view_only":false
,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,
"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,
```

```

"attprecision":null,"edit_types":["date","timestamp with time zone","timestamp
without time zone"],"cid":"c74"},
{"name":"signing_date","atttypid":1082,"attlen":null,"attnum":3,"attndims":0,"attty
pmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"date","displaytypename":"date","cltype":"date","el
emoid":1082,"typnspname":"pg_catalog","defaultstorage":"p","description":null,"indk
ey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_colum
n":false,"colconstype":"n","genexpr":null,"relname":"Contract","is_view_only":false
,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,
"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,
"attprecision":null,"edit_types":["date","date","timestamp with time
zone","timestamp without time zone"],"cid":"c75"},
{"name":"client_id","atttypid":23,"attlen":null,"attnum":4,"attndims":0,"atttypmod"
:-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnspname":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":true,"seclabels":null,"is_sys
_column":false,"colconstype":"n","genexpr":null,"relname":"Contract","is_view_only"
:false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax"
:null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":
false,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","integer","money","numeri
c","oid","real","regclass","regcollation","regconfig","regdictionary","regnamespace
","regoper","regoperator","regproc","regprocedure","regrole","regtype","smallint"],
"cid":"c76"}], "name":"Contract", "schema":"C21-703-
7", "description":null, "rlspolicy":false, "forcerlspolicy":false, "fillfactor":null, "t
oast_tuple_target":null, "parallel_workers":null, "relpersistence":false, "primary_key
":
[{"oid":41155, "name":"Contract_pkey", "col_count":1, "spcname":"pg_default", "comment"
:null, "condeferrable":false, "condeferred":false, "conislocal":true, "fillfactor":null
, "columns":[{"column":"contract_id", "cid":"c70"}], "include":
[], "cid":"c69"}], "foreign_key":
[{"name":"Contract_client_id_fkey", "condeferrable":false, "condeferred":false, "confu
pdtype":"a", "confdeltype":"a", "confmatchtype":false, "conkey":[4], "confkey":
[1], "confrelid":41142, "fknspace":"C21-703-7", "fkname":"Contract", "refnspace":"C21-703-
7", "reftable":"Client", "comment":null, "convalidated":false, "conislocal":true, "columns
":[{"local_column":"client_id", "references":"3bf79f08-e8b5-4948-9d97-
378a98bf3515", "referenced":"client_id", "references_table_name":"Client", "cid":"c72"
}], "remote_schema":"C21-703-
7", "remote_table":"Client", "coveringindex":null, "autoindex":false, "hasindex":false,
"cid":"c71"}], "unique_constraint":[], "note":""," "metadata":
{"data_failed":false, "is_promise":false}}, "7fbb1aa-ae22-4d2e-bdc6-34e74f61a235":
{"id":"7fbb1aa-ae22-4d2e-bdc6-
34e74f61a235", "type":"table", "selected":false, "x":230, "y":5, "ports":

```



```
[{"id":"90f59715-5c51-4686-b873-fc6ff125608b","type":"onetomany","x":399.9999702500426,"y":96.99999757952988,"name":"coll-port-1","alignment":"right","parentNode":"7fbbe1aa-ae22-4d2e-bdc6-34e74f61a235","links":["ed690931-9e4f-49b5-8f02-8c8bee91742e"],"subtype":"one"}],{"name":"Untitled","color":"rgb(0,192,255)","portsInOrder":[],"portsOutOrder":["90f59715-5c51-4686-b873-fc6ff125608b"],"otherInfo":{"data":{"name":"Room","description":null,"relpersistence":false,"fillfactor":null,"toast_tuple_target":null,"parallel_workers":null,"coll_inherits":[""],"hastoasttable":true,"toast_autovacuum_enabled":"x","autovacuum_enabled":"x","primary_key":[{"oid":41125,"name":"Room_pkey","col_count":1,"spcname":"pg_default","comment":null,"condeferable":false,"condeferred":false,"conislocal":true,"fillfactor":null,"columns":[{"column":"id","cid":"c12"}],"include":[""],"cid":"c11"},"foreign_key":[""],"partition_keys":[""],"partitions":[""],"partition_type":"range","is_partitioned":false,"columns":[{"name":"id","atttypid":23,"attlen":null,"attnum":1,"attndims":0,"atttypmod":-1,"attacl":[""],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attidentity":"","defval":null,"typname":"integer","displaytypname":"integer","cltype":"integer","elemoid":23,"typnsname":"pg_catalog","defaultstorage":"p","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Room","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":true,"is_primary_key":true,"attprecision":null,"edit_types":["bigint","double precision","information_schema.cardinal_number","integer","money","numeric","oid","real","regclass","regcollation","regconfig","regdictionary","regnamespace","regoperator","regoperator","regproc","regprocedure","regrole","regtype","smallint"],"cid":"c13"}],"name":"name","atttypid":1043,"attlen":"50","attnum":2,"attndims":0,"atttypmod":-1,"attacl":[""],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"x","attidentity":"","defval":null,"typname":"character varying","displaytypname":"character varying","cltype":"character varying","elemoid":1043,"typnsname":"pg_catalog","defaultstorage":"x","description":null,"indkey":"1","isdup":false,"collspcname":"pg_catalog.\"default\"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Room","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":null,"edit_types":["\"char\"","character","character varying","character varying","information_schema.character_data","information_schema.yes_or_no","name","regclass","text"],"cid":"c14","min_val_attlen":1,"max_val_attlen":2147483647},"name":"space","atttypid":1700,"attlen":"7","attnum":3,"attndims":0,"atttypmod":-1,"attacl":
```

```
[[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "Room", "is_view_only": false, "seqrelid": null, "seqtypeid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": "2", "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "real", "smallint"], "cid": "c15", "min_val_attlen": 1, "max_val_attlen": 1000, "min_val_attprecision": 1, "max_val_attprecision": 1000}, {"name": "space_left", "atttypeid": 1700, "attlen": "7", "attnum": 4, "atndims": 0, "atttypmod": -1, "attacl": [[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "Room", "is_view_only": false, "seqrelid": null, "seqtypeid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": "2", "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "numeric", "real", "smallint"], "cid": "c16", "min_val_attlen": 1, "max_val_attlen": 1000, "min_val_attprecision": 1, "max_val_attprecision": 1000}, {"name": "min_humidity", "atttypeid": 1700, "attlen": "8", "attnum": 5, "atndims": 0, "atttypmod": -1, "attacl": [[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "Room", "is_view_only": false, "seqrelid": null, "seqtypeid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": "2", "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "numeric", "numeric", "real", "smallint"], "cid": "c17", "min_val_attlen": 1, "max_val_attlen": 1000, "min_val_attprecision": 1, "max_val_attprecision": 1000}, {"name": "max_humidity", "atttypeid": 1700, "attlen": "8", "attnum": 6, "atndims": 0, "atttypmod": -1, "attacl": [[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "Room", "is_view_only": false, "seqrelid": null, "seqtypeid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": "2", "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "numeric", "numeric", "real", "smallint"], "cid": "c18", "min_val_attlen": 1, "max_val_attlen": 1000, "min_val_attprecision": 1, "max_val_attprecision": 1000}]]
```



```

else,"attprecision":"2","edit_types":["bigint","double
precision","integer","money","numeric","numeric","numeric","numeric","nume
ric","numeric","real","smallint"],"cid":"c18","min_val_attlen":1,"max_val_attlen":1000,"min_val_attpre
cision":1,"max_val_attprecision":1000},
{"name":"min_temp","atttypid":1700,"attlen":"5","attnum":7,"attndims":0,"atttypmod"
:-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attiden
tity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"num
eric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":n
ull,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_
sys_column":false,"colconstype":"n","genexpr":null,"relname":"Room","is_view_only":
false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":
null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":f
alse,"attprecision":"2","edit_types":["bigint","double
precision","integer","money","numeric","numeric","numeric","numeric","numeric","num
eric","numeric","real","smallint"],"cid":"c19","min_val_attlen":1,"max_val_attlen":1000,"min_
val_attprecision":1,"max_val_attprecision":1000},
{"name":"max_temp","atttypid":1700,"attlen":"5","attnum":8,"attndims":0,"atttypmod"
:-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attiden
tity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"num
eric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":n
ull,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_
sys_column":false,"colconstype":"n","genexpr":null,"relname":"Room","is_view_only":
false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":
null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":f
alse,"attprecision":"2","edit_types":["bigint","double
precision","integer","money","numeric","numeric","numeric","numeric","numeric","num
eric","numeric","numeric","real","smallint"],"cid":"c20","min_val_attlen":1,"max_val_attlen":
1000,"min_val_attprecision":1,"max_val_attprecision":1000}], "schema":"C21-703-
7","r1spolicy":false,"forcer1spolicy":false,"unique_constraint":
[{"oid":41127,"name":"uni_room_name","col_count":1,"spcname":"pg_default","comment"
:null,"condeferrable":false,"condeferred":false,"conislocal":true,"fillfactor":null
,"columns":[{"column":"name","cid":"c22"}],"include":
[],"cid":"c21"}]], "note":"","metadata":
{"data_failed":false,"is_promise":false}}}, "f9071bcc-9e1e-474c-9c83-fa779a55e73f":
{"id":"f9071bcc-9e1e-474c-9c83-
fa779a55e73f","type":"table","selected":false,"x":230,"y":377,"ports":
[{"id":"6ce0d9d6-0ad2-4fc8-9449-
eacf851565ca","type":"onetomany","x":399.9999702500426,"y":493.99999703457314,"name
":"coll-port-2","alignment":"right","parentNode":"f9071bcc-9e1e-474c-9c83-
fa779a55e73f","links":["ed690931-9e4f-49b5-8f02-8c8bee91742e"],"subtype":"many"},
{"id":"0734642d-2350-4607-95e7-
10d96f25e7c7","type":"onetomany","x":399.9999702500426,"y":468.9999861354381,"name"
:"coll-port-1","alignment":"right","parentNode":"f9071bcc-9e1e-474c-9c83-
fa779a55e73f","links":["395614bd-919c-4261-95e4-

```

```

9097b920a43d"], "subtype": "one"}], "name": "Untitled", "color": "rgb(0,192,255)", "portsIn
nOrder": [], "portsOutOrder": ["6ce0d9d6-0ad2-4fc8-9449-eacf851565ca", "0734642d-2350-
4607-95e7-10d96f25e7c7"], "otherInfo": {"data":
{"name": "Shelf", "description": null, "relpersistence": false, "fillfactor": null, "toast_
tuple_target": null, "parallel_workers": null, "coll_inherits":
[], "hastoahtable": true, "toast_autovacuum_enabled": "x", "autovacuum_enabled": "x", "pr
imary_key":
[{"oid": 41140, "name": "Shelf_pkey", "col_count": 1, "spcname": "pg_default", "comment": nu
ll, "condeferrable": false, "condeferred": false, "conislocal": true, "fillfactor": null, "c
olumns": [{"column": "shelf_id", "cid": "c75"}], "include":
[], "cid": "c74"}], "foreign_key":
[{"name": "Shelf_room_id_fkey", "condeferrable": false, "condeferred": false, "confupdtype":
"a", "confdeltype": "a", "confmatchtype": false, "conkey": [2], "confkey":
[1], "confrelid": 41115, "fknspace": "C21-703-7", "fktable": "Shelf", "refnspace": "C21-703-
7", "reftable": "Room", "comment": null, "convalidated": false, "conislocal": true, "columns":
[{"local_column": "room_id", "references": "7fbb1aa-ae22-4d2e-bdc6-
34e74f61a235", "referenced": "id", "references_table_name": "Room", "cid": "c77"}], "remot
e_schema": "C21-703-
7", "remote_table": "Room", "coveringindex": null, "autoindex": false, "hasindex": false, "c
id": "c76"}], "partition_keys": [], "partitions":
[], "partition_type": "range", "is_partitioned": false, "columns":
[{"name": "shelf_id", "atttypid": 23, "attlen": null, "attnum": 1, "attndims": 0, "atttypmod":
-1, "attacl":
[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "p", "attiden
tity": "", "defval": null, "typename": "integer", "displaytypename": "integer", "cltype": "int
eger", "elemoid": 23, "typnspace": "pg_catalog", "defaultstorage": "p", "description": nul
l, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sy
s_column": false, "colconstype": "n", "genexpr": null, "relname": "Shelf", "is_view_only": f
alse, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": n
ull, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": true, "is_primary_key": tru
e, "attprecision": null, "edit_types": ["bigint", "double
precision", "information_schema.cardinal_number", "integer", "money", "numeric", "oid", "
real", "regclass", "regcollation", "regconfig", "regdictionary", "regnamespace", "regoper
", "regoperator", "regproc", "regprocedure", "regrole", "regtype", "smallint"], "cid": "c78
"},
{"name": "room_id", "atttypid": 23, "attlen": null, "attnum": 2, "attndims": 0, "atttypmod": -
1, "attacl":
[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "p", "attiden
tity": "", "defval": null, "typename": "integer", "displaytypename": "integer", "cltype": "int
eger", "elemoid": 23, "typnspace": "pg_catalog", "defaultstorage": "p", "description": nul
l, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": true, "seclabels": null, "is_sys
_column": false, "colconstype": "n", "genexpr": null, "relname": "Shelf", "is_view_only": fa
lse, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": nu
ll, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": fal
se, "attprecision": null, "edit_types": ["bigint", "double
precision", "information_schema.cardinal_number", "integer", "integer", "money", "numeri

```

```

c","oid","real","regclass","regcollation","regconfig","regdictionary","regnamespace",
,"regoper","regoperator","regproc","regprocedure","regrole","regtype","smallint"],
"cid":"c79"}},
{"name":"max_spaces","atttypid":23,"attlen":null,"attnum":3,"attndims":0,"atttypmod":
-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnsname":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sy
s_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":f
alse,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":n
ull,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":fa
lse,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","integer","integer","mone
y","numeric","oid","real","regclass","regcollation","regconfig","regdictionary","re
gnamespace","regoper","regoperator","regproc","regprocedure","regrole","regtype","s
mallint"],"cid":"c80"}},
{"name":"spaces_left","atttypid":23,"attlen":null,"attnum":4,"attndims":0,"atttypmo
d":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnsname":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sy
s_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":f
alse,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":n
ull,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":fa
lse,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","integer","integer","inte
ger","money","numeric","oid","real","regclass","regcollation","regconfig","regdicti
onary","regnamespace","regoper","regoperator","regproc","regprocedure","regrole","r
egtype","smallint"],"cid":"c81"}},
{"name":"slot_w","atttypid":1700,"attlen":"7","attnum":5,"attndims":0,"atttypmod":-
1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attiden
tity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"num
eric","elemoid":1700,"typnsname":"pg_catalog","defaultstorage":"m","description":n
ull,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_
sys_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only"
:false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax"
:null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":
false,"attprecision":null,"edit_types":["bigint","double
precision","integer","money","numeric","numeric","real","smallint"],"cid":"c82","mi
n_val_attlen":1,"max_val_attlen":1000},
{"name":"slot_h","atttypid":1700,"attlen":"7","attnum":6,"attndims":0,"atttypmod":-
1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attiden

```

```

tity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":null,"edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","real","smallint"],"cid":"c83","min_val_attlen":1,"max_val_attlen":1000},
{"name":"slot_1","atttypid":1700,"attlen":"7","attnum":7,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c84","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"max_weight","atttypid":1700,"attlen":"7","attnum":8,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c85","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"weight_left","atttypid":1700,"attlen":"7","attnum":9,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"Shelf","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","numeric","num

```

```

eric","real","smallint"],["cid":"c86","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000}], "schema":"C21-703-7", "rllspolicy":false, "forcerllspolicy":false, "unique_constraint": [], "note":"","metadata":{"data_failed":false, "is_promise":false}}}, "a44feb65-58a0-4043-ba99-638b350446f5":{"id":"a44feb65-58a0-4043-ba99-638b350446f5", "type":"table", "selected":false, "x":117.5, "y":778, "ports":[{"id":"c79bf0fa-0496-4c55-b9a8-e588d8833eab", "type":"onetomany", "x":287.4999702500426, "y":995.0000035740542, "name":"coll-port-6", "alignment":"right", "parentNode":"a44feb65-58a0-4043-ba99-638b350446f5", "links":["4d561263-21d3-44a2-ba0b-28eb83f5f4ca"], "subtype":"many"}, {"id":"d371b914-813f-470a-9fe9-50f51641b95b", "type":"onetomany", "x":287.4999702500426, "y":1120.0000253723242, "name":"coll-port-11", "alignment":"right", "parentNode":"a44feb65-58a0-4043-ba99-638b350446f5", "links":["395614bd-919c-4261-95e4-9097b920a43d"], "subtype":"many"}], "name":"Untitled", "color":"rgb(0,192,255)", "portsInOrder":[], "portsOutOrder":["c79bf0fa-0496-4c55-b9a8-e588d8833eab", "d371b914-813f-470a-9fe9-50f51641b95b"], "otherInfo":{"data":{"name":"product", "description":null, "relpersistence":false, "fillfactor":null, "toast_tuple_target":null, "parallel_workers":null, "coll_inherits": [], "hastoasttable":true, "toast_autovacuum_enabled":"x", "autovacuum_enabled":"x", "primary_key":[{"oid":41169, "name":"product_pkey", "col_count":1, "spcname":"pg_default", "comment":null, "condeferrable":false, "condeferred":false, "conislocal":true, "fillfactor":null, "columns":[{"column":"product_id", "cid":"c107"}], "include": [], "cid":"c106"}], "foreign_key":[{"name":"product_contract_id_fkey", "condeferrable":false, "condeferred":false, "confupdtype":"a", "confdeltype":"a", "confmatchtype":false, "conkey":[6], "confkey":[1], "confrelid":41151, "fknspace":"C21-703-7", "fktable":"product", "refnspace":"C21-703-7", "reftable":"Contract", "comment":null, "convalidated":false, "conislocal":true, "columns":[{"local_column":"contract_id", "references":"d0cd97a7-0f02-43a0-9cc4-603eae5a62b", "referenced":"contract_id", "references_table_name":"C21-703-7.Contract", "cid":"c109"}], "remote_schema":"C21-703-7", "remote_table":"Contract", "coveringindex":null, "autoindex":false, "hasindex":false, "cid":"c108"}, {"name":"product_shelf_id_fkey", "condeferrable":false, "condeferred":false, "confupdtype":"a", "confdeltype":"a", "confmatchtype":false, "conkey":[11], "confkey":[1], "confrelid":41129, "fknspace":"C21-703-7", "fktable":"product", "refnspace":"C21-703-7", "reftable":"Shelf", "comment":null, "convalidated":false, "conislocal":true, "columns":[{"local_column":"shelf_id", "references":"f9071bcc-9e1e-474c-9c83-fa779a55e73f", "referenced":"shelf_id", "references_table_name":"Shelf", "cid":"c111"}], "remote_schema":"C21-703-7", "remote_table":"Shelf", "coveringindex":null, "autoindex":false, "hasindex":false, "cid":"c110"}], "partition_keys":[], "partitions": [], "partition_type":"range", "is_partitioned":false, "columns":[{"name":"product_id", "atttypid":23, "attlen":null, "attnum":1, "attndims":0, "atttypmod":-1, "attacl":

```

```
[[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "p", "attidentity": "", "defval": null, "typename": "integer", "displaytypename": "integer", "cltype": "integer", "elemoid": 23, "typnsname": "pg_catalog", "defaultstorage": "p", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "product", "is_view_only": false, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": true, "is_primary_key": true, "attprecision": null, "edit_types": ["bigint", "double precision", "information_schema.cardinal_number", "integer", "money", "numeric", "oid", "real", "regclass", "regcollation", "regconfig", "regdictionary", "regnamespace", "regoperator", "regoperator", "regproc", "regprocedure", "regrole", "regtype", "smallint"], "cid": "c112"},
{"name": "width", "atttypid": 1700, "attlen": "7", "attnum": 2, "atndims": 0, "atttypmod": -1, "attacl":
[[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "product", "is_view_only": false, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": null, "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "real", "smallint"], "cid": "c113", "min_val_attlen": 1, "max_val_attlen": 1000},
{"name": "height", "atttypid": 1700, "attlen": "7", "attnum": 3, "atndims": 0, "atttypmod": -1, "attacl":
[[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "product", "is_view_only": false, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": null, "edit_types": ["bigint", "double precision", "integer", "money", "numeric", "numeric", "numeric", "real", "smallint"], "cid": "c114", "min_val_attlen": 1, "max_val_attlen": 1000},
{"name": "length", "atttypid": 1700, "attlen": "7", "attnum": 4, "atndims": 0, "atttypmod": -1, "attacl":
[[], "attnotnull": true, "attoptions": null, "attstattarget": -1, "attstorage": "m", "attidentity": "", "defval": null, "typename": "numeric", "displaytypename": "numeric", "cltype": "numeric", "elemoid": 1700, "typnsname": "pg_catalog", "defaultstorage": "m", "description": null, "indkey": "1", "isdup": false, "collspcname": "", "is_fk": false, "seclabels": null, "is_sys_column": false, "colconstype": "n", "genexpr": null, "relname": "product", "is_view_only": false, "seqrelid": null, "seqtypid": null, "seqstart": null, "seqincrement": null, "seqmax": null, "seqmin": null, "seqcache": null, "seqcycle": null, "is_pk": false, "is_primary_key": false, "attprecision": null, "edit_types": ["bigint", "double
```



```

precision","integer","money","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c115","min_val_attlen":1,"max_val_attlen":1000},
{"name":"unpacking_date","atttypid":1082,"attlen":null,"attnum":5,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attidentity":"","defval":null,"typename":"date","displaytypename":"date","cltype":"date","elemoid":1082,"typnsname":"pg_catalog","defaultstorage":"p","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":null,"edit_types":["date","timestamp with time zone","timestamp without time zone"],"cid":"c116"},
{"name":"contract_id","atttypid":23,"attlen":null,"attnum":6,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attidentity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"integer","elemoid":23,"typnsname":"pg_catalog","defaultstorage":"p","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":true,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":null,"edit_types":["bigint","double precision","information_schema.cardinal_number","integer","integer","money","numeric","oid","real","regclass","regcollation","regconfig","regdictionary","regnamespace","regoper","regoperator","regproc","regprocedure","regrole","regtype","smallint"],"cid":"c117"},
{"name":"max_humid","atttypid":1700,"attlen":"8","attnum":7,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnsname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c118","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"min_humid","atttypid":1700,"attlen":"8","attnum":8,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnsname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_

```

```

sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypeid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c119","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"max_temp","atttypeid":1700,"attlen":"5","attnum":9,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnsname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypeid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c120","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"min_temp","atttypeid":1700,"attlen":"5","attnum":10,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attidentity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"numeric","elemoid":1700,"typnsname":"pg_catalog","defaultstorage":"m","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypeid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":"2","edit_types":["bigint","double precision","integer","money","numeric","numeric","numeric","numeric","numeric","numeric","numeric","numeric","real","smallint"],"cid":"c121","min_val_attlen":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000},
{"name":"shelf_id","atttypeid":23,"attlen":null,"attnum":11,"attndims":0,"atttypmod":-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attidentity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"integer","elemoid":23,"typnsname":"pg_catalog","defaultstorage":"p","description":null,"indkey":"1","isdup":false,"collspcname":"","is_fk":true,"seclabels":null,"is_sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only":false,"seqrelid":null,"seqtypeid":null,"seqstart":null,"seqincrement":null,"seqmax":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":false,"attprecision":null,"edit_types":["bigint","double precision","information_schema.cardinal_number","integer","integer","integer","money","numeric","oid","real","regclass","regcollation","regconfig","regdictionary","regnamespace","regoper","regoperator","regproc","regprocedure","regrole","regtype","s

```

```

mallint"],"cid":"c122"},
{"name":"slot_id","atttypid":23,"attlen":null,"attnum":12,"attndims":0,"atttypmod":
-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"p","attiden
tity":"","defval":null,"typename":"integer","displaytypename":"integer","cltype":"int
eger","elemoid":23,"typnspname":"pg_catalog","defaultstorage":"p","description":nul
l,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_sy
s_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_only"
:false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqmax"
:null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key":
false,"attprecision":null,"edit_types":["bigint","double
precision","information_schema.cardinal_number","integer","integer","integer","inte
ger","money","numeric","oid","real","regclass","regcollation","regconfig","regdicti
onary","regnamespace","regoper","regoperator","regproc","regprocedure","regrole","r
egtype","smallint"],"cid":"c123"},
{"name":"weight","atttypid":1700,"attlen":"7","attnum":13,"attndims":0,"atttypmod":
-1,"attacl":
[],"attnotnull":true,"attoptions":null,"attstattarget":-1,"attstorage":"m","attiden
tity":"","defval":null,"typename":"numeric","displaytypename":"numeric","cltype":"num
eric","elemoid":1700,"typnspname":"pg_catalog","defaultstorage":"m","description":n
ull,"indkey":"1","isdup":false,"collspcname":"","is_fk":false,"seclabels":null,"is_
sys_column":false,"colconstype":"n","genexpr":null,"relname":"product","is_view_onl
y":false,"seqrelid":null,"seqtypid":null,"seqstart":null,"seqincrement":null,"seqma
x":null,"seqmin":null,"seqcache":null,"seqcycle":null,"is_pk":false,"is_primary_key
":false,"attprecision":"2","edit_types":["bigint","double
precision","integer","money","numeric","numeric","numeric","numeric","numeric","num
eric","numeric","numeric","numeric","real","smallint"],"cid":"c124","min_val_attlen
":1,"max_val_attlen":1000,"min_val_attprecision":1,"max_val_attprecision":1000}], "s
chema":"C21-703-7","rlspolicy":false,"forcerlspolicy":false,"unique_constraint":
[{"oid":41171,"name":"uni_place","col_count":2,"spcname":"pg_default","comment":nul
l,"condeferrable":false,"condeferred":false,"conislocal":true,"fillfactor":null,"co
lumsns":[{"column":"shelf_id","cid":"c126"},
{"column":"slot_id","cid":"c127"}],"include":
[],"cid":"c125"}]],"note":"","metadata":
{"data_failed":false,"is_promise":false}}}}}}}}

```

## Лабораторная работа 3

```

--0
SELECT sum(weight) from "C21-703-7"."product";
--1
SELECT sum(width*height*length) from "C21-703-7"."product" p GROUP BY (SELECT

```

```

client_id from "C21-703-7"."Contract" c
  where c.contract_id = p.contract_id) ORDER BY sum(weight) DESC LIMIT 3;
--2
SELECT s.shelf_id, count(p.product_id) FROM "C21-703-7"."Shelf" s LEFT JOIN "C21-
703-7"."product" p
on(s.shelf_id = p.shelf_id) GROUP BY s.shelf_id
--3
delete from "C21-703-7"."product" p where (SELECT max_weight from "C21-703-
7"."Shelf" s
                                where s.shelf_id = p.shelf_id) < 100;
--4
update "C21-703-7"."Contract" set expiration_date = expiration_date + interval '1
month' where client_id = 100;
--5
alter table "C21-703-7"."product" add column if not exists is_fragile char NOT
NULL;
--6
alter table "C21-703-7"."product" add constraint max_weight_check (max_weight <=
500);

```

```

DROP SEQUENCE IF EXISTS room_generator;
DROP SEQUENCE IF EXISTS shelf_generator;
DROP SEQUENCE IF EXISTS client_generator;
DROP SEQUENCE IF EXISTS contract_generator;
DROP SEQUENCE IF EXISTS pid_generator;

```

-- Очищаем структуру БД

```

TRUNCATE "C21-703-7"."Client" CASCADE;
TRUNCATE "C21-703-7"."Contract" CASCADE;
TRUNCATE "C21-703-7"."Room" CASCADE;
TRUNCATE "C21-703-7"."Shelf" CASCADE;
TRUNCATE "C21-703-7"."product" CASCADE;

```

SET Datestyle to German;

```

CREATE SEQUENCE room_generator INCREMENT BY 1 CACHE 10 START 1;
CREATE SEQUENCE shelf_generator INCREMENT BY 1 CACHE 10 START 1;
CREATE SEQUENCE client_generator INCREMENT BY 1 CACHE 10 START 100;
CREATE SEQUENCE contract_generator INCREMENT BY 1 CACHE 10 START 1;
CREATE SEQUENCE pid_generator INCREMENT BY 1 CACHE 10 START 1;

```

INSERT INTO "C21-703-7"."Room" Values

```

(nextval('room_generator'), 'Room1', 50, 50, 20, 60, 18, 32),
(nextval('room_generator'), 'Room2', 500, 500, 40, 100, 22, 32),
(nextval('room_generator'), 'Room3', 50, 50, 20, 60, 18, 32),

```

```
(nextval('room_generator'),'Garage1',10000,10000,40,100,22,32),  
(nextval('room_generator'),'Room4',50,50,20,60,18,32);
```

```
INSERT INTO "C21-703-7"."Shelf" Values
```

```
(nextval('shelf_generator'),(select id from "C21-703-7"."Room" where name  
='Room1'),10,10,500,400,300,500,500),  
(nextval('shelf_generator'),(select id from "C21-703-7"."Room" where name  
='Room1'),50,50,500,400,400,600,600),  
(nextval('shelf_generator'),(select id from "C21-703-7"."Room" where name  
='Room2'),40,40,500,500,500,500,500),  
(nextval('shelf_generator'),(select id from "C21-703-7"."Room" where name  
='Room3'),40,40,500,500,500,500,500),  
(nextval('shelf_generator'),(select id from "C21-703-7"."Room" where name  
='Room4'),5,5,500,500,500,40,40);
```

```
INSERT INTO "C21-703-7"."Client" Values(nextval('client_generator'),'PAO SBERBANK',
```

```
'Юридический адрес      117312, г. Москва, ул. Вавилова, д.19
```

```
БИК      044525225
```

```
ИНН      7707083893
```

```
КПП      773643001
```

```
ОКПО     57972160'),
```

```
(nextval('client_generator'),' Российская Государственная Библиотека',
```

```
' ИНН 7704097560, ОГРН 1037739390809, ОКПО 02175175'),
```

```
(nextval('client_generator'),'Мираторг', 'Наименование: "Агропромышленный холдинг  
"Мираторг", 000
```

```
Основной ОКВЭД: Консультирование по вопросам коммерческой деятельности и управления
```

```
Страна: РОССИЯ
```

```
Регион: Московская область
```

```
ИНН:      7704669440
```

```
ОКПО или др.: 84054099
```

```
Данные госрегистрации: №1077763208874 от 29.11.2007, Межрайонная инспекция ФНС N  
46 по г. Москве
```

```
Юридический адрес:      142030, Московская обл, г. Домодедово, тер. Трио-Инвест-Ям  
(Центральный Мкр, стр. 3
```

```
Почтовый адрес: 142000, Московская обл., г. Домодедово, мкр Центральный, тер. Трио-  
Инвест-Ям, стр. 3'),
```

```
(nextval('client_generator'),'НИЯУ МИФИ', 'Федеральное государственное автономное  
учреждение
```

```
Полное наименование:
```

```
Федеральное государственное автономное образовательное учреждение высшего  
образования «Национальный исследовательский ядерный университет «МИФИ»
```

```
Наименование без ОПФ:
```

```
Национальный исследовательский ядерный университет «МИФИ»
```

```
Сокращенное наименование:
```

```
НИЯУ МИФИ
```

```
Полное наименование на английском языке:
```

National Research Nuclear University МЕРhI (Moscow Engineering Physics Institute)

Сокращенное наименование на английском языке:

МЕРhI

Дата государственной регистрации образовательного учреждения:

23 ноября 1942

Адрес (место нахождения):

115409, г. Москва, Каширское шоссе, д. 31

Юридический адрес:

115409, г. Москва, Каширское шоссе, д. 31

ИНН:

7724068140

КПП:

772401001

Справочная:

+7 495 788-5699, +7 499 324-7777

Факс:

+7 499 324-2111

Адрес электронной почты:

info@mephi.ru'),

(nextval('client\_generator'),'ОЗОН','Юридический адрес 123112, г. Москва,  
Пресненская наб., д. 10, эт. 41, Пом. I, комн. 6

Фактический адрес 123112, Москва, Пресненская наб., д. 10, блок С, комплекс  
«Башня на набережной»

№ ОГРН 1027739244741

ИНН 7704217370

КПП

(По месту постановки на учет в качестве крупного налогоплательщика) 997750001  
КПП

(По месту регистрации) 770301001

Код по ОКПО 55185357

ОКВЭД 52.47.1, 45.21, 45.21.1., 51.12.23, 51.12.24, 51.18.22, 51.18.25, 51.47.34,  
51.52.23, 51.70, 52.45.4, 52.48.2, 52.48.22, 52.50.1, 52.50.2, 52.61.1, 74.40,  
74.84

ОКФС 23

ОКОПФ 65

Расчетный счет 40702810100002400756 в АО «Райффайзенбанк» г. Москва

Корреспондентский счет 30101810200000000700

БИК 044525700');

```
CREATE OR REPLACE FUNCTION slot_finder(ushelf_id integer) RETURNS integer as $$
BEGIN
CASE when (SELECT count(*) from "C21-703-7"."product" p where p.shelf_id =
```



```

ushelf_id) > 0 then
RETURN (SELECT max(slot_id) + 1 FROM "C21-703-7"."product" p where p.shelf_id =
ushelf_id);
else
RETURN 1;
END CASE;
END;

```

```

$$ language plpgsql;

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'25-03-
24','26-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name = 'PAO
SBERBANK'));

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'25-03-
24','26-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name = 'PAO
SBERBANK'));

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'29-03-
24','30-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name = 'ОЗОН'));

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'29-03-
24','30-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name = 'НИЯУ
МИФИ'));

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'29-03-
24','30-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name = 'НИЯУ
МИФИ'));

```

```

INSERT INTO "C21-703-7"."Contract" Values(nextval('contract_generator'),'29-03-
24','30-03-23',(SELECT client_id FROM "C21-703-7"."Client" where name =
'Мираторг'));

```

```

INSERT INTO "C21-703-7"."product"
Values(nextval('pid_generator'),110,120,130,now(),1,60,30,20,50,5,slot_finder(5),10
);

```

```

INSERT INTO "C21-703-7"."product"
Values(nextval('pid_generator'),300,300,300,now(),2,60,30,20,50,1,slot_finder(1),10
0);

```

```

INSERT INTO "C21-703-7"."product"
Values(nextval('pid_generator'),210,220,230,now(),3,80,50,40,70,2,slot_finder(2),37
);

```

```

INSERT INTO "C21-703-7"."product"
Values(nextval('pid_generator'),70,50,30,now(),4,60,30,20,50,5,slot_finder(5),10);

```

```

INSERT INTO "C21-703-7"."product"
Values(nextval('pid_generator'),110,120,130,now(),5,60,30,20,50,5,slot_finder(5),70
);

```

```
-- This script was generated by a beta version of the ERD tool in pgAdmin 4.  
-- Please log an issue at  
https://redmine.postgresql.org/projects/pgadmin4/issues/new if you find any bugs,  
including reproduction steps.
```

```
BEGIN;
```

```
CREATE TABLE IF NOT EXISTS "C21-703-7"."Room"
```

```
(  
    id integer,  
    name character varying(50) NOT NULL,  
    space numeric(7,2) NOT NULL,  
    space_left numeric(7,2) NOT NULL,  
    min_humidity numeric(8,2) NOT NULL,  
    max_humidity numeric(8,2) NOT NULL,  
    min_temp numeric(5,2) NOT NULL,  
    max_temp numeric(5,2) NOT NULL,  
    PRIMARY KEY (id),  
    CONSTRAINT uni_room_name UNIQUE (name),  
    CONSTRAINT positive_volume_left_room CHECK(space_left >0),  
    CONSTRAINT positive_volume_room CHECK(space >0),  
    CONSTRAINT volume_left_le_volume CHECK(space_left <= space),  
    CONSTRAINT hu_max_in_interval CHECK (max_humidity <= 100 and max_humidity  
>= 0),  
    CONSTRAINT hu_min_in_interval CHECK (min_humidity <= 100 and min_humidity  
>= 0)  
);
```

```
CREATE TABLE IF NOT EXISTS "C21-703-7"."Shelf"
```

```
(  
    shelf_id integer,  
    room_id integer NOT NULL,  
    max_spaces integer NOT NULL,  
    spaces_left integer NOT NULL,  
    slot_w numeric(7,0) NOT NULL,  
    slot_h numeric(7,0) NOT NULL,  
    slot_l numeric(7,0) NOT NULL,  
    max_weight numeric(7,2) NOT NULL,  
    weight_left numeric(7,2) NOT NULL,  
    PRIMARY KEY (shelf_id),  
    CONSTRAINT positive_size_slot_w_shelf CHECK(slot_w >0),  
    CONSTRAINT positive_size_slot_h_shelf CHECK(slot_h >0),  
    CONSTRAINT positive_size_slot_l_shelf CHECK(slot_l >0),  
    CONSTRAINT positive_weight_shelf CHECK(max_weight >0),  
    CONSTRAINT positive_weight_left_shelf CHECK(weight_left >0),
```

```

        CONSTRAINT wight_left_le_weight CHECK(weight_left <= max_weight)

);

CREATE TABLE IF NOT EXISTS "C21-703-7"."Client"
(
    client_id integer,
    name character varying(255) NOT NULL,
    requisites text NOT NULL,
    PRIMARY KEY (client_id),
    CONSTRAINT uni_client_requisites UNIQUE (requisites, name)
);

CREATE TABLE IF NOT EXISTS "C21-703-7"."Contract"
(
    contract_id integer,
    expiration_date date NOT NULL,
    signing_date date NOT NULL,
    client_id integer NOT NULL,
    PRIMARY KEY (contract_id),
    CONSTRAINT signed_not_future CHECK(signing_date <= now())
);

CREATE TABLE IF NOT EXISTS "C21-703-7".product
(
    product_id integer,
    width numeric(7,0) NOT NULL,
    height numeric(7,0) NOT NULL,
    length numeric(7,0) NOT NULL,
    unpacking_date date NOT NULL,
    contract_id integer NOT NULL,
    max_humid numeric(8,2) NOT NULL,
    min_humid numeric(8,2) NOT NULL,
    max_temp numeric(5,2) NOT NULL,
    min_temp numeric(5,2) NOT NULL,
    shelf_id integer NOT NULL,
    slot_id integer NOT NULL,
    weight numeric(7,2) NOT NULL,
    PRIMARY KEY (product_id),
    CONSTRAINT uni_place UNIQUE (shelf_id, slot_id),
    CONSTRAINT hu_max_in_interval_product CHECK (max_humid <= 100 and max_humid
>= 0),
    CONSTRAINT hu_min_in_interval_product CHECK (min_humid <= 100 and min_humid
>= 0),
    CONSTRAINT size_pos_product_width CHECK (width > 0),

```

```
CONSTRAINT size_pos_product_height CHECK (height > 0),
CONSTRAINT size_pos_product_length CHECK (length > 0),
CONSTRAINT pos_weight_product CHECK(weight > 0),
CONSTRAINT up_date_not_future CHECK (unpacking_date < now())

);

ALTER TABLE IF EXISTS "C21-703-7"."Shelf"
    ADD FOREIGN KEY (room_id)
    REFERENCES "C21-703-7"."Room" (id) MATCH SIMPLE
    ON UPDATE NO ACTION
    ON DELETE NO ACTION
    NOT VALID;

ALTER TABLE IF EXISTS "C21-703-7"."Contract"
    ADD FOREIGN KEY (client_id)
    REFERENCES "C21-703-7"."Client" (client_id) MATCH SIMPLE
    ON UPDATE NO ACTION
    ON DELETE NO ACTION
    NOT VALID;

ALTER TABLE IF EXISTS "C21-703-7"."product"
    ADD FOREIGN KEY (shelf_id)
    REFERENCES "C21-703-7"."Shelf" (shelf_id) MATCH SIMPLE
    ON UPDATE NO ACTION
    ON DELETE NO ACTION
    NOT VALID;

ALTER TABLE IF EXISTS "C21-703-7"."product"
    ADD FOREIGN KEY (contract_id)
    REFERENCES "C21-703-7"."Contract" (contract_id) MATCH SIMPLE
    ON UPDATE NO ACTION
    ON DELETE NO ACTION
    NOT VALID;

END;
```

## Лабораторная работа 4

(7)

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14

Задача 1. Составить программу - С++ 90%

Описание задачи: В 14.09.14 на 10.09.14