

CMPS 221 Sample Midterm 1

1. What is the difference between integer division and double division? How can you force the two integers in the following code snippet to do double division?

```
int a, b;  
double c;
```

```
c = a / b;
```

2. Give the syntax for declaring a variable and initializing it in the same statement, such as setting count to 0 when count is declared.
3. Give the pseudocode for the following programming project:

Write a program that will ask the user for the gallons of gas consumed and miles traveled for two cars. Define a function to compute the number of miles per gallon. For each car, compute the miles per gallon and output that amount. Determine which car has the better fuel efficiency (more miles per gallon) and output that car.

4. Write a function called `find_area()` to compute the area of a circle. Remember that the area of a circle is $\pi * radius^2$. Write just the function prototype and function body; do not write the `main()` function.
5. You have a program with variables named 'price' and 'tax'. You wish to output the following:

The subtotal is \$5.55 and the tax is \$0.49. The total is \$6.04.

Show the cout statement(s) to do this output.

6. Write a `for()` loop that will count from 0 to 10, incrementing by 2 each iteration.
7. What is the syntax for the `if`, `else-if`, `else` statement?
8. What would be the output of the following code snippet? Trace the output in the space provided.

```
for(i = 3; i < 10; i = i + 2)  
{  
    cout << i << ": ";  
    for(j = 2; j <= (i / 2); j++)  
    {  
        cout << j << " ";  
    }  
    cout << endl;  
}
```

9. The following code has 5 common pitfalls and syntax errors. Identify each one by giving the line number it occurs on and describing what the error is.

```
1  #include<iostream>
2  using namespace std;
3
4  int main()
5  {
6      int count, double;
7
8      cout << "Enter a number: "
9      cin >> count;
10
11     if (count > 5) && (count < 10)
12     {
13         cout << "Count is within range.\n";
14     }
15     cout << "Bye";
16     else
17     {
18         cout << "Count is not within range.\n";
19     }
20 }
21 cout << "Count times 10 is " << (count * 10) << " and ";
22     << " count divided by 10 is " << (count / 10) << ".\n";
23 return 0;
24 }
```

10. In the following code, what is the scope of 'min', 'num1', 'ret' and 'bob'? If the scope is local, name the function or code block that contains the variable.

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

int mini;

int find_minimum(int a, int b);

int main()
{
    int num1, num2;

    cout << "Enter two numbers: ";
    cin >> num1 >> num2;

    mini = find_minimum(num1, num2);
    cout << "The minimum is " << mini << ".\n";

    return 0;
}

int find_minimum(int a, int b)
{
    int ret;

    if( a < b )
    {
        ret = a;
    }
    else
    {
        char bob;
        ret = b;
    }
    return ret;
}
```