CS 357 Lab 6. Turn in this document (not link) to Moodle, with an X next to your choice.

1. Analyze the following code.

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

      class Test
      {
      public:
        int x;

        Test()
        {
          cout << "Test";
        }
      };

      int main()
      {
        Test test;
        cout << test.x;
      }
```

A. The program has a compile error because x has not been initialized.
B. The program has a compile error because Test does not have a default constructor.
C. The program runs fine, but test.x is unpredictable. X
D. The program has a compile error because the test is not initialized.

2. Suppose you wish to provide an accessor function for a boolean property **finished**, what signature of the function should be?

A. bool getFinished() X
B. void getFinished()
C. bool isFinished()
D. void isFinished()

3. Which of the following statements are true?

A. All of the statements. X
B. The :: symbol is called the scope operator.
C. The binary scope operator can be used as ClassName::member to tell the compiler that a member belongs to a class.
D. The unary scope operator can be used as ::var to tell the compiler that the variable is a global variable.

4. Given the declaration Circle x, which of the following statements is most accurate?

A. x is a reference to a Circle object.
B. x contains an int value.
C. You can assign an int value to x.
D. x is an object of the Circle type. X

5. What is the output of the following code?

```
#include <iostream>
```

```
using namespace std;

class Foo
{
public:
  int x; // data field

  Foo()
  {
    x = 10;
  }

  void p()
  {
    int x = 30; // local variable
    cout << "x is " << x << " ";
  }
};

int main()
{
  Foo foo;
  foo.x = 20;
  foo.p();

  return 0;
}
```

A. x is 10
B. no output
C. x is 20
D. x is 30 X

6. You can always use the default constructor if only the non-default constructors are explicitly defined in the class.

A. false X

B. true

7. The default constructor has no arguments.

A. true X
B. false

8. You can declare variables of the same name in a function if they are in non-nesting blocks.

A. true X
B. false

9. It is legal to declare variables of the same name in a function even though they are in the same block.

A. true
B. false X

10. All local variables in a function have default values.

A. true
B. false X

11. Analyze the following code:

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

class Name
{
public:
  string firstName;
  char mi;
  string lastName;

  Name(string firstName1, char mi1, string lastName1)
  {
    firstName = firstName1;
    mi = mi1;
```

```
    lastName = lastName1;
  }
};

int main()
{
  string firstName("John");
  Name name(firstName, 'F', "Smith");
  firstName = "Peter";
  name.lastName = "Pan";
  cout << name.firstName << " " << name.lastName <<
 endl;
}
```

A. The program displays Peter Smith.
B. The program displays Peter Pan.
C. The program displays John Pan. X
D. The program displays John Smith.

12. What is the output of the following code?

```
string s("abc");
s.append(3, 'w');
cout << s << endl;
```

A. abcwel
B. abc
C. abcwww X
D. abcwelcome

13. What is the output of the following code?

```
string s("abc");
s.assign("welcome", 0, 3);
cout << s << endl;
```

A. abcwww
B. abc
C. abcwelcome
D. wel X
E. welcome

14. What is the output of the following code?

```
string s("abcdefg");
s.erase(2, 3);
cout << s << endl;
```

A. aefg
B. abcd
C. abcg
D. abfg X

15. What is the output of the following code?

```
string s("abcdefag");
cout << s.find("def") << " " << s.find("a", 3);
```

A. 3 6 X
B. 2 4
C. 3 0
D. 0 0

16. Which of the following is the correct statement to return the length from string s = "abcde"?

A. size(s)
B. length(s)

C. "abcde".size() X I think there's an error, none of these are actually the right answer but if you swap out "abcde" with s then that's the right answer

D. s.size()

17. What is the output of the following code?

```
string s("abc");
s.assign("welcome");
cout << s << endl;
```

A. abcwww
B. abcwelcome
C. welcome X
D. abc

18. What is the output of the following code?

```
string s("abcdefgh");
s.replace(1, 2, "ttt");
cout << s << endl;
```

A. abtttdefgh
B. tttbcdefgh
C. atttcdefgh
D. abcdefgh
E. atttdefgh X

19. What is the output of the following code?

```
string s("abcdefgh");
cout << s.find("cd");
```

A. 0
B. 2 X
C. 1
D. -1
E. -2

20. What is the output of the following code?

```
string s("abcd");
cout << s.at(3) << endl;
```

A. c
B. a
C. b
D. d X

21. Given the array int list[] = {3, 4, 5, 1, 13, 4}, after invoking sort(list + 2, list + 4), list is _____.

A. {1, 3, 4, 5, 13, 4}
B. {3, 1, 4, 5, 13, 4}
C. {3, 4, 5, 1, 13, 4}
D. {3, 4, 1, 5, 13, 4} X

22. Which of the following statements is correct to delete a dynamic object from a pointer p?

A. delete p; X
B. delete *p;
C. delete [] p;
D. delete [] *p;

23 The asterisk (*) used in the following statement is known as _____. Please select all that apply.

```
cout << *pCount;
```

A. indirection operator X
B. dereference operator X
C. multiply operator
D. address operator

24. Which of the following declarations is correct? Please select all that apply.

A. double* pValue = new int;
B. double* pValue = new double; X
C. int* pValue = new int; X
D. int* pValue = new double;

25. Suppose you declare an array double list[] = {1, 3.4, 5.5, 3.5} and compiler stores it in the memory starting with address 04BFA810. Assume a double value takes eight bytes on a computer. &list[1] is _____.

A. 04BFA810
B. 1
C. 04BFA818 X
D. 3.4

26. Assume you declared int* p and p?s current value is 1000. What is p + 1?

A. 1003
B. 1001
C. 1004 X
D. 1002

27. Suppose circle1 and circle2 are two Circle objects. What does the following statement do?

```
circle2 = circle1;
```

A. It copies the contents of circle2 to circle1.
B. It makes circle2 and circle1 the same object.
C. This statement is illegal.
D. It copies the contents of circle1 to circle2. X

28. What is the output of the following code?

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

void f1(int x, int& y, int* z)
{
    x++;
    y++;
    (*z)++;
}

int main()
{
    int i = 1, j = 1, k = 1;
    f1(i, j, &k);

    cout << "i is " << i;
    cout << " j is " << j;
    cout << " k is " << k << endl;

    return 0;
}
```

A. i is 1 j is 1 k is 1;
B. i is 1 j is 1 k is 1;
C. i is 2 j is 2 k is 2
D. i is 1 j is 2 k is 2 X
E. i is 1 j is 2 k is 3

29. What is wrong in the following code?

```
#include <iostream>
```

```
using namespace std;

class TempClass
{
public:
    int i;

    TempClass()
    {
        int i = 5;
    }
};

int main()
{
    TempClass temp(2);
}
```

A. The program has a compilation error because TempClass does not have a constructor with an int argument. X
B. The program compiles and runs fine.
C. The program compiles fine, but it does not run because class C is not public.
D. The program has a compilation error because TempClass does not have a default constructor.

30. Analyze the following code.

```
#include <iostream>
```

```
using namespace std;

class B
{
public:
    B() { };

private:
    int k;
};

int main()
{
    B b;
    cout << b.k << endl;

    return 0;
}
```

A. The program displays 0.
B. The program displays an unpredictable number.
C. The program has a compile error because b.k cannot be accessed. X
D. The program displays 1.
E. The program has a runtime error because b.k does not have a value.

31. Which of the following statements deletes the first element from vector v?

A. v.delete(v.begin())
B. v.erase(0)
C. v.erase(v.begin()) X
D. v.delete(0)

32. Which of the statements is incorrect for using the following template class?

```
template<typename T, int capacity>
```

```
class Stack
{
  Stack();
  ...
private:
  T elements[capacity];
  int size;
};
```

A. Stack<double, 40> s;
B. Stack<string, 50> s;
C. Stack<int, double> s; X
D. Stack<int, 50> s;

33. Given the printArray template function, which of the statements are correct to invoke it?

```
template<typename T>
void printArray(T list[], int arraySize)
{
  for (int i = 0; i < arraySize; i++)
  {
    cout << list[i] << " ";
  }
  cout << endl;
}
```

A. double list[] = {1, 2, 3, 4}; printArray(list, 4); X
B. int list[] = {1, 2, 3, 4}; printArray(list, 4); X
C. int list[] = {1, 2.5, 3, 4}; printArray(list, 4);
D. All of the above.
E. string list[] = {"Atlanta", "Dallas", "Houston", "Chicago"}; printArray(list, 4); X

34. A template prefix for two parameters may be defined as _____. Please select all that apply.

A. template<typename T1, T2>
B. template<class T1, class T2> X
C. template<typename T1, typename T2> X
D. template<class T1, T2>

35. What is wrong in the following code?

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

int main()
{
  vector<int> v;
  cout << v[0];
  return 0;
}
```

A. The program has a runtime error on vector<int> v.
B. The program has a compile error on v[0].
C. The program has a compile error on vector<int> v.
D. The program has a runtime error on v[0], because the vector is empty. X

36. Suppose a template function is defined as follows:

```
template<typename T>
T maxValue(const T& value1, const T& value2)
{
  if (value1 > value2)
    return value1;
  else
    return value2;
}
```

Which of the following statements are correct?

A. cout << maxValue("AB", "AB")
B. cout << maxValue(1, 2) X
C. cout << maxValue('A', 'B') X
D. cout << maxValue(1.5, 2.5) X
E. cout << maxValue(1.5, 2) X

37. A template prefix for two parameters may be defined as _____.

A. template<typename T1, typename T2> X
B. template<typename T1, T2>
C. template<class T1, T2>
D. template<class T1, class T2> X

38.
Templates are for using generic types.

A. false
B. true X

39. Suppose you declare

```
template<typename T = int>
class Stack
{
  Stack();
  ...
};
```

Which of the following statements are correct?

A. Stack<int, double> s;
B. Stack<int> s; X
C. Stack<double> s; X
D. Stack<> s; X
E. Stack s; X

40. Suppose you declared

```
template<typename T, int capacity>
class Stack
{
  Stack();
  ...
private:
  T elements[capacity];
  int size;
};
```

Which of the following statements are correct?

A. Stack<int, 50> s; X
B. Stack<int, double> s;
C. Stack<50> s;
D. Stack<double, 40> s; X