Data Structures and algorithms

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Q1) Write a function using Recursion to enter and display a string in reverse and state whether the string contains any spaces. Don't use arrays/strings.

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

int reverse(int b)
{
    char ch;
    cin.get(ch);
    if(ch=='\n')        //Newline key is used as the delimiter to act as the end of input.
    {
        cout<<"The reversed string is : ";
        return(b);
    }
    else
    {
        if(ch==' ')
        {
            b++;
        }
        b = reverse(b);
        cout<<ch;
        return(b);
    }
}

int main()
{
    int n, b;
    cout<<"Enter the string : ";
    b = reverse(0);
    cout<<endl;
    if(b>0)
    {
        cout<<"The nuumber of blank spaces in the enterd string is : "<<b<<endl;
    }
    else
    {
        cout<<"The entered string has no blank spaces."<<endl;
    }
}
```

```
Aadhityas-MacBook-Air:DSA-Course aadhitya$ g++ da1.cpp
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the string : abcde
The reversed string is : edcba
The entered string has no blank spaces.
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the string : ab cd ee sd
The reversed string is : ds ee dc ba
The nuumber of blank spaces in the enterd string is : 3
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the string :   12 33
The reversed string is :   33 21
The nuumber of blank spaces in the enterd string is : 5
Aadhityas-MacBook-Air:DSA-Course aadhitya$
```

Q2) Write a function using Recursion to check if a number *n* is prime. (You have to check whether *n* is divisible by any number below *n*)

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

bool check_prime(int n, int a)
{
    if(a==1)
    {
        return(true);
    }
    else
    {
        if(n%a==0)
        {
            return(false);
        }
        return(check_prime(n, a-1));
    }
}

int main()
{
    int n;
    cout<<"Enter the number to be checked : ";
    cin>>n;
    bool flag = check_prime(n, (int)(n/2));
    if(flag)
    {
        cout<<"The entered number "<<n<<" is a prime number."<<endl;
    }
    else
    {
        cout<<"The entered number "<<n<<" is not a prime number."<<endl;
```

```
    }
}
```

```
Aadhityas-MacBook-Air:DSA-Course aadhitya$ g++ da1.cpp
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the number to be checked : 22
The entered number 22 is not a prime number.
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the number to be checked : 23
The entered number 23 is a prime number.
Aadhityas-MacBook-Air:DSA-Course aadhitya$ ./a.out
Enter the number to be checked : 1111
The entered number 1111 is not a prime number.
Aadhityas-MacBook-Air:DSA-Course aadhitya$
```