

Copilot

Sure, Habib! Here's a concise cheatsheet for vectors in C++:

Vectors in C++

1. Declaration and Initialization:

```
#include <vector>

std::vector<int> vec; // Empty vector of integers
std::vector<int> vec(10); // Vector of integers with 10 elements, all initialized to 0
std::vector<int> vec = {1, 2, 3, 4, 5}; // Vector initialized with values
```

2. Adding and Removing Elements:

```
vec.push_back(6); // Adds 6 to the end of the vector
vec.pop_back(); // Removes the last element
```

3. Accessing Elements:

```
int first = vec[0]; // Access the first element
int last = vec.back(); // Access the last element
```

4. Size and Capacity:

```
size_t size = vec.size(); // Number of elements in the vector
size_t capacity = vec.capacity(); // Number of elements the vector can hold before resizing
```

5. Iterating Over Elements:

```
for (int i = 0; i < vec.size(); ++i) {
    std::cout << vec[i] << " ";
}

for (auto it = vec.begin(); it != vec.end(); ++it) {
    std::cout << *it << " ";
}

for (int val : vec) {
    std::cout << val << " ";
}
```

6. Modifying Elements:

```
vec[0] = 10; // Modify the first element
vec.at(1) = 20; // Modify the second element using at()
```

7. Other Useful Functions:

```
vec.clear(); // Removes all elements
bool empty = vec.empty(); // Checks if the vector is empty
vec.resize(5); // Resizes the vector to contain 5 elements
```

For a more detailed cheatsheet, you can check out resources like [Codecademy](#) and [GeeksforGeeks](#).

Feel free to ask if you have any specific questions about vectors or need further assistance with your code!