The University of Alabama in Huntsville
ECE Department
CPE 197 01
Spring 2001
Sample Test III
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1) (4 points) When the following code is executed, how many iterations of the loop are performed?

```
number = 2;
done = false;
while (!done)
{
   number = number * 2;
   if (number > 64)
      done = true;
}
```

2) (8 points) The following code segment is supposed to write out the even numbers between 1 and 15. (`n` is an `int` variable. It has two flaws in it.

```
n = 2;
while (n != 15)
{
   n = n +2;
   cout <, n << ' ';
}
```

a. What is the output of the code as written?
b. Correct the code so that it works as intended.

3) (12 points) Write a program segment that reads in integers and then counts and prints out the number of positive integers and the number of negative integers. If a value is 0, it should not be counted. The process should continue until end-of-file occurs.

4) (12 points) What is the output of the following program segment? (All variables are of type int.)

```
i = 1;
while (i <= 5)
{
   sum = 0;
   j = 1;
   while (j <= i)
   {
      sum = sum + j;
      j++;
   }
   cout << sum << ' ';
   i++;
}
```

5) (3 points) Given the function heading

```
void QuickCheck (int    size,
                 float& length,
                 char initial)
```

indicate which parameters are value parameters and which are reference parameters.

6) (12 points) Identify the following items in the program fragment shown below.

```
void Test(int, int, int);

int main()
{
   int a;
   int b;
   int c;
      .
      .
      .
   Test(a, c, b);
   Test(b, a, c);
      .
      .
      .
}

void Test(int d,
          int e,
          int f)
{
   int g;
   int h;
      .
      .
      .
}
```

a. function prototype
b. arguments

c. local variables
d. function definition
e. parameters
f. function call

7) (2 points) _____ (True or False) Using a value parameter, the value of a variable can be passed to a function and used for computation there without any modification of the caller's argument.

8) (12 points) For the program in Exercise 6, fill in the blanks below with variable names to show the matching that takes place between the arguments ada the parameters in each of the two calls to the `Test` function.

First call to `Test`

	Parameter	Argument
1.	_____	_____
2.	_____	_____
3.	_____	_____

Second call to `Test`

	Parameter	Argument
1.	_____	_____
2.	_____	_____
3.	_____	_____

9) (6 points) Using the data values

```
3 2 4
```

show what is printed by the following program.

```
#include <iostream>

using namespace std;

void Test(int&, int&, int&);

int main()
{
   int a;
   int b;
   int c;

   Test(a, b, c);
   b = b + 10;
   cout << "The answers are " << b << ' ' << c << ' ' << a;
   return 0;
}

void Test(int& z,
          int& x,
          int& a)
{
   cin >> z >> x >> a;
   a = z * x + a;
}
```

10) (5 points) Write the function heading for a void function named PrintMax that accepts a pair of integers and prints out the greater of the two. Document the data flow of each parameter with /*in*/, /*out*/, or /*inout*/.

11) (12 points) Write a void function named `SkipToBlank` that skips all characters in the standard input stream unitl a blank is encountered. In your function, use the `cin.get` function to read each character.

12) (12 points) Consider the following function definition.

```
void Rotate(/*inout*/ int& firstValue,
            /*inout*/ int& secondValue,
            /*inout*/ int& thirdValue)
{

   int temp;

   temp = firstValue;
   firstValue = secondValue;
   secondValue = thirdValue;
   thirdValue = temp;
}
```

Write a program that reads three values into variables, echo prints them, calls the `Rotate` function with the three variables as arguments, and then prints the arguments after the function returns.