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-- Номер 1:
-- Вывести все директории в виде:
-- ID, Название, Путь до корня

WITH RECURSIVE fs_hierarchy(id, parent_id, name, type, file_size, path) AS (
    SELECT id, parent_id, name, type, file_size, '/' || name::VARCHAR
    FROM file_system WHERE parent_id IS NULL

    UNION ALL

    SELECT fs.id, fs.parent_id, fs.name, fs.type, fs.file_size, fsh.path || '/' || fs.name
    FROM file_system fs
    JOIN fs_hierarchy fsh
    ON fs.parent_id = fsh.id
)
SELECT id, name, path FROM fs_hierarchy WHERE type LIKE 'DIR';
```

	id integer	name character varying (2000)	path text
1	0	Program Files	/Program Files
2	1	3T Software Labs	/Program Files/3T Software Labs
3	573	7-Zip	/Program Files/7-Zip
4	682	Adobe	/Program Files/Adobe
5	6636	AMD	/Program Files/AMD
6	6638	Canon	/Program Files/Canon
7	6724	Common Files	/Program Files/Common Files
8	7470	Crypto Pro	/Program Files/Crypto Pro
9	7554	Docker	/Program Files/Docker
10	7902	Far Manager	/Program Files/Far Manager
11	8483	Git	/Program Files/Git
12	15278	Google	/Program Files/Google
13	16734	Hyper-V	/Program Files/Hyper-V
14	16823	Internet Explorer	/Program Files/Internet Explorer
15	16842	KeePassXC	/Program Files/KeePassXC
16	17007	Lenovo	/Program Files/Lenovo
Total rows: 1000 of 9033 Query complete 00:00:00.255 Ln 10, Col 1			

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-- Номер 2:
-- Для каждой директории посчитать объем занимаемого места на диске (с учетом всех вложенных папок)
-- ID, Название, Путь до корня, total_size

WITH RECURSIVE fs_hierarchy(id, parent_id, name, type, file_size, path) AS (
    SELECT id, parent_id, name, type, file_size, '/' || name::VARCHAR
    FROM file_system WHERE parent_id IS NULL

    UNION ALL

    SELECT fs.id, fs.parent_id, fs.name, fs.type, fs.file_size, fsh.path || '/' || fs.name
    FROM file_system fs
    JOIN fs_hierarchy fsh
    ON fs.parent_id = fsh.id
)
SELECT fsh1.id, fsh1.name, fsh1.path, SUM(fsh2.file_size) AS total_size
FROM fs_hierarchy fsh1
LEFT JOIN fs_hierarchy fsh2
ON fsh2.path LIKE fsh1.path || '/' OR fsh2.path LIKE fsh1.path
WHERE fsh1.type LIKE 'DIR' --AND fsh1.id < 1000
GROUP BY fsh1.id, fsh1.name, fsh1.path;
```

	id integer	name character varying (2000)	path text	total_size bigint	ratio numeric
1	0	Program Files	/Program Files	14893337645	100.0
2	1	3T Software Labs	/Program Files/3T Software Labs	384024122	2.5784960440276112
3	2	Studio 3T	/Program Files/3T Software Labs/Studio 3T	384024122	100.0000000000000000
4	3	.install4j	/Program Files/3T Software Labs/Studio 3T/.install4j	5299170	1.3799055049984594
5	36	user	/Program Files/3T Software Labs/Studio 3T/.install...	700590	13.2207496645701119
6	114	jre	/Program Files/3T Software Labs/Studio 3T/jre	124401895	32.3942918877371979
7	115	bin	/Program Files/3T Software Labs/Studio 3T/jre/bin	21982192	17.6703031734363854
8	199	server	/Program Files/3T Software Labs/Studio 3T/jre/bin...	12642184	57.5110252881059359
9	211	conf	/Program Files/3T Software Labs/Studio 3T/jre/conf	111879	0.08993351749183563482
10	213	management	/Program Files/3T Software Labs/Studio 3T/jre/con...	28193	25.1995459380223277
11	218	security	/Program Files/3T Software Labs/Studio 3T/jre/con...	68977	61.6532146336667292
12	221	policy	/Program Files/3T Software Labs/Studio 3T/jre/con...	8184	11.8648245067196312
13	222	limited	/Program Files/3T Software Labs/Studio 3T/jre/con...	5455	66.6544477028347996
14	227	unlimited	/Program Files/3T Software Labs/Studio 3T/jre/con...	339	4.1422287390029326
15	231	include	/Program Files/3T Software Labs/Studio 3T/jre/incl...	338423	0.27204006819992573264
Total rows: 1000 of 9033 Query complete 00:02:57.246 Ln 51, Col 1					

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-- Номер 3:
-- Добавить в запрос: сколько процентов директория занимает места относительно всех среди своих соседей (siblings)
-- ID, Название, Путь до корня, total_size, ratio

WITH RECURSIVE fs_hierarchy(id, parent_id, name, type, file_size, path) AS (
    SELECT id, parent_id, name, type, file_size, '/' || name::VARCHAR
    FROM file_system WHERE parent_id is NULL

    UNION ALL

    SELECT fs.id, fs.parent_id, fs.name, fs.type, fs.file_size, fsh.path || '/' || fs.name
    FROM file_system fs
    JOIN fs_hierarchy fsh
    ON fs.parent_id = fsh.id
),
fs_size AS (
    SELECT fsh1.id, fsh1.name, fsh1.parent_id, fsh1.path, SUM(fsh2.file_size) AS total_size
    FROM fs_hierarchy fsh1
    LEFT JOIN fs_hierarchy fsh2
    ON fsh2.path LIKE fsh1.path || '/' OR fsh2.path LIKE fsh1.path
    WHERE fsh1.type LIKE 'DIR'
    GROUP BY fsh1.id, fsh1.name, fsh1.parent_id, fsh1.path
)
SELECT fss1.id,
       fss1.name,
       fss1.path,
       fss1.total_size,
       CASE WHEN fss1.total_size=0 THEN 0.0
            WHEN fss2.total_size IS NULL THEN 100.0
            ELSE fss1.total_size * 100.0 / fss2.total_size
       END AS ratio
FROM fs_size fss1
LEFT JOIN fs_size fss2
ON fss1.parent_id = fss2.id;

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	id integer	name character varying (2000)	path text	total_size bigint	ratio numeric
1	0	Program Files	/Program Files	14893337645	100.0
2	1	3T Software Labs	/Program Files/3T Software Labs	384024122	2.5784960440276112
3	2	Studio 3T	/Program Files/3T Software Labs/Studio 3T	384024122	100.0000000000000000
4	3	.install4j	/Program Files/3T Software Labs/Studio 3T/.install4j	5299170	1.3799055049984594
5	36	user	/Program Files/3T Software Labs/Studio 3T/.install...	700590	13.2207496645701119
6	114	jre	/Program Files/3T Software Labs/Studio 3T/jre	124401895	32.3942918877371979
7	115	bin	/Program Files/3T Software Labs/Studio 3T/jre/bin	21982192	17.6703031734363854
8	199	server	/Program Files/3T Software Labs/Studio 3T/jre/bin...	12642184	57.5110252881059359
9	211	conf	/Program Files/3T Software Labs/Studio 3T/jre/conf	111879	0.08993351749183563482
10	213	management	/Program Files/3T Software Labs/Studio 3T/jre/con...	28193	25.1995459380223277
11	218	security	/Program Files/3T Software Labs/Studio 3T/jre/con...	68977	61.6532146336667292
12	221	policy	/Program Files/3T Software Labs/Studio 3T/jre/con...	8184	11.8648245067196312
13	222	limited	/Program Files/3T Software Labs/Studio 3T/jre/con...	5455	66.6544477028347996
14	227	unlimited	/Program Files/3T Software Labs/Studio 3T/jre/con...	339	4.1422287390029326
15	231	include	/Program Files/3T Software Labs/Studio 3T/jre/incl...	338423	0.27204006819992573264

Total rows: 1000 of 9033 Query complete 00:02:57.246 Ln 51, Col 1