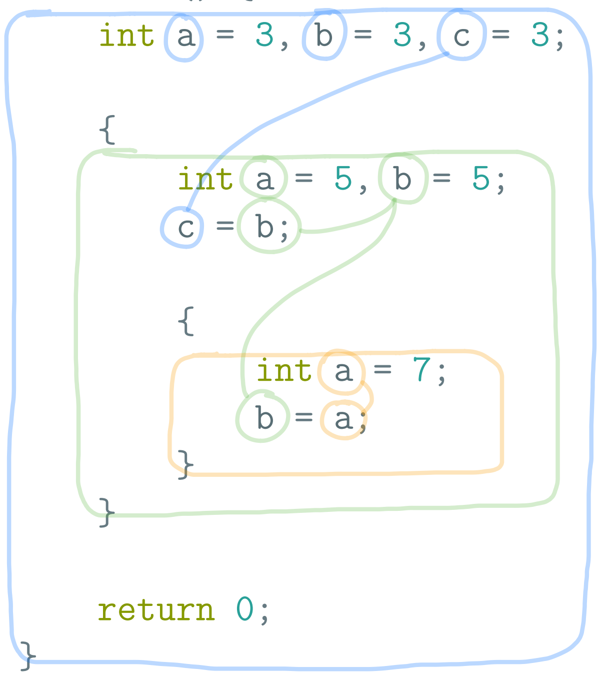
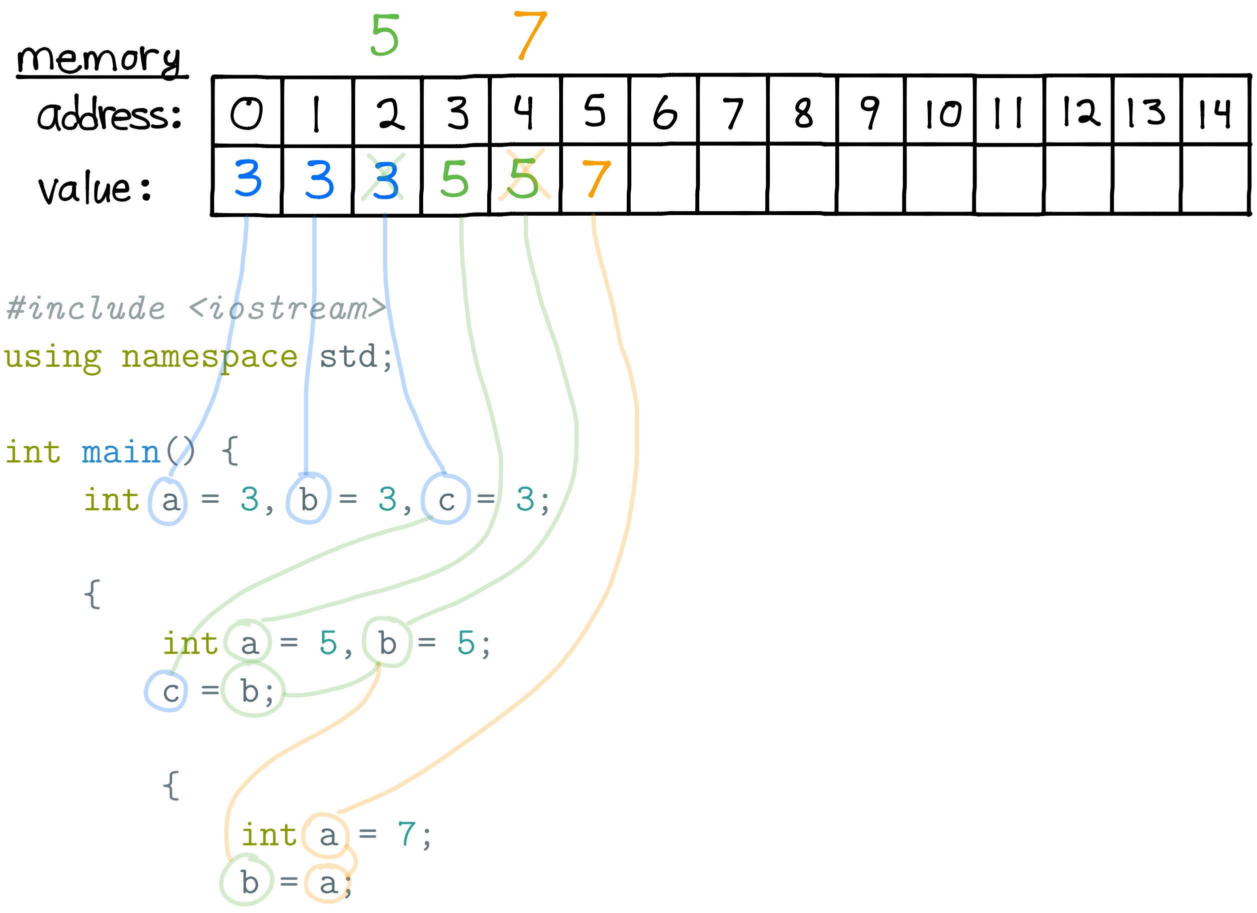
Circle the Variables' Scopes



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

int main() {
    int a = 3, b = 3, c = 3;

    {
        int a = 5, b = 5;
        c = b;

        {
            int a = 7;
            b = a;
        }
    }

    return 0;
}
```

Fill in the Memory

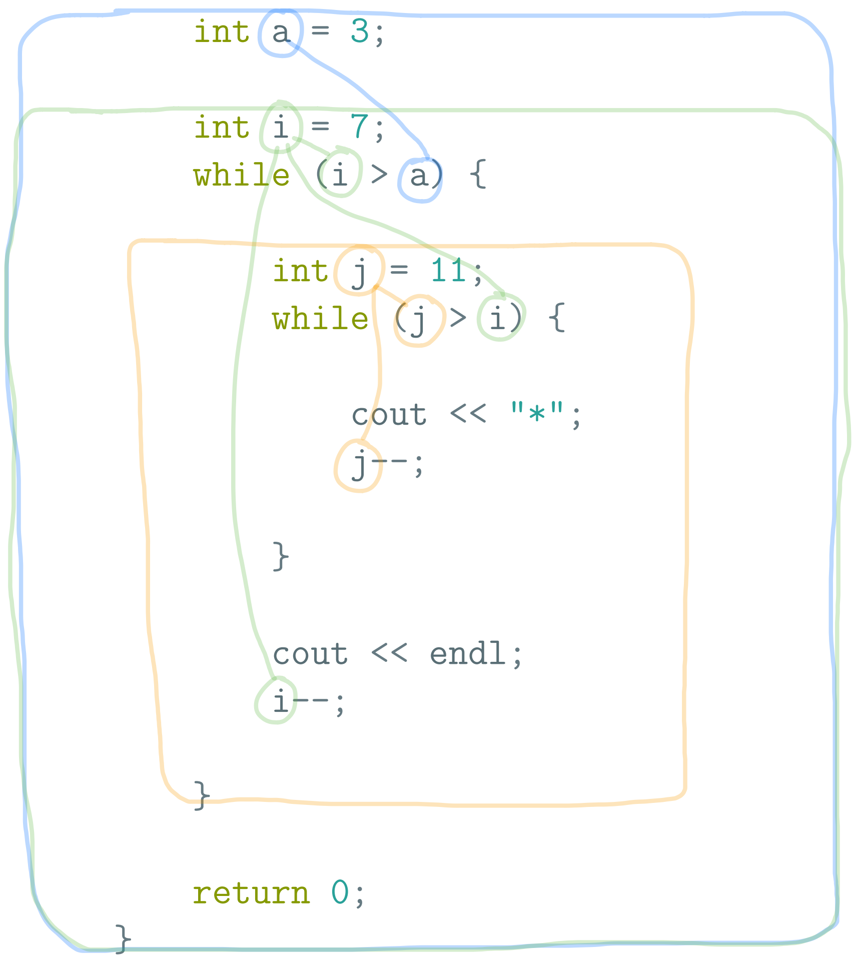


memory															
			5		7										
address:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
value:	3	3	~~3~~	5	~~5~~	7									

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

int main() {
    int a = 3, b = 3, c = 3;

    {
        int a = 5, b = 5;
        c = b;

        {
            int a = 7;
            b = a;
        }
    }

    return 0;
}
```

Circle the Variables' Scopes

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

int main() {
    int a = 3;

    for (int i = 7; i > a; i--) {

        for (int j = 11; j > i; j--) {

            cout << "*";

        }

        cout << endl;

    }

    return 0;
}
```

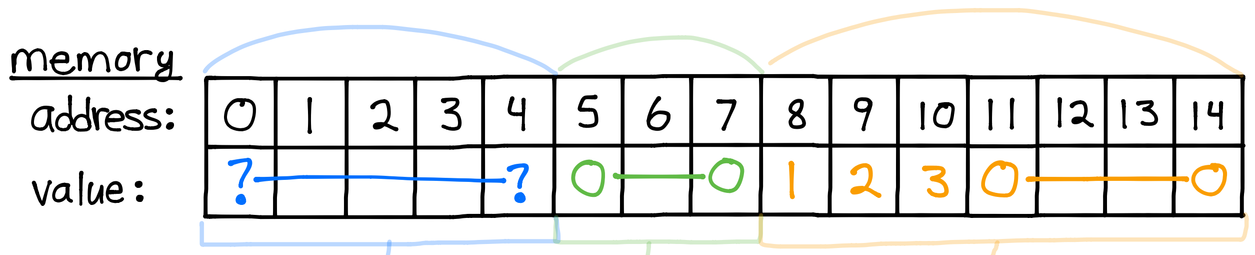


```
#include <iostream>
using namespace std;

int main() {
    int a = 3;

    int i = 7;
    while (i > a) {

        int j = 11;
        while (j > i) {

            cout << "*";
            j--;

        }

        cout << endl;
        i--;

    }

    return 0;
}
```

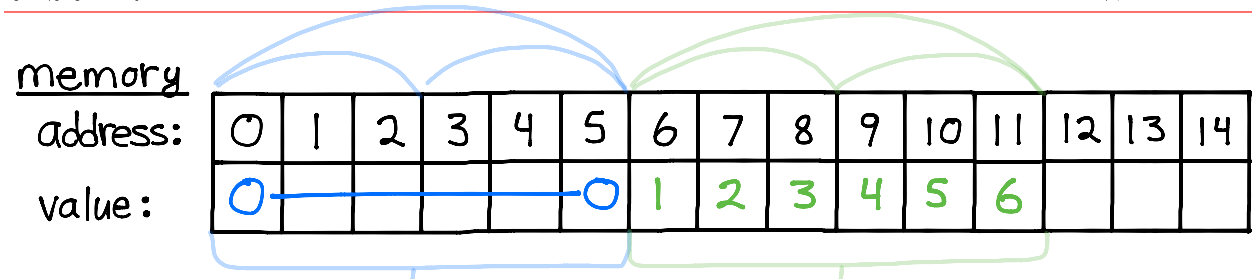
```
#include <iostream>
using namespace std;

int main() {
    // have to be a little careful with do-while loops:
    // it's not always possible to write one that means the
    // same thing as the corresponding for or while loop

    int a = 3;

    int i = 7;
    do {

        int j = 11;
        do {

            cout << "*";
            j--;

        } while (j > i);

        cout << endl;
        i--;

    } while (i > a);

    return 0;
}
```

6 Arrays

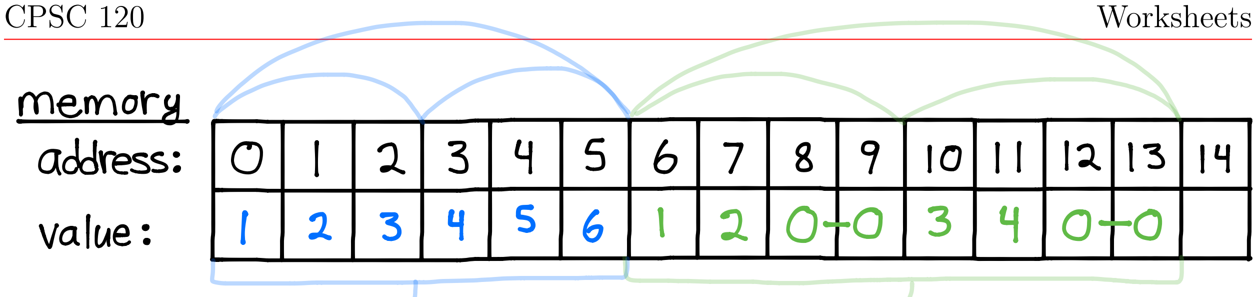
Fill in the Memory



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

int main() {
    int a[5];

    int b[3] = {};

    int c[7] = {1,2,3};

    return 0;
}
```

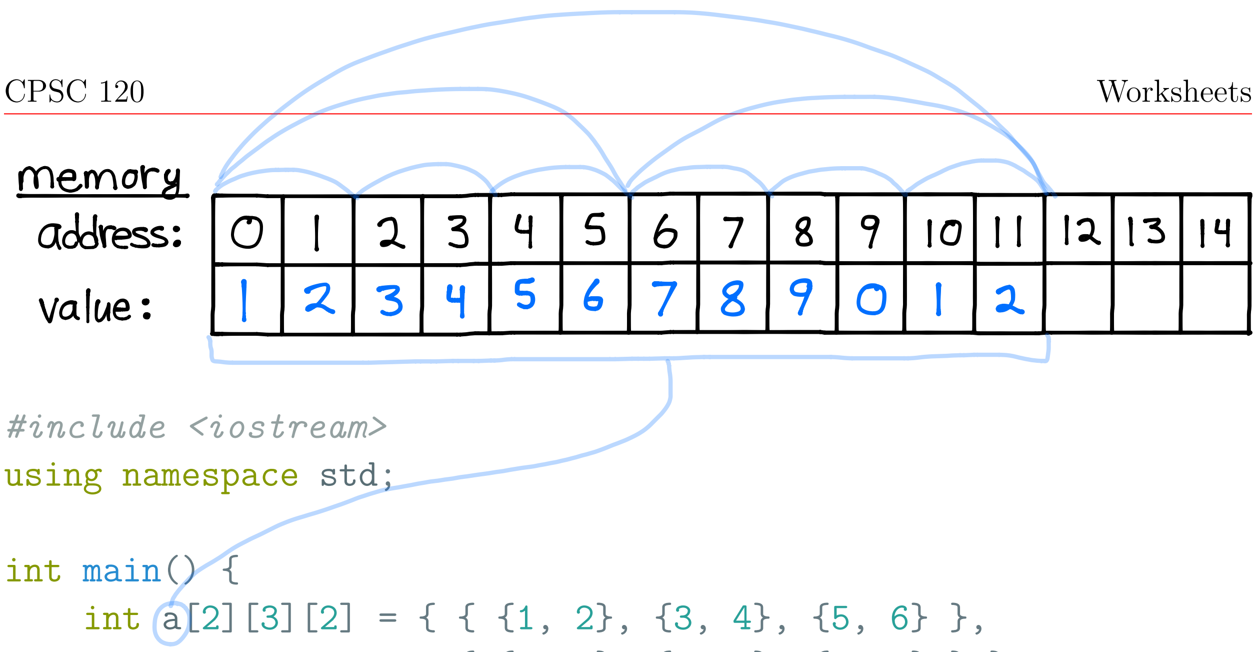


```
#include <iostream>
using namespace std;

int main() {
    int a[2][3] = {};

    int b[2][3] = {1, 2, 3, 4, 5, 6};

    return 0;
}
```

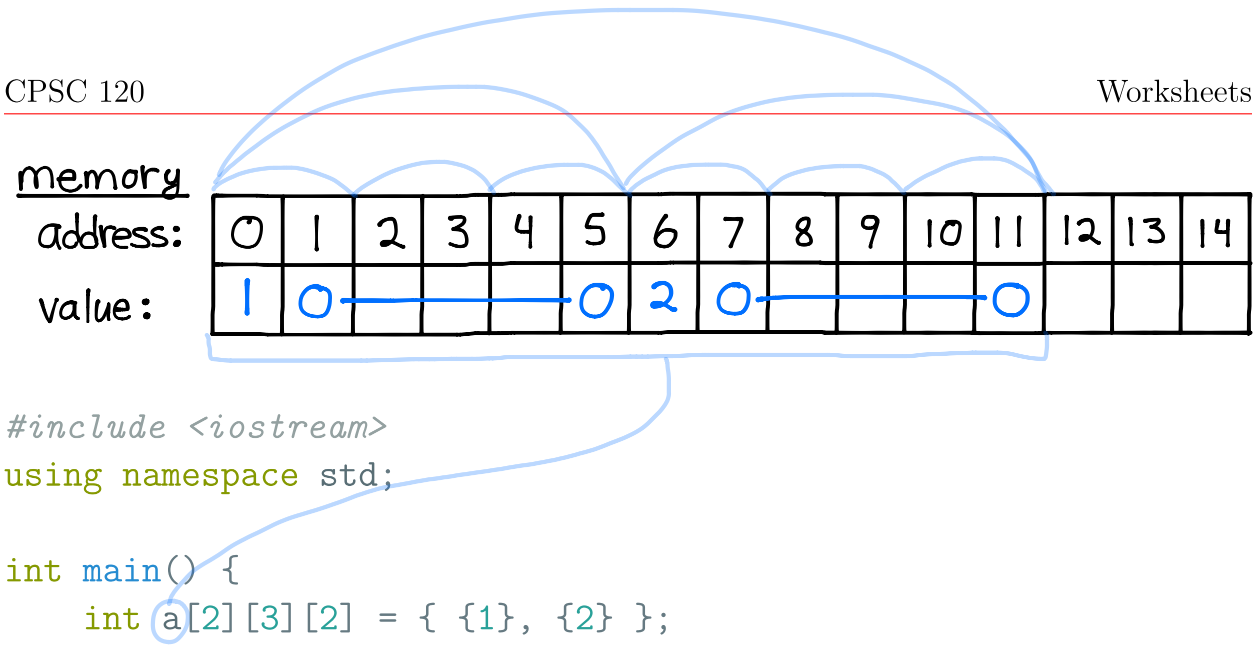


memory address:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
value:	1	2	3	4	5	6	1	2	0	0	3	4	0	0	

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

int main() {
    int a[2][3] = { {1, 2, 3}, {4, 5, 6} };

    int b[2][4] = { {1, 2}, {3, 4} };

    return 0;
}
```



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

int main() {
    int a[2][3][2] = { { {1, 2}, {3, 4}, {5, 6} },
                       { {7, 8}, {9, 0}, {1, 2} } };

    return 0;
}
```



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

int main() {
    int a[2][3][2] = { {1}, {2} };

    return 0;
}
```