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2024_28_CPP Programming Lab_CSE A

2028_SUH_CPP_COD_Cycle 7

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

Write a function that takes an integer n as argument and returns 1 if it is a prime number and 0 otherwise.

Function Specifications: int isPrime(int n)

Answer

```
// You are using GCC
#include<iostream>
#include<cmath>
using namespace std;
int isPrime(int n){
    int count =0;
    for(int i=1;i<=n;i++){
        if(n%i==0){
```

```
            count++;
        }
    }
    if (count ==2){
        return 1;
    }
    else{
        return 0;
    }
}

int main(){
    int n,res;
    cin>>n;
    res=isPrime(n);
    if(res==1){
        cout<<n<<" is a prime number";
    }
    else{
        cout<<n<<"is not a prime number";
    }
}
```

Status : Correct *Marks : 10/10*

2. Problem Statement

Write a function that takes a positive integer n as an argument and returns the nth Fibonacci number.

Answer

```
// You are using GCC
#include <iostream>
using namespace std;

int fibonacci(int n)
{
    if (n <= 1)
        return n;
    int a = 0, b = 1, fib;
    for (int i = 2; i <= n; i++)
    {
        fib = a + b;
        a = b;
        b = fib;
    }
    return b;
}

int main()
{
    int n;
    cin >> n;
    cout << fibonacci(n) << endl;
    return 0;
}
```

Status : Correct ***Marks : 10/10***

3. Problem Statement

Write a program to generate Pascal's triangle.

Function specification: void printPascalsTriangle(int rows)

Answer

```
// You are using GCC
#include <iostream>
#include <iomanip>
using namespace std;

void printPascalsTriangle(int rows)
{
    for (int i = 0; i < rows; i++)
    {

        cout << setw((rows - i) * 2);
        int value = 1;
        for (int j = 0; j <= i; j++)
        {
            cout << value << " ";
            value = value * (i - j) / (j + 1);
        }
        cout << endl;
    }
}

int main()
{
    int rows;
    cin >> rows;
    printPascalsTriangle(rows);
    return 0;
}
```

Status : Correct ***Marks : 10/10***

4. Problem Statement

Write a program that reads a given text and counts the number of letters, words, and lines. Implement this functionality using a function.

Function Specifications:

void countTextAttributes(const string &text, int &letterCount, int

&wordCount, int &lineCount)

Answer

```
// You are using GCC
#include <iostream>
#include <string>
using namespace std;

void countTextAttributes(const string &text, int &letterCount, int &wordCount,
int &lineCount)
{
    letterCount = 0;
    wordCount = 0;
    lineCount = 0;

    bool inWord = false;
    for (char ch : text)
    {
        if (isalpha(ch)) letterCount++;
        if (ch == '\n') lineCount++;
        if (isspace(ch))
        {
            if (inWord)
            {
                wordCount++;
                inWord = false;
            }
        } else
        {
            inWord = true;
        }
    }
    if (inWord) wordCount++;
    if (!text.empty() && text.back() != '\n') lineCount++;
}

int main()
{
    string text, line;
    int letterCount, wordCount, lineCount;
```

```
    while (getline(cin, line))
    {
        text += line + '\n';
    }

    countTextAttributes(text, letterCount, wordCount, lineCount);

    cout << "Letters: " << letterCount << endl;
    cout << "Words: " << wordCount << endl;
    cout << "Lines: " << lineCount << endl;

    return 0;
}
```

Status : Correct ***Marks : 10/10***