Name: _____

CS 0449 – Sample First Midterm

Directions: You have 1 hour to complete this test. Remember to keep your eyes on your own paper. Make sure everything is off your desk. Good luck!

Multiple Choice – Circle ONE of the following

1.) Which of the following data types does not require being prefixed by an & in scanf?

A) char

B) int

C) double

D) string

2.) Which of the following keywords stops a loop, skipping any remaining statements in the body?

A) skip

B) continue

C) break

D) case

3.) Which of the following flags to gcc tells it to create a program with debugging support?

A) -o

B) -g

C) -d

D) -debug

4.) Assuming “s” is a pointer to a struct, which of the following is equivalent to `(*s).data`?

A) `s->data`

B) `*s.data`

C) `*(s.data)`

D) `s.data`

5.) Which of the following arguments to fopen says to open a file for reading and writing in text mode, provided the file already exists?

A) “w+t”

B) “r+w+t”

C) “rw+t”

D) “r+”

Short Answer

6.) Given: `int a = 1; int b = 2;` What is the value of:

a.) a & b

b.) a && b

7.) What is the result of the following calculation?

```
int a = 20;
int b = 4;
int c = ++a - 2*b;
b++;
```

a= _____ b= _____ c= _____

8.) What is the problem with the following segment of code?

(Hints: There is only one problem, the program behaves as intended, the code compiles)

```
int *x;
do
{
   x = (int *)malloc(sizeof(int));

   printf("Enter an integer (0 to stop):");
   scanf("%d", x);
   printf("You entered %d\n", *x);
} while(*x != 0);
free(x);
```

9.) Fill in the following table:

	Lifetime	Scope
global variable		
local variable		
malloc'ed variable		

Tracing

10.) What is output by the following program when run?

```
#include <stdio.h>

int main()
{
   int i,j;

   for(i=1; i<=5; i++)
   {
      for(j=i; j>0; j--)
      {
         printf("%d\t",i);
      }
      printf("\n");
   }
   return 0;
}
```

11.) What is output by the following program when run?

```
#include <stdio.h>

int mystery(int x, int y);

int main()
{
   int a = 5;
   int b = 3;
   switch(mystery(a,b))
   {
      case 3:     printf("It was three\n");

      case 5:
            printf("Or maybe 5\n");
            break;
      default:
            printf("It wasn\'t either!\n")
   }
   return 0;
}

int mystery(int x, int y)
{
   if(x < y)
   {
      return x;
   }
   return y;
}
```

Coding

Imagine a teacher has kept their class grades in a binary file with the following format:

Offset	Size	Description
0	20	Last name
20	1	Midterm grade (integer, out of 100)
21	1	Final grade (integer, out of 100)

Write a program that reads in the file, and computes each student's average and displays it on the screen. (as a real number with one digit after the decimal place) Note: Be able to handle an arbitrary number of students in the class.

Essay

12.) What are the two strategies for keeping track of variable-length data? List an advantage and disadvantage to both approaches.

13.) What is the difference between a binary and a text file?