Fall Semester 15, Dr. Punch. Exam #1 (10/8), form 1 A

Last name (printed): ____________________________________________________________

First name (printed): __________________________________________________________

Directions:

a) DO NOT OPEN YOUR EXAM BOOKLET UNTIL YOU HAVE BEEN TOLD TO BEGIN.

b) You have 80 minutes to complete the exam (10:20-11:40)

c) This exam booklet contains 30 multiple choice questions, each weighted equally (5 points). 10 pages total

d) You may use one 8.5" x 11" note sheet during the exam. No other reference materials or calculating devices may be used during the examination.

e) Questions will not be interpreted during the examination.

f) You should choose the single best alternative for each question, even if you believe that a question is ambiguous or contains a typographic error.

g) Please fill in the requested information at the top of this exam booklet.

h) Use a #2 pencil to encode any information on the OMR form.

i) Please encode the following on the OMR form:
   - Last name and first initial
   - MSU PID
   - Exam form (see the title of this page)

j) Please sign the OMR form.

k) Only answers recorded on your OMR form will be counted for credit.

l) Completely erase any responses on the OMR form that you wish to delete.

m) You must turn in this exam booklet and the OMR form when you have completed the exam. When leaving, please be courteous to those still taking the exam.

Good luck.

**Timing tip.** A rate of 2.5 minutes per multiple choice problem leaves 5 minutes to go over any parts of the exam you might have skipped.
```cpp
#include<iostream>
using std::cout; using std::endl; using std::boolalpha;

int main () {
    long num1 = 23, num2 = 2;
    long res1, cnt;

    cout << boolalpha;
    cnt = 0;
    while (num1 > num2){
        res1 = num1 % num2;
        if (res1 > num1)
            res1++;
        num1 /= num2;
        cnt++;
    }

    cout << num1 << endl;       // Line 1
    cout << num2 << endl;       // Line 2
    cout << res1 << endl;       // Line 3
    cout << cnt << endl;        // Line 4
    cout << (num1 == num2) << endl; // Line 5
}
```

1) For the program in Figure 1, give the output of Line 1?
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above.

2) For the program in Figure 1, give the output of Line 2?
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above.

3) For the program in Figure 1, give the output of Line 3?
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above.
4) For the program in Figure 1, give the output of Line 4?
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above.

5) For the program in Figure 1, give the output of Line 5?
   a) 1
   b) 2
   c) 3
   d) 4
   e) None of the above.
6) What does the statement `cout << "Hi" << "mom" return?`
   a) The last value printed, in this case "mom"
   b) No return.
   c) returns true if printing succeeded, false otherwise
   d) Everything that printed, as a string. In this case "Himom"
   e) None of the above
7) For `int v = 5;` what does `cout << &v;` output?
   a) 5
   b) 5
   c) cout
   d) some address
   e) None of the above
8) Which of the following are true about a `const int` declaration?
   a) cannot be initialized at declaration time
   b) can be set to a literal (like the number 5)
   c) can be changed after it is declared.
   d) All of the above
   e) None of the above
9) For an STL `vector<string> v;` what is the difference between `v[index]` and `v.at(index)`?
   a) `v.at(index)` throws an error when index is out of range, `v[index]` does not.
   b) no difference, just a different way to say the same thing.
   c) `v[index]` is only used to return values, `v.at(index)` only used to set values.
   d) In this case, `v[index]` returns a string, `v.at(index)` returns a boolean
   e) None of the above
10) The `sizeof` function return's a variable's size in bytes. For `char c = 'a';
    char* p = & c;` In a 64 bit OS, what does `sizeof(p)` return?
    a) 1
    b) 2
    c) 4
    d) 8
    e) None of the above
11) Which of the following expressions will return a double given `int i=5;`.
    a) `i/10;`
    b) `static_cast<double>(i);`
    c) `i + 0;`
    d) All of the above
    e) None of the above
12) Which of the following initializes a string `s` to the value "Hi Mom"?
    a) `string s = "Hi Mom";`
    b) `string s("Hi Mom");`
    c) `string s = {'H', 'i', ' ', 'M', 'o', 'm'};`
    d) All of the above
    e) None of the above
For the program in Figure 2, what type is `result` on Line 2.

a) `int`
b) `double`
c) `long*`
d) `long&`
e) None of the above

For the program in Figure 2, what value is output on Line 3.

a) some address
b) 4
c) 6
d) 10.0
e) None of the above

For the program in Figure 2, give the output of Line 4.

a) 4
b) 14
c) -6
d) some address
e) None of the above
16) For the program in Figure 2, give the output of Line 5.
   a) 6
   b) 16
   c) -4
   d) some address
   e) None of the above

17) For the program in Figure 2, give the output of Line 6.
   a) 3.0
   b) 2.0
   c) 1.0
   d) some address
   e) None of the above

18) For the program in Figure 2, if Line 1 were uncommented, which of the following would result.
   a) no change in the value returned by f1
   b) dbl in the main program would be unchanged
   c) the program would not compile
   d) Line 4 output would go up by one.
   e) None of the above
19) For the program shown in Figure 3, what output is produced by Line 1?

a) abcd
b) cdab
c) true
d) false
e) None of the above
20) For the program shown in Figure 3, what output is produced by Line 2?
   a) abcd
   b) acbd
   c) abdc
   d) cdab
   e) None of the above

21) For the program shown in Figure 3, what output is produced by Line 3?
   a) 1234
   b) 3412
   c) true
   d) false
   e) None of the above

22) For the program shown in Figure 3, what output is produced by Line 4?
   a) 1234
   b) 3412
   c) 1324
   d) 1423
   e) None of the above

23) For the program shown in Figure 3, what output is produced by Line 5?
   a) fred
   b) derf
   c) redf
   d) dfre
   e) None of the above

24) For the program shown in Figure 3, what output is produced by Line 6?
   a) fred
   b) derf
   c) redf
   d) dfre
   e) None of the above
25) For the program in Figure 4, what type is `result1` on Line 1?
   a) long
   b) string
   c) Type
   d) size_t
   e) None of the above
26) For the program in Figure 4, what value is printed by Line 2?
   a) abcdabcd
   b) abcdefghxyzzy
   c) efgh
   d) xyzzy
   e) None of the above

27) For the program in Figure 4, what type is result2 on Line 3?
   a) long
   b) string
   c) Type
   d) size_t
   e) None of the above

28) For the program in Figure 4, what value is printed by Line 4?
   a) 10
   b) 20
   c) 30
   d) 40
   e) None of the above

29) For the program in Figure 4, what value is printed by Line 5?
   a) 1234
   b) 12341234
   c) 1234321
   d) 31234
   e) None of the above

30) As discussed in class, what drives the C++ system?
   a) types
   b) the compiler
   c) the linker
   d) the programmer
   e) None of the above