

KSU/CCIS/CS	CSC 215	Mid-term exam 1 - Fall 13-14 Time allowed: 1:30
Name: ID:		

EXERCISE 1

Write True/ False (20pts)

In C, boolean is the logical type	
In C, memory management is left to the programmer.	
C helps organize software projects more than Java.	
The conversion of a higher order type to a lower order may cause truncation and loss of information.	
The scope of a global variable is the entire program.	
strlen(s) returns the number of characters in s including the terminating character.	
A local variable is one whose value can be accessed only by the Function/block in which it is declared.	
The operator & , when applied to a variable, results in the address of the variable.	
Pointers of different types have different sizes.	
The continue statement does not terminate the loop; it only interrupts a particular iteration.	

EXERCISE 2

Select the correct answer (20pts)

1- Which of the following is **NOT** a correct for naming variables in C?

- a) May begin with a letter
- b) Cannot contain white space characters
- c) Cannot begin with an underscore
- d) Must not be a keyword

2- What is printed by the code below? (Assume 1 byte characters)

```
char array[] = "foo";  
  
printf("%lu\n", sizeof(array[0]));
```

- a) 0
- b) 1
- c) 2
- d) f

3- Given the following declaration **int i=1, *ip;** Which of the flowing initializes the pointer ip to the address of i?

- e) ip = &i; b) *ip = i; c) i = &ip; d) *ip=&i;

4- When a break statement is encountered within a loop body,

- a) The execution of the loop body is interrupted, and the program control transfers to the exit point of the loop.
- b) All the remaining statements in the loop body are skipped and the loop continuation condition is evaluated next.
- c) The program stops.
- d) Nothing happens.

5- When a function calls itself (directly, or indirectly) it is called a

- A. Self
 - B. Recursive
 - C. Referring
 - D. None of the above
-

EXERCISE 3

1- Write the output of the following C program. (10 pts)

```
#include <stdio.h>
void main()
    int a = 2 , b=3, c=4;

    int *p = &a;

    printf("a and *p: %d %d\n", a, *p);

    (*p) +=1;

    printf("a and *p: %d %d\n", a, *p);

    printf("a > b: %d\n", a>b);

    printf("a-c==b+c : %d\n", a+c==b+c);

    printf("c<<2: %d\n" , c<<2);
}
```

2- Write the output of the following C program. (10pts)

```
#include <stdio.h>
int main()

    int i, n=10, sum=0;
    for (i = 1; i <= n; i++) {
        if (i % 3 == 0) { continue; }
        sum += i;
    }
    printf("The value of sum is %d\n", sum);

    sum=0;
    for (i = 1; i <= n; i++) {
        if (i % 4 == 0) { break; }
        sum += i;
    }
    printf("The value of sum is %d\n", sum);

    sum=0;
    while (sum<=n) {
        sum++;
    }
    printf("The value of sum is %d\n", sum);

    return 0;
}
```

3- Write the output of the corresponding C program (5 pts)

```
#include <stdio.h>
```

```
void printSeries(int num) {  
    if (num > 1)  
        printSeries(num - 1);  
    printf("%d\n", num);  
}  
main()  
{  
    printSeries(4);  
}
```

4- Write the output of the corresponding C program (5 pts)

```
float x = 10;  
void doubleX()  
{  
    x *=2;  
    printf("%f", x);  
}  
main(){  
    float x = 3;  
    doubleX();  
    printf("The value of x is: %f", x);  
}
```

EXERCISE 3

Write a C program that implements the following requirements: (30pts)

- 1- A function called **max** that takes two integers and return their maximum.
- 2- A recursive function called **factorial** that takes an integer n and returns the factorial of n.
(e.g: $\text{factorial}(5) = 5*4*3*2*1=120$)
- 3- A **main** function with the following requirements:
 - a. Ask the user to enter two numbers and read them **one at time** using **scanf**.
 - b. Compute the maximum of the two numbers using the function **max** and save the result into a variable called **m**.
 - c. Compute the factorial of m using the factorial function and save the result into a variable called **f**.
 - d. Print the value of **f**.