C++ Recursion functions.

1. Write a c++ program to find factorial of first 5 numbers without using loops;

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

int factorial(int num){
   if(num == 0){
      return 1;
   }
   return num * factorial(num-1);
}

int main() {
  cout << factorial(5);
  return 0;
}
```

2==========//==========

write 5 times hello world without loop

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

int hello(int num){
   if(num == 0){
```

```
        return 0;
    }
    cout << "hello" << endl;
    return hello(num-1);
}

int main() {
    hello(5);
  return 0;
}
```

3==========//==========

print 1 to N number without loop;

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

int rec(int num){
    if(num == 0){
        return 0;
    }
    cout << 1 + rec(num-1);
    return num;
}

int main() {
   rec(7);
```

```
  return 0;
}
```

4==========//==========

print N to 1 number without loop;

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

int rec(int num){
   if(num == 0){
      return 0;
   }
   cout << num;
   return rec(num -1);

}

int main() {
  rec(7);
  return 0;
}
```

5==========//==========

reverse of a word;

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

int rec(string word , int index){
   if(index == 1){
      cout << word[0];
      return 1;
   }

   cout << word[index-1];
   return rec(word , index-1);
}

int main() {
   string word = "OLLLOO";
   int size = word.length();
   rec(word, size);
   return 0;
}
```

6==========//==========

avarage of array

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

float avarage(float nums[] ,int index, int size){
   int sum;
   if(index == 1){
      return nums[0];
```

```
    }
    sum = nums[index - 1] + avarage(nums ,index - 1,size);
    if(index == size){
        return sum / size;
    }
    return sum;
}

int main() {
    float nums[4] = {2,3,5,2};
    int size = sizeof(nums)/sizeof(nums[0]);
    cout << avarage(nums ,size , size );
    return 0;
}
```

7==========//==========

fibonaci number calculation with recursion;

```
#include <iostream>
using namespace std;
int fib(int n){
    if(n == 1){
        return 1;
    }
    else if(n == 0){
        return 0;
    }
    return fib(n-1) + fib(n-2);
}
```

```
int main() {
    for(int i =0; i < 10 ; i++)
    cout << "fib(" << i << ") = "  << fib(i) << endl;
    return 0;
}
```