

The University of Alabama in Huntsville
Electrical and Computer Engineering
CPE 112 02
Test #3
November 6, 2001

Name: _____

True or False (2 points each)

1. _____ When a While expression evaluates to `false`, the loop terminates and control goes back to the statement immediately before the While statement.
2. _____ It is possible for the body of a While statement never to be executed.
3. _____ Any parameter that can be classified as both incoming and outgoing must be coded as a reference parameter.
4. _____ When a parameter is passed by reference, the argument can be any expression.
5. _____ The scope of an identifier does not include any nested block that contains a locally declared identifier with the same name.
6. _____ If one programmer in a large team is given the task of writing a single function for the team project, this programmer is more likely to need a function driver than a function stub.
7. _____ The statement

```
return 3 * alpha + 8;
```

is valid in a value-returning function but not in a void function.

8. _____ The termination condition for the While loop

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

```
is loopCount > 9.
```

Fill in the Blank (2 points each)

9. Before each iteration of a While loop, the loop _____ is performed at the beginning of the loop.

10. A(n) _____ is an individual pass through, or repetition of, the body of a loop.
11. A(n) _____ is a variable that is declared within a block and is not accessible outside of that block.
12. The pass by _____ mechanism is used for the parameter `alpha` below:
- ```
void DoSomething(char& alpha,
 char beta);
```
13. The \_\_\_\_\_ of an identifier is the region of program code where it is legal to reference that identifier.
14. The \_\_\_\_\_ of a variable is the period of time during program execution when the variable has memory allocated to it.
15. A(n) \_\_\_\_\_ is a simple `main` function that is used to call a function being tested.

**Multiple Choice** (3 points each)

16. \_\_\_\_\_ Given the function heading

```
void GetNums(int howMany,
 float& alpha,
 float& beta)
```

which of the following is a valid function prototype for `GetNums`?

- a. `void GetNums( int howMany, float& alpha, float& beta );`
  - b. `void GetNums( int, float&, float& );`
  - c. `int GetNums( int, float&, float& );`
  - d. a and b above
  - e. a, b, and c above
17. \_\_\_\_\_ What is the value of `someInt` after control exits the following loop?
- ```
someInt = 273;  
while (someInt > 500)  
    someInt = someInt - 3;
```
- a. 270
 - b. 273
 - c. 497
 - d. 500
 - e. none of the above--this is an infinite loop

18. ____ 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. the testing of the loop control variable
- c. the incrementation of the loop control variable
- d. Nothing is missing.

19. ____ When parameters are passed between the calling code and the called function, formal and arguments are matched by:

- a. their data types
- b. their relative positions in the formal and argument lists
- c. their names
- d. whether they are inputs to or outputs from the function

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

```
alpha = 3;
beta = 20;
if (beta > 10)
{
    int alpha = 5;

    beta = beta + alpha;
    cout << alpha << ' ' << beta << endl;
}
cout << alpha << ' ' << beta << endl;
```

- a. 3 20
- b. 3 25
3 25
- c. 5 25
5 25
- d. 5 25
3 25
- e. 5 25
3 20

21. _____ 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 represents an appropriate use of the `TenToThePower` function?

- a. `someFloat = 4.96 * TenToThePower(8) + 2.5;`
- b. `TenToThePower(6);`
- c. `if (TenToThePower(someInt) > someFloat)`
`beta = 3;`
- d. a and b above
- e. a and c above

22. (6 points) 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;
}
```

23. (18 points) a. (5 points) Write the function heading for a void function named PrintMin that accepts a trio of integers and prints out the smallest of the three. Document the data flow of each parameter with `/*in*/`, `/*out*/`, or `/*inout*/`. b. (9 points) Write the function body of PrintMin. c. (4 points) Give an example of a valid call to PrintMin.

24. (13 points) Write a program segment that uses (a) while loop(s) that counts the number of phrases found in a paragraph as indicated by a phrase ending in either a comma or a period. Process the standard input stream until the end of file character is found. Use the `cin.get` function to read each character.

25. (15 points) Write a for loop which will read in n numbers from a file, check them for falling in the range -100 to 100 , and write the ones which fall in range to a different file. Be sure to include all necessary declarations.