STL teaser

Tiziana Ligorio

tligorio@hunter.cuny.edu

Beyond the scope of this course

Get to know it!!!

C++ Interlude 8 in your textbook

https://en.cppreference.com/w/cpp/container

Main Components

Containers

Algorithms

Functions

Iterators

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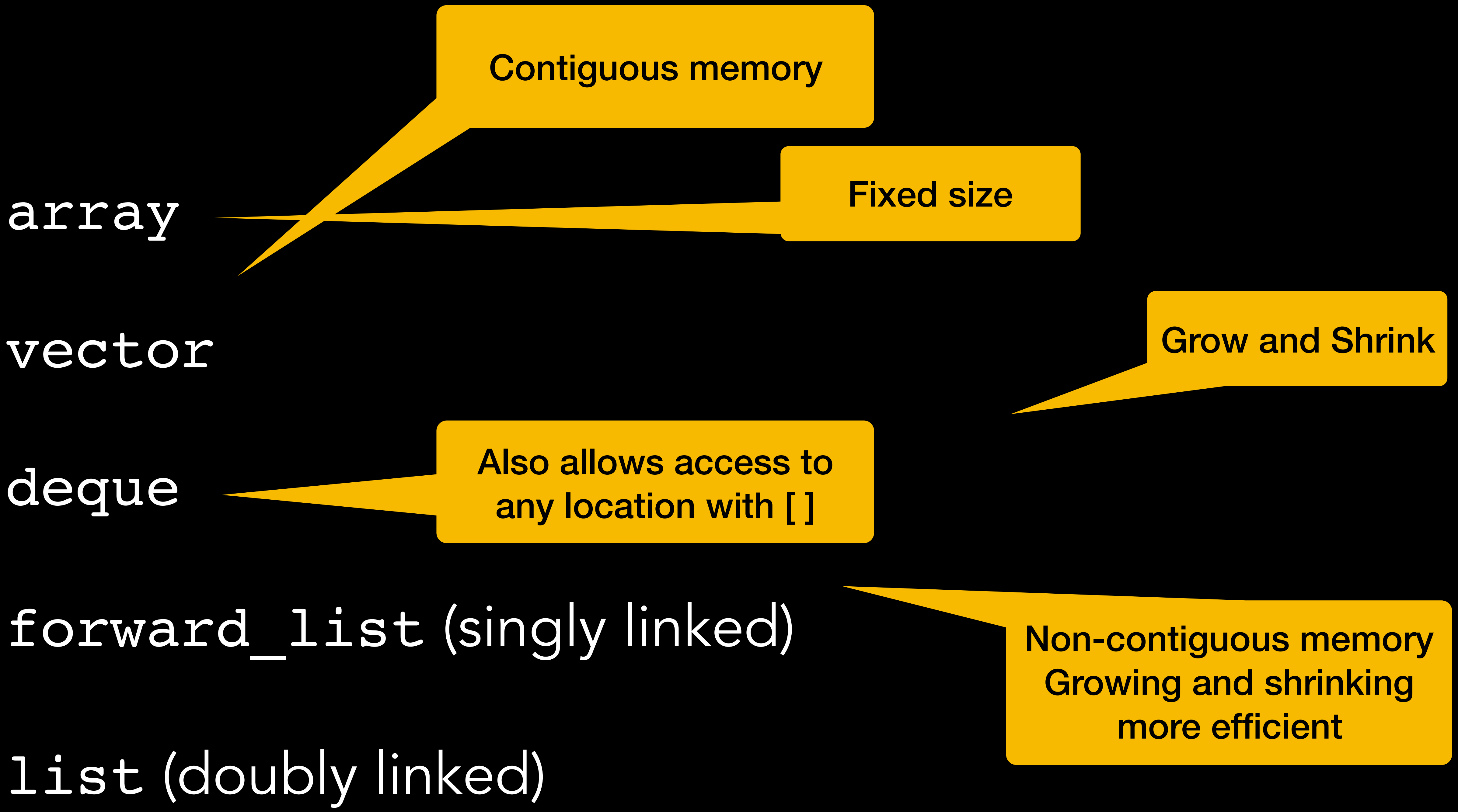
Containers

Algorithms

Functions

Iterators

Sequence Containers



`array`

`vector`

`deque`

`forward_list` (singly linked)

`list` (doubly linked)

Contiguous memory

Fixed size

Grow and Shrink

Also allows access to any location with [ ]

Non-contiguous memory
Growing and shrinking more efficient

Container Adapters

Impose a different interface for the underlying container

`stack`

`queue`

`priority_queue`

For Project 6

```
vector<string> my_vector;
my_vector.push_back("some string");

queue<vector<string>> my_queue;
my_queue.push(my_vector);


vector<string> another_vector;
another_vector = my_queue.front();

my_queue.push(another_vector); //now my_queue holds
                             // 2 identical vectors
my_queue.pop(); //always removes from the front
                 // does not return the popped item

my_vector = my_queue.back(); //you can look at the back
                        //but not remove from back
```

Algorithms

```
#include <algorithm>
```

Search and Compare Algorithms examples

```
    for_each() // applies a function to a range in container
    count() // counts the occurrences of an item within a range
    max_element() // returns the max value within a range
```

Sequence Modification Algorithms examples

```
    copy() //copies items within a range starting at given position
           within same or different container
    fill() // sets all entries within a range to give value
```

Sorting and Searching Algorithms examples

```
    sort() // sorts entries within a range in ascending order –
               typically some variation of QuickSort
    stable_sort() // “” – typically MergeSort may vary
    binary_search() // determines if an item exist in a given range
                       in a sorted container
```

. . . much more!!!

For Project 6

```
#include <algorithm>

. . .

bool found = binary_search(my_vector.begin(),
                            my_vector.end(), my_string);
```