
3300 Problems, Section 1: Intro, Variables, Data Types, and Assignment

Section 1:

1. List the (multiple) errors in each of the following programs, which attempt to multiply a length and a width to display the area of a rectangle. (Try to do it first without compiling; then check by entering the code in your compiler to see if you caught everything.)

a. `#include <iostream>`
`#include <stdlib.h>`

`using namespace std;`

`int main()`
`{`
 `int w, l, Area;`
 `w=15;`
 `l=5;`
 `Area=l*w;`
 `cout << "The area is" << "Area"`
 `system("pause");`
 `return 0;`
`}`

b. `#include <iostream>`
`#include <stdlib.h>`

`using namespace std;`

`int main()`
`{`
 `int w=15, l=5;`
 `Area=l*w;`
 `cout << "The area is" << area;`
 `system("pause");`
 `return 0;`
`}`

c. `#include <iostream>`
`#include <stdlib.h>`

`using namespace std;`

`int main()`
`{`
 `double w, l, Area;`
 `w=15.5;`
 `l=5;`
 `l*w = Area;`
 `cout << "The area is" Area;`
 `system("pause");`
 `return 0;`
`}`

```

d. #include <iostream>
    #include <stdlib.h>

    using namespace std;

    int main()
    {
        int w, l, Area;
        w=15.5;
        l=5;
        cout << "The area is " << w*l;
        system("pause");
        return 0;
    }

```

2. Find the values of all the variables *after all* the lines have been executed:

```

int a,b,c;
a = 32;
b = 10;
c = a-b;
b = c;
a = a+b;
-c;
a += 2;

```

3. Describe what happens when the following code is executed. If there is an error, explain why; if not, explain what prints out.

```

int a,b;
a = 10;
b = a+1;
a+2;
b = b/3;
cout << a << " " << b;

```

4. Describe what happens when the following code is executed. If there is an error, explain why; if not, explain what prints out.

```

double x = 7, y = 18;
int z;
z = static_cast<int>(y % x) ;
cout << z;

```

5. Describe what happens when the following code is executed. If there is an error, explain why; if not, explain what prints out.

```

int a,b;
a = 10;
b = a;
a++;
b = b/2;
cout << a << endl << b << endl;

```

6. Describe what happens when the following code is executed. If there is an error, explain why; if not, explain what prints out.

```

int a, b = 14;
a = b%3;
a+2;
b += b/5;
cout << a << " " << b;

```

7. Describe what happens when the following code is executed. If there is an error, explain why; if not, explain what prints out.

```
int a, b = 15;
double c = 3;
a = b%3;
c += static_cast<double>(b)/4;
cout << a << " " << b << " " << c;
```

8. What will be displayed by the following code? (Don't worry about decimal places.)

```
int x = 7, y = 18;
double z = 0.5;
double out = pow(y % x , z);
cout << out;
```

9. Point out the TWO errors in the following code, and briefly explain why they are errors.

```
double x = 2, y = 3;
x + 1 = y;
y--;
x += y % 2;
int z = static_cast<int>(x);
```

10. What values are stored in each of the variables `f`, `g`, and `h` after the following code is executed?

```
int f = 5, g = 11, h= 14;
f = f+1;
g = pow(h - g, 2) + pow(2,h-g);
f += (g%f);
h+2;
```

11. What is output when the following code fragment executes?

```
int a = 4, b=5, c=6, d=7;
cout << a + b * c - d%a << endl;
cout << d/b << endl;
```

12. What will be displayed by the following code?

```
int a,b;
double c;
a = 12/5;
b = 6 + 10 % 7;
c = a/2.0;
cout << a << endl << b << endl << c;
```

13. What will be displayed by the following code?

```
string x = "Hiya!";
char c = x[0];
cout << c << "-" << x << x[4];
```

14. Find the error in the following code. (It's slightly subtle.)

```
string x = " am a string";
char c = "I";
cout << c << " " << x << endl;
```

15. Find the two errors in the following code.

```
string x = "Hello";
string y = x[2];
cout << string.length() << " is the number of letters in Hello." << endl;
```

16. What will be displayed by the following code?

```
string x = "What's up?";
cout << x.length() + 2;
```

17. Suppose that I have a `string` variable named `x`, which already has a word stored in it. Write the code necessary to print out the *last* letter of `x`. (So, for example, if `x` had the value `"butter"`, it would print out `r`.) (1 line)