Instructions

For a each topic (if applicable) there are 4 sections:

fix teh brokd codez

Modify the code in the cleanest (and preferably shortest) way possible, so that it will compile and run without errors or warnings.

trace teh werkin codez

Trace through the execution of the code, keeping track of the value of each variable at each point in time, and the final output that the program produces.

circle teh variablez scope

Circle the scope of the given variable – i.e., circle the part of the code in which the variable "exists". A good test, if you're not sure, is: if you inserted a statement to `cout` the variable at a given point in the code, would any errors be produced?

fill in da mems

Fill in (or draw) a picture representing the computer memory, showing how the variables might be allocated, and whether they have an assigned value, or are uninitialized (use `?` for "uninitialized").

1 Variables and Assignment

fix teh brokd codez

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

int main() {
    int a = 5;
    int b = 7;

    cout << "before swapping: " << a << " " << b << endl;

    // swap
    int temp = int a;
    int a = int b;
    int b = int temp;

    cout << "after swapping: " << a << " " << b << endl;

    return 0;
}
```

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

int main() {
    int    i = '5' + 4.7;  // '5' == 53
    char   c = 42;         // '*' == 42
    bool   b = 10;
    double d =  7;
    string s = "hello world!";

    int u;

    cout << i << " " << c << " " << b << " "
         << d << " " << s << " " << u << endl;

    return 0;
}
```

trace teh werkin codez

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

int main() {
    cout << "a b temp\n" << "--------\n";

    int a = 5;      cout << a << endl;
    int b = 7;      cout << a << " " << b << endl;

    int temp = a;   cout << a << " " << b << "  " << temp << endl;
    a = b;          cout << a << " " << b << "  " << temp << endl;
    b = temp;       cout << a << " " << b << "  " << temp << endl;

    return 0;
}
```

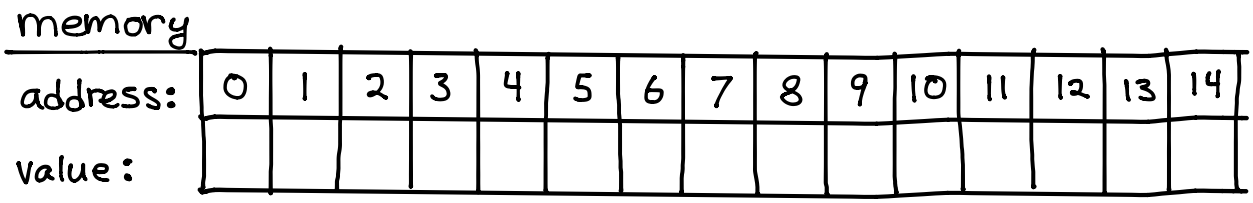
```cpp
#include <iostream>
using namespace std;

int main() {
    cout << "a b c d\n" << "--------\n";

    int a, b, c;

    a = b = c = 3;  cout << a << " " << b << " " << c << endl;
    b = c = 5;      cout << a << " " << b << " " << c << endl;
    c = 7;          cout << a << " " << b << " " << c << endl;

    int d = b;      cout << a << " " << b << " " << c << " " << d << endl;

    return 0;
}
```

circle teh variablez scope

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

int main() {
    int a = 3, b = 3;
    cout << "a: " << a << "  b: " << b << endl;
    {
        int a = 5;
        b = a;
        cout << "a: " << a << "  b: " << b << endl;
    }
    cout << "a: " << a << "  b: " << b << endl;

    return 0;
}
```

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

int main() {
    int a = 3, b = 3, c = 3;
    cout << "a: " << a << "  b: " << b << "  c: " << c << endl;
    {
        int a = 5, b = 5;
        c = b;
        cout << "a: " << a << "  b: " << b << "  c: " << c << endl;
        {
            int a = 7;
            b = a;
            cout << "a: " << a << "  b: " << b << "  c: " << c << endl;
        }
        cout << "a: " << a << "  b: " << b << "  c: " << c << endl;
    }
    cout << "a: " << a << "  b: " << b << "  c: " << c << endl;

    return 0;
}
```

fill in da mems




```
#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;
}
```

2 Data Types and Expressions

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

3 If and If-Else

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

4 Boolean Expressions

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

5 Predefined Functions

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

6 Loops

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

7 Arrays

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems

8 Selection Sort

fix teh brokd codez

trace teh werkin codez

circle teh variablez scope

fill in da mems