Sample Questions For Exam 1

These are the types of questions you will find on the midterm exam. They indicate the level of difficulty and format of the questions. The absence of a topic does not imply that it will not be covered on the exam. Consult the list of exam 1 topics for that information.

1. What is the output of the program below?

```cpp
#include <iostream.h>
using namespace std;
int main()
{
        int n = 3;
        while (n >= 0) {
                cout << n * n << endl;
                --n;
        }
        cout << n << endl;
        while (n < 4)
                cout << ++n << endl;
        cout << n << endl;
        while (n >= 0)
                cout << (n /= 2) << endl;
        return 0;
}
```

2. What is the output of the following program?

```cpp
#include <iostream.h>
int main()
{
    for ( int i = 1; i <= 6; i++ ) {
        for ( int j = 5; j >= 1; j-- )
            std::cout <<  i + j;
        std::cout << "\n";
     }
    return 0;
}
```

3. Write a void function named **uppercase()** that takes a string argument and converts it to uppercase.

4. What is the output when the following code fragment is executed?

   ```
   int found = 0, count = 5;
   if (!found || --count == 0)
   cout << "danger" << endl;
   cout << "count = " << count << endl;
   ```

5. A positive integer n is said to be prime (or, "a prime") if and only if n is greater than 1 and is divisible only by 1 and n . For example, the integers 17 and 29 are prime, but 1 and 38 are not prime. Write a function named `is_prime()` that takes a positive integer argument and returns as its value `true` if the argument is prime and returns the value `false` otherwise. Thus, for example,

   ```
   cout << is_prime(19) << endl;  // will print true
   cout << is_prime(-13) << endl; // will print false
   ```

6. Write a function named `ordinal_name()` that takes an integer argument in the range from 1 to 5 , inclusive, and prints the English ordinal for that integer's on the computer screen. A newline character should be sent to the screen following the ordinal name. If the argument is not in the required range, then the function should print `error` followed by the newline character. Thus, for example,

   the statement `ordinal_name(3);` should print `third` on the screen;

   the statement `ordinal_name(1);` should print `first` on the screen;

   the statement `ordinal_name(6);` should print `error` on the screen.

7. Given the function prototype,

   ```
   // sum(a,b) returns the sum of doubles a and b
   double sum(double a, double b);
   ```

   Write a single assignment statement that assigns the value of the expression

   $$\frac{x + y}{x^2 + y^2}$$

   to the `double z` without using the "+" operator. Assume that `x`, `y` and `z` are all declared type `double`, and that x and y have been assigned values.

8. Determine if the statements below are true or false.

   T　**F**　Assuming `n` is an `int` variable, `++n` and `n++` do the exact same thing.

   T　**F**　A variable used in the definition of a function `myFunction()` should be declared in the `main()` function.

   T　**F**　To indicate that 100 locations should be reserved for integer array `p`, the programmer writes the declaration : `p[100];`

   T　**F**　Empty parentheses following a function name in a function prototype indicate that the function does not require any parameters to perform its task.

   T　**F**　An array can store many different types of values.