CS 210 **Name_SOLUTION____**
Hour Exam 1 **September 22, 2016**

1. Show how many lines of print are printed by each of the following:

```
int i, j, k;
for(i=0;i<10;i++)
  for(j=0;j<20;j++)
    for(k=0;k<30;k++)
       printf("Hello Mom!\n");
```

Lines Printed = __6000_____

```
int i, j;
for(i=0;i < 10;i+=2)
   {printf("Hello Mom!\n");
    j = 16;
    while(j >= 0)
       {printf("I like Jello\n");
        j--;
       }
     printf("bananas are good.\n");
    }
```

Lines printed = __**95**_____

2. Write a line of C-code to implement the following equation. Take all variables to be doubles.

$$x = \frac{y + b/c - d^4}{13z + 12.5}$$

___`x = (y + b/c - pow(d, 4))/(13*z + 12.5);`___

3. If i = 3, j = 12, and k = 4, determine whether each of the following is TRUE or FALSE.

A) `(!((i+j)<20)&&(i==3))` _**FALSE**_ B) `((!(j==12)||!(k<7)))` **FALSE**___

4. What is printed by the following sequence.

```
int i = 3, j = 11;
double k;
k = j/i;
printf("%d, %2.3f", j/i,  k);
```

Printed results

___**3, 3.000**_____

_____

5. Give at least two advantages to using functions to modularize a program.

A) Saves memory if the function is called multiple times.
B) Provides a way to organize a program in smaller steps – divide and conquer.
C) Allows multiple programmers to implement pieces of code independently.

6. The statements below prompt the user to enter two integers called i and j. Write an *if block* to print the value of i and j only if the value of i is in the range ($10 \le i < 100$) *and* i is greater than j. If this is not the case your if block should print only the value of i.

```
int i, j;
printf("Enter an integer...");
scanf_s("%d", &i);
printf("Enter a second integer...");
scanf_s("%d", &j);
// Put your if block here
if(10 <= i && i < 100 && i > j)
   printf("%d %d\n", i, j);
else
  printf("%d\n", i);
```

7. Show what is printed by the following and fill in the memory map.

```
int Fun1(int a, int b);
int main()
{
   int a = 1, b = 2, c = 3;
   printf("%d %d %d\n", a, b, c);
   c = Fun1(a, b);
   printf("%d %d %d\n", a, b, c);
}
int Fun1(int x, int y)
{
   int a;
   a = x;
   x = y;
   y = a;
   printf("%d %d %d\n", x, y, a);
   return x;
}
```

Printed Results

1 2 3
2 1 1
1 2 2

Fun1	Main	Data
	a	1
	b	2
	c	~~3~~ 2
x		~~1~~ 2
y		~~2~~ 1
a		1

8. Write a program which prints the powers of 2 from 2^0 to 2^{16} on successive lines. *Do not use the pow function.*

```
int i, x = 1;
for(i=0;i<=16;i++)
{
      printf("%d\n", x);
      x *= 2;
}
```

9. Write a *function* which accepts two integer arguments name `max` and `min` and returns an `int`. Your function should input a number from the user and return that number if and only if it is greater than or equal to `min` AND less than or equal to `max`. Otherwise, it should return a 0. Name your function `MaxMin`.

```
int MaxMin(int max, int min)
{
    int n;
    printf("Enter an int ... ");
    scanf_s("%d", &n);
    if(n >= min && n <= max)
       return n;
    return 0;
}
```