Table

category_name	category_description	category_id	parent_category_id
hardware5	processors, sound and video cards, network cards, motherboards	15	10
hardware6	keyboards, mouses, mouse pads	16	10
hardware7	other peripherals (CD-ROM, DVD, tape cartridge drives, …)	17	10
hardware8	miscellaneous hardware (cables, screws, power supplies …)	19	10
software	computer software	20	90

Approach 1:List All category of 1 parent category:

```sql
SELECT c.category_name,
        c.category_description
FROM oe.categories_tab AS c
WHERE c.parent_category_id;
```

Parent-Child Tree in SQL

Approach 2: List a Parent Node For a Child Node: Self Join

```sql
SELECT c1.categoriy_id AS child_categroy_id
       c1,parent_category_id,
       c1.category_name,
       c1.category_description,
       c2.category_name AS parent_category_name,
       c2.category_description AS
parent_category_description
FROM oe.categories_tab c1
LEFT JOIN oe_categories_tab  c2
ON c1.parent_category_id = c2.category_id
ORDER BY c1.child_category_id ASC;
```

Approach 3:Get a Generation Number (or Tree Level) for Each Node : CTEs

```sql
-- Define the recursive CTE to create a hierarchy
with levels
WITH RECURSIVE CategoryHierarchy AS (
    -- Anchor member: start with root categories
(those without parents)
    SELECT
        category_id,
        category_name,
        category_description,
        parent_category_id,
        0 AS tree_level -- Root categories are at
level 0
    FROM
        oe.categories_tab
    WHERE
        parent_category_id IS NULL

    UNION ALL
```

Approach 3:Get a Generation Number (or Tree Level) for Each Node : CTEs

```sql
    -- Recursive member: join each category with its parent
    SELECT
        c.category_id,
        c.category_name,
        c.category_description,
        c.parent_category_id,
        ch.tree_level + 1 AS tree_level -- Increment tree
level by 1 for each level down
    FROM
        oe.categories_tab c
    INNER JOIN
        CategoryHierarchy ch ON c.parent_category_id =
ch.category_id
)
```

Approach 3:Get a Generation Number (or Tree Level) for Each Node : CTEs

```sql
-- Select from the CTE to get the desired result set
SELECT
  ch.category_id AS child_category_id,
  ch.parent_category_id,
  ch.category_name,
  ch.category_description,
  pc.category_name AS parent_category_name,
  pc.category_description AS parent_category_description,
  ch.tree_level -- Include the tree level in the result
FROM
  CategoryHierarchy ch
LEFT JOIN
  oe.categories_tab pc ON ch.parent_category_id =
pc.category_id
ORDER BY
  ch.child_category_id ASC;
```