

Database Programming with PL/SQL

6-2: Indexing Tables of Records

Practice Activities

Vocabulary

Identify the vocabulary word for each definition below.

	A set of occurrences of the same kind of data
	A collection which is based on a single field or column; for example, on the last_name column of EMPLOYEES
	A collection which is based on a composite record type; for example, on the whole DEPARTMENTS row

Try It / Solve It

1. PL/SQL collections:

A. In your own words, describe what a PL/SQL collection is.

B. Which of the following are collections and which are not?

1. A list of all employees' last names
2. The character value "Chang"
3. The populations of all countries in Europe
4. All the data stored in the employees table about a specific employee.

C. What is the difference between an INDEX BY table and a database table such as EMPLOYEES or COUNTRIES?

D. Describe the difference between an INDEX BY table and an INDEX BY table of records.

E. Look at the following code. Describe the difference between t_pops and v_pops_tab. Is v_pops_tab an INDEX BY table or an INDEX BY table of records? How do you know?

```
DECLARE
  TYPE t_pops IS TABLE OF countries.population%TYPE
    INDEX BY BINARY_INTEGER;
  v_pops_tab  t_pops;
```

2. INDEX BY tables of countries in South America:

- A. Write and execute an anonymous block that declares and populates an INDEX BY table of countries in South America (`region_id = 5`). The table should use `country_id` as a primary key, and should store the country names as the element values. The data should be stored in the table in ascending sequence of `country_id`. The block should not display any output. Save your code.
- B. Modify the block so that after populating the INDEX BY table, it uses a FOR loop to display the contents of the INDEX BY table. You will need to use the `FIRST`, `LAST`, and `EXISTS` table methods. Execute the block and check the displayed results. Save your code.
- C. Modify the block again so that instead of displaying all the contents of the table, it displays only the first and last elements and the number of elements in the INDEX BY table. Execute the block and check the displayed results.

3. INDEX BY tables of records:

- A. Write and execute an anonymous block that declares and populates an INDEX BY table of records containing employee data. The table of records should use the employee id as a primary key, and each element should contain an employee's last name, job id, and salary. The data should be stored in the INDEX BY table of records in ascending sequence of employee id. The block should not display any output.

Hint: declare a cursor to fetch the employee data, then declare the INDEX BY table as *cursor-name%*ROWTYPE. Save your code.

- B. Modify the block so that after populating the table of records, it uses a FOR loop to display to display the contents. You will need to use the `FIRST`, `LAST` and `EXISTS` table methods. Execute the block and check the displayed results. Save your code.