

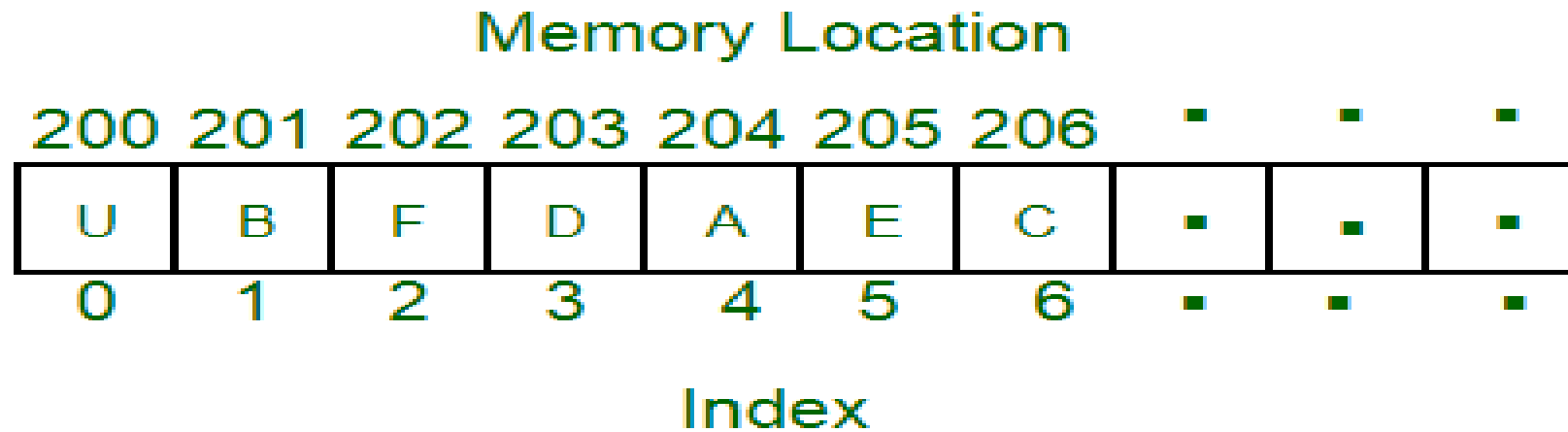
The background is a vibrant, abstract composition. It features large, overlapping organic shapes in shades of teal, orange, and brown. These shapes are decorated with various patterns: some have a fine dot pattern, others have wavy lines, and some have a cross-hatch pattern. Small, black, squiggly lines are scattered across the white background. The overall aesthetic is modern and artistic.

COMP 2006 – Lecture 3

INSTRUCTOR:
SYEM ISHAQUE

What are Arrays?

- They are sequence of objects (values)
- The type stays the same for all objects
- The data is stored sequentially in memory



Example code

```
#include <iostream>
using namespace std;
```

```
int main() {
```

```
    int numbers[] = {1, 3, 9, 15, 18};
    cout << "1st index 0 has value: " << numbers[0] << endl;
    cout << "last index 4 has value: " << numbers[4] << endl;
    return 0;
```

```
}
```

Returns

```
1st index 0 has value: 1
last index 4 has value: 18
```

Changing a value inside an array

```
#include <iostream>
using namespace std;
```

```
int main() {
```

```
    int numbers[] = {1, 3, 9, 15, 18};
    numbers[4] = 31; // value in index 4 changed to 31
    cout << "last index 4 now has value: " << numbers[4] << endl;
    return 0;

}
```

Returns

last index 4 now has value: 31

Character Arrays

```
#include <iostream>
using namespace std;
```

```
int main() {
```

```
    char words[5] = {'S', 'Y', 'E', 'M', 'I'}; // 5 indexes initialized from 0 to 4
    cout << " index 4 now has value: " << words[4] << endl;
    return 0;

}
```

Returns

index 4 now has value: I

Adding values inside an Array

```
#include <iostream>
using namespace std;
```

```
int main() {
```

```
    int numbers[5] = {1, 18, 25, 31, 36};
    int new_value = numbers[0] + numbers[2];
    cout << " Sum of index values is: " << new_value << endl;
    return 0;
```

```
}
```

Returns

Sum of index values is: 26

Inputting a sentence

```
#include <iostream>
#include <cstring>
#include <string>
using namespace std;
```

```
int main() {
```

```
    char about[140]; // size of sentence is 140 letters
    cout << "Tell me something about yourself?" << endl;
    cin.getline(about, 140); // get a 140 letters or less sentence
    cout << about << endl;
    return 0;
```

```
}
```

Returns

```
Tell me about yourself?
Cin: I am friendly
I am friendly
```

2D Array

```
#include <iostream>
#include <cstring>
#include <string>
using namespace std;

int main() {

string about[5][2] = { // initialize 5 rows, 2 column string array
    {"Age: ", "29"},
    {"Course: ", "COMP2006"},
    {"Hobby: ", "Sports"},
    {"Location: ", "Toronto"},
    {"Loves: ", "Coding"}
};
cout << "Age is " << about[0][1] << endl;
cout << "He " << about[4][0] << about[4][1] << endl;
return 0;
}
```

Returns

Age is 29
He Loves: Coding

Takeaways

- Learned how to initialize 1D and 2D arrays
- Learned how to manipulate strings
- Used in real for to access various information, lookup table, store data
- How can you use arrays to achieve something?



Reference

- 1. Modern C++ for Absolute Beginners: A Friendly Introduction to C++ Programming Language and C++11 to C++20 Standards