2009.1 Midterm Exam : C Programming

Student Id. : (   ) , Name : (   )

1. (15 points) You can see a C program and its output results as follows.
   Fill out the blanks (1), (2), (3) in the following C program.

```c
#include <stdio.h>

int main()
{
    int i,j;

    for (i=0;i<10;i++) {
        if (i<5) {
            for ((1)_____) printf("*");
            printf("\n");
        } else {
            for ((2)_____) printf(" ");

            for ((3)_____) printf("*");
            printf("\n");
        }
    }
    return 0;
}
```

Output :

```
*
**
***
****
*****
 ****
  ***
   **
    *
```

2. (10points) Consider following C function.

```c
double f(double x, unsigned int y)
{
    if (y==0) return 1.0;
    else if (y==1) return x;
    else {
        if (y%2 == 0) return f(x*x, y/2);
        else return f(x*x, y/2)*x;
    }
}
```

What is the return value of **f(4.0,3)**?
(Answer :   )

3. (10points) What is the value of x after executing following statements.

(1)
```c
int x=2;
x *= 11>>1;
```

(Answer: x=   )

(2)
```c
float x=2.0;
int y=3;
x += (y++)/2;
```

(Answer: x=   )

4. (15points) Given an integer number, write a program using while loop to reverse the digits of the number. For example,

        12345   <- keyboard input

        should be written as

        54321   <- output

Write down your code in the following C program box.

```c
#include <stdio.h>

int main()
{
        int val;
        scanf("%d",&val);




        return 0;
}
```

5. (15points) Write a C function that implements $f(n) = \sum_{k=1}^{n} k^2 = 1^2 + 2^2 + ... + n^2$.

```c
/*
        input : integer value n
        output : 1^2 + 2^2 + ... + n^2
*/
int f ( int n )
{




}
```

6. (10points)

(1) What is operator associativity?

  Explain. (   )

(2) when execute a statement **printf("%d", (35|21));**

what will be printed by printf function? (   )