

NAME _____

SID (last 4) _____

LOGIN _____

CS 010 – Intro to Computer Science

Summer Session 1 - 2004

Mid-term exam – Tuesday 7/6 – total 100 points

Time: **90 minutes**

You may have on your desks **ONLY** this exam, a writing implement and an eraser.

You may use a separate sheet(s) of scratch paper. Make good use of this – don't write your answers in the assigned space until you are sure of them!

WRITE CLEARLY IN THE SPACE PROVIDED: illegible responses will not be graded

You will be required to show your student ID when you hand in your exam.

Be sure to read each problem carefully and follow the directions.

Problem 1	20	
Problem 2	20	
Problem 3	8	
Problem 4	8	
Problem 5	12	
Problem 6	16	
Problem 7	16	
TOTAL	100	

LOGIN _____

1. (20 pts - 2 each) True/False and Multiple Choice. Please write out "True" and "False" or circle the correct choice. Do not just write T or F.

~~False~~

a. A computer's RAM performs program control, arithmetic, and data movement operations.

True

b. Compilers and assemblers are programs.

False

c. Omitting a semicolon at the end of a statement causes a logic error.

d. Of the following choices, the earliest step in writing a program to solve a problem should be writing the _____.

source code

object code

C++ code

algorithm

include directives

False

e. Floating-point numbers take less storage space and are processed faster than integer numbers in C++.

True

f. The following statements will cause a syntax error.

```
int x = 5;
5 = x;
```

True

g. The following statements will cause a syntax error.

```
const int A = 10;
A = 5;
```

False

h. The value of x after the following statement will be 1.75?

```
int x = 7 / 4;
```

True

i. The value of y after the following statement will be 3?

```
int y = 7 % 4;
```

True

j. The following statements will cause an infinite loop.

```
int count = 0;
while (count < 10)
{
    cout << count;
}
```

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2. (20 pts - 4 each) Fill in the blank.

a. Explain the difference between the "=" operator and the "==" operator?

= is an assignment operator and == is a comparison operator

b. List 2 examples of white space? newline space

c. What is the value of y after the following statements? 4

```
int x = 2;  
int y = x + x;
```

d. What is the value of str after the following statements? 22

```
string s = "2";  
string str = s + s;
```

e. Explain the difference between

```
Point(3, 4);
```

and

```
Point p(3, 4);
```

The first is an object, the second is a variable that holds an object

3. (8 pts) Write an **if-else** statement that outputs the string literal "Error: area has a negative value!" and then exits the program if the value of the integer variable *area* is negative. Otherwise, the **if-else** statement should output the value of *area* and then does **not** exit the program.

```
if (area < 0)  
{  
    cout << "Error: area has a negative value!";  
    return 1;  
}  
else  
{  
    cout << area;  
}
```

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4. (8 pts) Write a **while** statement that loops *number* times. Each loop should output the square of the value of the integer variable *count* and then increment *count* by 1. You may assume the integer variable *number* has been declared and initialized to some integer value and *count* was declared and initialized to the value 0 before the **while** statement.

```

while (count < number)
{
    cout << count * count << endl;
    count++;
}

```

5. (12 pts - 4 each) To the right of each of the following code fragments, show its output.

a.

```
int i = 0;
while (i < 5)
{
    cout << i << " ";
    i++;
}
```

0 1 2 3 4

b.

```
int i = 10;
while (i > 0)
{
    cout << i << " ";
    i = i - 2;
}
cout << i << endl;
```

10 8 6 4 2 0

c.

```
int x = 0;
while (x < 10)
{
    if (x < 5)
    {
        x++;
    }
    else
    {
        x = x + 2;
    }
    cout << x << endl;
}
```

1
2
3
4
5
7
9
11

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6. (16 pts) Write a program that asks the user to click near the center of the window and then draws a circle with a radius of 2 and a center at the point the user clicked.

```
#include "ccc-win.h"
```

```
int ccc-win-main()
```

```
{
```

```
    Point center = cwin.get_mouse("Click near center of window.");  
    cwin << Circle(center, 2);
```

```
    return 0;
```

```
}
```

+2 MISC

LOGIN _____

7. (16 pts) Write a **program** that asks the user for the number of inputs. The program should then read in that many positive or negative integers and then output the average of those integers. Your output should look exactly like the following sample except that the user input values will be different depending on what the user enters. In other words, the numbers in **bold** should **NOT** be in your program code.

Sample run: (user input in **bold**)

How many entries? **7**

Enter 7 positive or negative integers: **1 9 -50 2 -10 5 8**

The average of the 7 integers entered is: -5.

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

```
int main()
{
```

```
    cout << "How many entries? ";
```

(+1)

```
    int entries;
```

(+2)

```
    cin >> entries;
```

(+2)

```
    cout << "Enter " << entries << " positive or negative integers: ";
```

```
    int count = 0;
```

(+2)

```
    int sum = 0;
```

```
    while (count < entries)
```

(+2)

```
    {
```

```
        cin >> number;
```

(+1)

```
        sum += number;
```

(+2)

```
        count++;
```

(+2)

```
    }
```

```
    cout << "The average of the " << entries <<
```

(+2)

```
    << " integer entered is: " << (sum / entries) << ".";
```

```
    return 0;
```