CS1411 - 160 - Fall 04 - Test 1

September 27, 2004

1. The statement

```
switch (n)
{
    case 8  : alpha++;
              break;
    case 3  : beta++;
              break;
    default : gamma++;
              break;
}
```

is equivalent to the following statement.

```
if (n == 8)
    alpha++;
else if (n == 3)
    beta++;
else
    gamma++;
```

A) True
B) False

2. What is the output of the following code fragment? (All variables are of type int.)

```
n = 2;
for (loopCount = 1; loopCount <= 3; loopCount++)
    while (n <= 4)
        n = 2 * n;
cout << n << endl;
```

A) 32
B) 4
C) 16
D) 64
E) 8

3. The value of the C++ expression $3/4 * 5$ is:
A) 3.75
B) 0
C) 0.0
D) 0.15
E) 3

4. Any parameter that can be classified as both incoming and outgoing must be coded as a reference parameter.
A) True
B) False

5. Given the function definition

```
void SomeFunc( ... )
{
    float alpha;
    ...
}
```

which of the following statements about alpha is false ?
A) The value of alpha is undefined at the moment control enters the function.
B) A parameter in the function heading can also be named alpha.
C) alpha cannot be accessed directly from code outside the function.
D) The memory allocated to alpha is deallocated when the function returns.

6. The value of the C++ expression $11 + 22\%4$ is:
A) 8
B) 13
C) 16
D) 1
E) none of the above

7. What is the output of the following program fragment?

```
age = 29;
cout << "Are you" << age << "years old?" << endl;
```

A) Are you29 years old?
B) Are you age years old?
C) Are you29years old?
D) Are you 29 years old?
E) Are you 29years old?

8. What is the output of the following code fragment? (All variables are of type int.)

```
limit = 8;
cout << 'H';
loopCount = 10;
do
{
    cout << 'E';
    loopCount++;
} while (loopCount <= limit);
cout << "LP";
```

A) HELP
B) HLP
C) HEEELP
D) HEELP
E) none of the above

9. If a While loop's termination condition becomes true in the middle of the loop body, the loop is exited immediately.
A) True
B) False

10. In the following code fragment, a semicolon appears at the end of the line containing the While condition.

```
cout << 'A';
loopCount = 1;
while (loopCount <= 3);
{
  cout << 'B';
  loopCount++;
}
cout << 'C';
```

The result will be:
A) the output ABC
B) the output AC
C) an infinite loop
D) a compile-time error
E) the output ABBBC

11. If there are several items in a parameter list, the compiler matches the parameters and arguments by their relative positions in the parameter and argument lists.
A) True
B) False

12. In C++, corresponding parameters and arguments must have the same name.
A) True
B) False

13. Consider the function definition

```
void DoThis( int& alpha,
             int  beta  )
{
    int temp;

    alpha = alpha + 100;
    temp = beta;
    beta = 999;
}
```

Suppose that the caller has integer variables gamma and delta whose values are 10 and 20, respectively. What are the values of gamma and delta after return from the following function call?

```
DoThis(gamma,delta);
```

A) gamma = 110 and delta = 20
B) gamma = 110 and delta = 999
C) gamma = 10 and delta = 20
D) gamma = 10 and delta = 999
E) none of the above

14. Among the C++ operators +, -, *, /, and %, which ones have the lowest precedence
A) + and -
B) +, -, and *
C) * and /
D) +, -, and %
E) *, /, and %

15. What is the value of sum after execution of the following code? (All variables are of type int.)

```
sum = 0;
for (counter = 2; counter <= 5; counter++)
    sum = sum + 2 * counter;
```

A) 30
B) 10
C) 18
D) 28
E) none of the above

16. What is the output of the following code fragment? (All variables are of type int.)

```
sum = 0;
outerCount = 1;
while (outerCount <= 3)
{
  innerCount = 1;
  while (innerCount <= outerCount)
  {
    sum = sum + innerCount;
    innerCount++;
  }
  outerCount++;
}
cout << sum << endl;
```

A) 10
B) 35
C) 1
D) 20
E) 4

17. Which one of the following is not a valid identifier in C++?
A) myName
B) X123Y
C) Go Home
D) IdEnTiFiEr
E) little

18. If the int variables int1 and int2 contain the values 4 and 5, respectively, then the value of the expression float(int1 / int2) is:
A) 1.0
B) 1
C) 0.0
D) 0
E) 0.8

19. The function heading

```
float TenToThePower( /* in */ int n )
```

is for a function that returns 10.0 raised to any integer power.Which of the following statements stores into someFloat the value 10.0 raised to the power someInt?
A) someInt = TenToThePower(someFloat);
B) TenToThePower(someFloat, someInt);
C) TenToThePower(someInt);
D) someFloat = TenToThePower(someInt);
E) TenToThePower(someInt) = someFloat;

20. Consider the function definition

```
void Demo( int    intVal,
           float& floatVal )
{
    intVal = intVal * 2;
    floatVal = float(intVal) + 3.5;
}
```

Suppose that the caller has variables myInt and myFloat whose values are 20 and 4.8, respectively. What are the values of myInt and myFloat after return from the following function call?

```
Demo(myInt, myFloat);
```

A) myInt = 40 and myFloat = 43.5
B) myInt = 40 and myFloat = 4.8
C) myInt = 20 and myFloat = 43.5
D) myInt = 20 and myFloat = 4.8
E) none of the above

21. To avoid infinite loops, a Do-While statement's condition must be false at some time during its execution.
A) True
B) False

22. With respect to the loop in the following main function, what is missing?

```
int main()
{
    int loopCount;

    while (loopCount <= 8)
    {
        cout << "Hi";
        loopCount++;
    }
    return 0;
```

A) the initialization of the loop control variable
B) Nothing is missing.
C) the testing of the loop control variable
D) the incrementation of the loop control variable

23. Every C++ program must have a function named main.
A) True
B) False

24. A value can be stored into a variable by execution of:
A) an input statement
B) an output statement
C) an assignment statement
D) a and b above
E) a and c above

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25. Which of the following is not a reason why programmers write their own functions?
A) to allow the reuse of the same code (function) within another program
B) to help organize and clarify programs
C) to make programs execute faster than they would with sequential flow of control
D) to allow the reuse of the same code (function) within the same program

26. Which of the following statements about the C++ main function is false?
A) The main function must call (invoke) at least one other function.
B) Every program must have a function named main.
C) The word int in the function heading means that the main function returns an integer value (to the operating system).
D) Program execution begins with the first executable statement in the main function.

27. In C++, the expression (a + b / c) / 2 is implicitly parenthesized as ((a + b) / c) / 2.
A) True
B) False

28. Which of the following does not constitute a logical (Boolean) expression?
A) an arithmetic expression followed by a relational operator followed by an arithmetic expression
B) an arithmetic expression followed by a logical operator followed by an arithmetic expression
C) a Boolean variable or constant
D) a logical expression followed by a binary logical operator followed by a logical expression
E) a unary logical operator followed by a logical expression

29. Which one of the following is not a valid identifier in C++?
A) UpAnDdOwN
B) 3BlindMice
C) Hi_There
D) CAPS
E) top40

30. Boolean variables cannot store the result of a comparison of two variables.
A) True
B) False

31. Which logical operator (op) is defined by the following table? (T and F denote TRUE and FALSE.)

```
 P  Q   P op Q
 -----------
 T  T   T
 T  F   F
 F  T   F
 F  F   F
```

A) AND
B) NOT
C) OR
D) none of the above

32. The statement

```
if (grade == 'A' || grade == 'B' || grade == 'C')
   cout << "Fail";
else
   cout << "Pass";
```

prints Pass if grade is 'A', 'B', or 'C' and prints Fail otherwise.
A) True
B) False

33. Which of the following is the correct function heading for a parameterless function named PrintStars?
A) void PrintStars
B) void PrintStars();
C) void PrintStars(int n)
D) void PrintStars()
E) void PrintStars;

34. The C++ compiler considers the identifier CanOfWorms to be the same as the identifier canofworms.
A) True
B) False

35. Parameter passage by value is used if a parameter's data flow is
A) one-way, into the function.
B) one-way, out of the function.
C) two-way, into and out of the function.
D) a and b above
E) b and c above

36. Execution of the statement

```
someInt = 3 * int(someFloat);
```

does not change the contents of the variable someFloat in memory.
A) True
B) False

37. To test whether someInt equals 25 or 30, the C++ expression

```
someInt == 25 || 30
```

has the correct semantics but produces a syntax (compile-time) error.
A) True
B) False

38. Which For loop is equivalent to the following While loop? (All variables are of type int.)

```
count = -5;
while (count <= 15)
{
    sum = sum + count;
    count++;
}
```

A)

```
for (count = -5; count <= 15; count++)
    {
        count++;
        sum = sum + count;
    }
```

B)

```
for (count = -5; count <= 15; count++)
        sum = sum + count;
```

C)

```
for (count = 1; count <= 21; count++)
        sum = sum + count;
```

D)

```
for (count = -5; count <= 15; count++)
    {
        sum = sum + count;
        count++;
    }
```

39. Formatting a program in a consistent, readable style is valuable to
A) the person who writes the program.
B) other people who need to understand and work with the program.
C) the C++ compiler.
D) a and b above
E) a, b, and c above

40. A single function heading can declare both reference and value parameters.
A) True
B) False

41. The scope of a parameter is identical to the scope of a local variable declared in the outermost block of the function body.
A) True
B) False

42. The termination condition for the While loop

```
while (loopCount < 9)
{
   cout << loopCount << endl;
   loopCount++;
}
```

is loopCount > 9.
A) True
B) False

43. What is the output of the following code fragment if the input value is 4? (Be careful here.)

```
int num;
int alpha = 10;

cin >> num;
switch (num)
{
    case 3  : alpha++;
    case 4  : alpha = alpha + 2;
    case 8  : alpha = alpha + 3;
    default : alpha = alpha + 4;
}
cout << alpha << endl;
```

A) 19
B) 14
C) 15
D) 12
E) 10

44. After execution of the following code, what is the value of length? (count and length are of type int.)


```
length = 5;
count = 4;
while (count <= 6)
{
   if (length >= 100)
     length = length - 2;
   else
     length = count * length;
   count++;
}
```

A) 100
B) 20
C) 600
D) 98
E) none of the above

45. Parameter passage by reference is used if a parameter's data flow is
A) one-way, into the function.
B) one-way, out of the function.
C) two-way, into and out of the function.
D) a and b above
E) b and c above

46. Which of the following statements prints HappyBirthday on one output line?
A) cout << "Happy" << endl;
cout << "Birthday" << endl;
B) cout << "Happy";
cout << "Birthday" << endl;
C) cout << "HappyBirthday" << endl;
D) b and c above
E) a, b, and c above

47. What is the output of the following code fragment? (All variables are of type int.)

```
n = 2;
for (loopCount = 1; loopCount <= 3; loopCount++)
    do
        n = 2 * n;
    while (n <= 4);
cout << n << endl;
```

A) 16
B) 32
C) 64
D) 4
E) 8

48. Consider the following If statement, which is syntactically correct but uses poor style and indentation:

```
if (x >= y) if (y > 0) x = x * y; else if (y < 4) x = x - y;
```

Assume that x and y are int variables containing the values 3 and 9, respectively, before execution of the above statement. After execution of the statement, what value will x contain?
A) 6
B) -6
C) 27
D) 9
E) none of the above

49. Which assignment statement could be used to store the letter A into the char variable someChar?
A) someChar = "A";
B) someChar = A;
C) someChar = 'A';
D) a and b above
E) a, b, and c above

50. The statement:

```
myVar++;
```

causes 1 to be subtracted from myVar.
A) True
B) False

51. After execution of the following code, what will be the value of angle if the input value is 10?

```
cin >> angle;
if (angle > 5)
    angle = angle + 5;
else if (angle > 2)
    angle = angle + 10;
```

A) 0
B) 25
C) 15
D) 5
E) 10

52. What is the output of the following code fragment? (finished is a Boolean variable, and firstInt and secondInt are of type int.)

```
finished = FALSE;
firstInt = 3;
secondInt = 20;
while (firstInt <= secondInt && !finished)
  if (secondInt / firstInt <= 2) // Reminder: integer division
    finished = TRUE;
  else
    firstInt++;
cout << firstInt << endl;
```

A) 9
B) 7
C) 8
D) 5
E) 3

53. If an ampersand (&) is not attached to the data type of a parameter, then the corresponding argument can be:
A) a constant
B) a variable name
C) an arbitrary expression
D) a and b above
E) a, b, and c above

54. In a C++ expression, all additions are performed before any subtractions.
A) True
B) False

55. Given the function prototype

```
int Top( int, int );
```

which of the following statements contain valid calls to the Top function?
A) someInt = 4 + Top(oneInt, anotherInt);
B) cin >> Top(oneInt, anotherInt);
C) cout << Top(5, Top(3, 4));
D) a and c above
E) a, b, and c above

56. What is the output of the following program?

```
#include <iostream>

using namespace std;

void Try( int&, int );

int x;
int y;
int z;

int main()
{
    x = 1;
    y = 2;
    z = 3;
    Try(y, x);
    cout << x << ' ' << y << ' ' << z << endl;
    return 0;
}

void Try( int& a,
          int  b )
{
    int x;

    x = a + 2;
    a = a * 3;
    b = x + a;
}
```

A) 1 2 3
B) 1 6 3
C) 10 2 3
D) 10 6 3
E) none of the above

57. Which of the following statements about value parameters is true?
A) The argument is never modified by execution of the called function.
B) The parameter is never modified by execution of the called function.
C) The argument must be a variable.
D) The argument cannot have a Boolean value.
E) b and c above

58. Given the function definition

```
void Twist( int  a,
            int& b )
{
    int c;

    c = a + 2;
    a = a * 3;
    b = c + a;
}
```

what is the output of the following code fragment that invokes Twist? (All variables are of type int.)

```
r = 1;
s = 2;
t = 3;
Twist(t, s);
cout << r << ' ' << s << ' ' << t << endl;
```

A) 1 14 9
B) 5 14 3
C) 1 14 3
D) 1 10 3
E) none of the above

59. Given that x is a float variable and num is an int variable containing the value 5, what will x contain after execution of the statement

```
x = num + 2;
```

A) nothing, a compile-time error occurs
B) 7.0
C) 5.0
D) 7
E) 5

60. Which of the following can be assigned to a char variable?
A) '$'
B) 't'
C) '2'
D) All of the above