

Array iterator index querying

- Array iterator index querying methods shall operate on both index and element.

Finding array element with index

Array_name.**find** with (item == item.**index**);

Array_name.**find** with (item > item.**index**);

Returns the array element whose value is greater than the index value.

Array iterator index querying

- Array iterator index querying methods shall operate on both index and element.

Finding array element with index

Array_name.**find** with (item == item.**index**);

Returns the array element whose value is equal to the index value.

Array_name.**find** with (item > item.**index**);

Array reduction methods

Methods	Description
and	Returns bitwise AND (&) of all elements of the array.
or	Returns bitwise OR () of all elements of the array.
xor	Returns bitwise XOR (^) of all elements of the array.
sum	Returns the sum of all elements of the array.
product	Returns product of all elements of the array.

Array reduction methods

- The array reduction methods are used to reduce the array to a single value with the optional use of the 'with' clause.
- The reduction methods can be applied on any unpacked array. For a 'with' clause, boolean or arithmetic reduction operation must be specified.
- If the 'with' clause is specified, reduction methods return value based on evaluating the expression for each array element

Array ordering methods

- The ordering methods are used to reorder the single-dimensional arrays or queues.

Methods	'with' clause	Description
sort	optional	Sorts the unpacked array in ascending order
rsort	optional	Sorts the unpacked array in descending order
reverse	not allowed	Reverses all the elements of a packed or unpacked array.
shuffle	not allowed	Randomizes the order of the elements in an array

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Element locator methods

Methods	'with' clause	Description
find_index	mandatory	Returns the indices of all elements satisfying the given expression
find_first_index	mandatory	Returns the index of the first element satisfying the given expression.
find_last_index	mandatory	Returns the index of the last element satisfying the given expression.
unique_index	optional	Returns the indices of all elements with unique values or whose expression evaluates to a unique value

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Element locator methods

Methods	'with' clause	Description
find	mandatory	Returns all elements satisfying the given expression.
find_first	mandatory	Returns the first element satisfying the given expression.
find_last	mandatory	Returns the last element satisfying the given expression.
unique	optional	Returns all elements with unique values or whose expression is unique
min	optional	Returns the element with the minimum value or whose expression evaluates to a minimum.
max	optional	Returns the element with the maximum value or whose expression evaluates to a maximum. tìm đầu tiên tìm cuối cùng

‘with’ clause

- The expression to be evaluated when iterating over the array elements can be specified using the ‘with’ clause.
- The iterator argument can be specified with some local variable or without variable.
- If local variable is not used then the ‘item’ keyword is referred as a by-default keyword.

//With local variable

```
arr.find(x) with (x > 3);
```

//Without local variable

```
arr.find with (item > 3);
```


Array locator methods

- Array locator methods operate on **queues, unpacked arrays**, but their return type is a queue.
- Search an index or elements of the array
- Array traversal in an unspecified order

Types of array locator methods:

1. Element locator
2. Index locator

- Iterate over all elements in an array, and then it is used to evaluate the expression specified '**with**' clause and returns element/s in a queue.
- For some of the methods, the 'with' clause is optional.

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Types of array locator methods:

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Array manipulation methods

In system verilog

thảo luận về
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