codistributed

Create codistributed array from replicated local data

Syntax

```
C = codistributed(X)
C = codistributed(X,codist)
C = codistributed(X,lab,codist)
C = codistributed(C1,codist)
```

Description

`C = codistributed(X)` distributes a replicated array `X` using the default codistributor, creating a codistributed array `C` as a result. `X` must be a replicated array, that is, it must have the same value on all workers. `size(C)` is the same as `size(X)`.

`C = codistributed(X,codist)` distributes a replicated array `X` using the distribution scheme defined by codistributor `codist`. `X` must be a replicated array, namely it must have the same value on all workers. `size(C)` is the same as `size(X)`. For information on constructing codistributor objects, see the reference pages for `codistributor1d` and `codistributor2dbc`.

`C = codistributed(X,lab,codist)` distributes a local array `X` that resides on the worker identified by `lab`, using the codistributor `codist`. Local array `X` must be defined on all workers, but only the value from `lab` is used to construct `C`. `size(C)` is the same as `size(X)`.

`C = codistributed(C1,codist)` accepts an array `C1` that is already codistributed, and redistributes it into `C` according to the distribution scheme defined by the codistributor `codist`. This is the same as calling `C = redistribute(C1,codist)`. If the existing distribution scheme for `C1` is the same as that specified in `codist`, then the result `C` is the same as the input `C1`.

Examples

Create a 1000-by-1000 codistributed array `C1` using the default distribution scheme.

```
spmd
    N = 1000;
    X = magic(N);           % Replicated on every worker
    C1 = codistributed(X); % Partitioned among the workers
end
```

Create a 1000-by-1000 codistributed array `C2`, distributed by rows (over its first dimension).

```
spmd
    N = 1000;
    X = magic(N);
    C2 = codistributed(X,codistributor1d(1));
end
```

Tips

`gather` essentially performs the inverse of `codistributed`.

See Also

What Is a Datastore? | `codistributor1d` | `codistributor2dbc` | `distributed` | `gather` | `getLocalPart` | `globalIndices` | `redistribute` | `subsasgn` | `subsref`