Spring Semester 18 Dr. Punch. Exam #1 (2/14), form 1 D

Last name (printed): ____________________________________________________________

First name (printed): __________________________________________________________

Directions:

a) DO NOT OPEN YOUR EXAM BOOKLET UNTIL YOU HAVE BEEN TOLD TO BEGIN.
b) You have 90 minutes to complete the exam (7:00pm – 8:30pm)
c) This exam booklet contains 30 multiple choice questions, each weighted equally
   (5 points). **11 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::cin;

long fn1 (double dbl1, double dbl2)
{
    long lng = static_cast<long>(dbl1);
    double r = dbl1 - lng;
    if (r >= dbl2)
        return lng + 1;
    else
        return lng;
}

long fn2 (long lng)
{
    long result = 0;
    for(int i=1; i <= lng; ++i){
        if (lng % i == 0)
            result += i;
    }
    return result;
}

long fn3 (long lng)
{
    long result = 0, r=0;
    while (lng > 0){
        r = lng % 10;
        result += r;
        lng /= 10;
    }
    return result;
}

int main ()
{
    cout << fn1(123.75, 0.5) << endl; // Line 1
    cout << fn1(14.5, 0.5) << endl; // Line 2
    cout << fn2 (12) << endl; // Line 3
    cout << fn2 (31) << endl; // Line 4
    cout << fn3 (12) << endl; // Line 5
    cout << fn3 (31) << endl; // Line 6
}
```

Figure 2
1) For the program in Figure 2, what value is output on Line 1.
   a) 123  
   b) 124  
   c) 123.75  
   d) 0.5  
   e) None of the above  

2) For the program in Figure 2, what value is output on Line 2.
   a) 14  
   b) 15  
   c) 14.5  
   d) 0.5  
   e) None of the above  

3) For the program in Figure 2, give the output of Line 3.
   a) 1  
   b) 12  
   c) 13  
   d) 24  
   e) None of the above  

4) For the program in Figure 2, give the output of Line 4.
   a) 0  
   b) 31  
   c) 32  
   d) 62  
   e) None of the above  

5) For the program in Figure 2, give the output of Line 5.
   a) 0  
   b) 1  
   c) 2  
   d) 3  
   e) None of the above  

6) For the program in Figure 2, give the output of Line 6.
   a) 0  
   b) 1  
   c) 2  
   d) 3  
   e) None of the above
7) For the program in Figure 3, what output is produced by Line 1?
   a) 0
   b) 1
   c) 2
   d) 4
   e) None of the above
8) For the program shown in Figure 3, what output is produced by Line 2?
   a) true
   b) false
   c) 0
   d) 1
   e) None of the above
9) For the program shown in Figure 3, what output is produced by Line 3?
   a) some address
   b) 1
   c) 2
   d) 4
   e) None of the above
10) For the program shown in Figure 3, type is result on Line 4?
    a) long
    b) long reference
    c) bool
    d) long pointer
    e) None of the above
11) For the program shown in Figure 3, what output is produced by Line 5?
   a) 3.4
   b) 13.6
   c) 6.8
   d) 2.0
   e) None of the above

12) For the program shown in Figure 3, what output is produced by Line 6?
   a) some address
   b) 1
   c) 2
   d) 4
   e) None of the above
13) For the program in Figure 4, what type is var on Line 1?
   a) double
   b) string
   c) Type
   d) unsigned int
   e) None of the above

14) For the program in Figure 4, what value is printed by Line 2?
   a) abcdefg
   b) cdefgab
   c) abcd
   d) efg
   e) None of the above
15) For the program in Figure 4, what value is printed by Line 3?
   a) abcdefg  
   b) cdefgab  
   c) abcd    
   d) efg    
   e) None of the above

16) For the program in Figure 4, what value is printed by Line 4?
   a) abcdefg  
   b) cdefgab  
   c) abcd  
   d) efg  
   e) None of the above

17) For the program in Figure 4, what value is printed by Line 5?
   a) abcdefg  
   b) cdefgab  
   c) abcd  
   d) efg  
   e) None of the above
18) For the program in Figure 1 given the inputs $6 \ 12$ give the output of Line 1?

a) 0  

b) 3  

c) 6  

d) 12  

e) None of the above.
19) For the program in Figure 1 given the inputs 6  12 give the output of Line 2?
   a) 0
   b) 3
   c) 6
   d) 12
   e) None of the above.
20) For the program in Figure 1 given the inputs 6  12 give the output of Line 3?
   a) 0
   b) 3
   c) 6
   d) 12
   e) None of the above.
21) For the program in Figure 1 given the inputs 10  5 give the output of Line 1?
   a) 0
   b) 2
   c) 5
   d) 10
   e) None of the above.
22) For the program in Figure 1 given the inputs 10  5 give the output of Line 4?
   a) 0
   b) 1
   c) 2
   d) 5
   e) None of the above.
23) For the program in Figure 1 given the inputs 10  5 give the output of Line 5?
   a) 0
   b) 1
   c) 2
   d) 5
   e) None of the above.
24) Given the declaration `int i = 5;` what does `i--;` *return*?
   a) 0
   b) 5
   c) 6
   d) there is no return from the statement, so undefined.
   e) None of the above

25) For the following code snippet:
    ```cpp
    long lng1 = 10;
    long &lng2 = lng1;
    ```
    What does the `&` signify?
   a) take the Boolean-and of `lng2` and `lng1`.
   b) treat `lng2` as a reference type.
   c) extract the memory address of `lng2`.
   d) This expression is illegal, will not compile
   e) None of the above

26) For the following code snippet:
    ```cpp
    long my_long = 123;
    long* val = &my_long;
    ```
    What does the `&` signify?
   a) take the Boolean-and of `my_long`
   b) treat `my_long` as a reference type
   c) extract the memory address of `my_long`
   d) This expression is illegal, will not compile
   e) None of the above

27) Which of the following Unix command line commands will copy a file?
   a) copy
   b) cp
   c) mv
   d) c
   e) None of the above

28) On the command line, the Unix command `cd ..` does what?
   a) printer the current directory
   b) select as the current working directory the first child directory
   c) copies all the elements in the current directory to the special `cd` directory
   d) select as the current directory the parent directory
   e) None of the above
29) Given the following code snippet:
   unsigned int my_var = 0;
   my_var = my_var - 1;
Which of the following statements are true?
   a) my_var has the value -1
   b) my_var has the value 0
   c) my_var has the value -2,147,483,648 (that is, -2^{31})
   d) my_var has the value 4,294,967,295 (that is, 2^{32} - 1)
   e) None of the above

30) Given the decimal value 17, which of the following statements are true?
   a) hexadecimal equivalent is 0x11
   b) binary equivalent is 0b10001 (C++14 notation)
   c) octal equivalent is 021
   d) All of the above
   e) None of the above