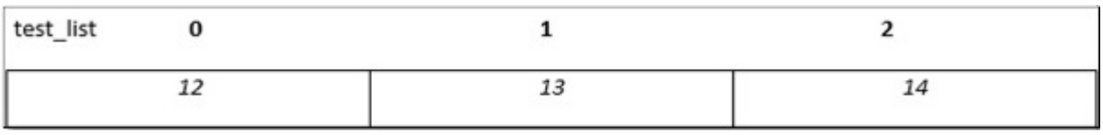
Dart Programming - Lists

A very commonly used collection in programming is an **array**. Dart represents arrays in the form of **List** objects. A **List** is simply an ordered group of objects. The **dart:core** library provides the List class that enables creation and manipulation of lists.

The logical representation of a list in Dart is given below −



- **test_list** − is the identifier that references the collection.
- The list contains in it the values 12, 13, and 14. The memory blocks holding these values are known as **elements**.
- Each element in the List is identified by a unique number called the **index**. The index starts from **zero** and extends up to **n-1** where **n** is the total number of elements in the List. The index is also referred to as the **subscript**.

Lists can be classified as −

- Fixed Length List
- Growable List

Let us now discuss these two types of **lists** in detail.

Fixed Length List

A fixed length list's length cannot change at runtime. The syntax for creating a fixed length list is as given below −

Step 1 − Declaring a list

The syntax for declaring a fixed length list is given below −

```
var list_name = new List(initial_size)
```

The above syntax creates a list of the specified size. The list cannot grow or shrink at runtime. Any attempt to resize the list will result in an exception.

Step 2 − Initializing a list

The syntax for initializing a list is as given below −

```
lst_name[index] = value;
```

Example

Live Demo

```
void main() {
   var lst = new List(3);
   lst[0] = 12;
   lst[1] = 13;
   lst[2] = 11;
   print(lst);
}
```

It will produce the following **output** −

```
[12, 13, 11]
```

Growable List

A growable list's length can change at run-time. The syntax for declaring and initializing a growable list is as given below −

Step 1 − Declaring a List

```
var list_name = [val1,val2,val3]
--- creates a list containing the specified values
OR
var list_name = new List()
--- creates a list of size zero
```

Step 2 − Initializing a List

The index / subscript is used to reference the element that should be populated with a value. The syntax for initializing a list is as given below −

```
list_name[index] = value;
```

Example

The following example shows how to create a list of 3 elements.

Live Demo

```
void main() {
   var num_list = [1,2,3];
   print(num_list);
}
```

It will produce the following **output** −

```
[1, 2, 3]
```

Example

The following example creates a zero-length list using the **empty List() constructor**. The **add()** function in the **List** class is used to dynamically add elements to the list.

Live Demo

```
void main() {
   var lst = new List();
   lst.add(12);
   lst.add(13);
   print(lst);
}
```

It will produce the following **output** −

```
[12, 13]
```

List Properties

The following table lists some commonly used properties of the **List** class in the **dart:core library**.

Sr.No	Methods & Description
1	first Returns the first element case.
2	isEmpty Returns true if the collection has no elements.
3	isNotEmpty Returns true if the collection has at least one element.
4	length Returns the size of the list.
5	last Returns the last element in the list.
6	reversed Returns an iterable object containing the lists values in the reverse order.
7	Single Checks if the list has only one element and returns it.