DATA STRUCTERS

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SUB CODE: CSA0312

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TOPIC: RECURSION

#Fibonacci series using recursive function

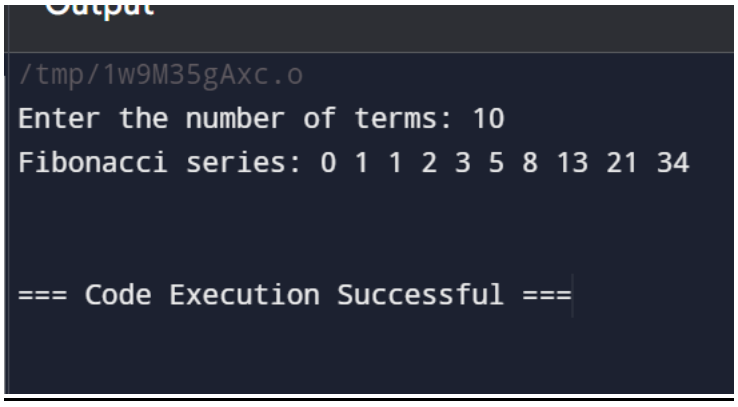
Input :-

```
#include <stdio.h>
int fibonacci(int n) {
   if (n == 0) {
      return 0;
   } else if (n == 1) {
      return 1;
   }
```

```
    else {
        return fibonacci(n - 1) + fibonacci(n - 2);
    }
}
int main() {
    int n, i;

    printf("Enter the number of terms: ");
    scanf("%d", &n);
    printf("Fibonacci series: ");
    for (i = 0; i < n; i++) {
        printf("%d ", fibonacci(i));
    }
    printf("\n");
    return 0;}
```

output:-



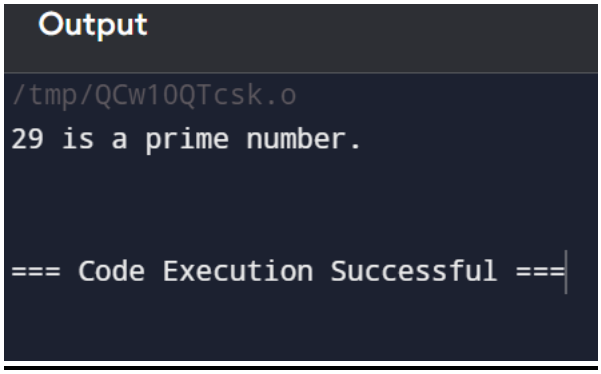
#Prime numbers using recursive function

Input:-

```
#include <stdio.h>
int isPrime(int n, int i) {
    if (n <= 1) {
        return 0;
    }
    if (i * i > n) {
        return 1;
    }
    if (n % i == 0) {
        return 0;
    }
    return isPrime(n, i + 1);
}
int main() {
    int num = 29;

    if (isPrime(num, 2)) {
        printf("%d is a prime number.\n", num);
    } else {
        printf("%d is not a prime number.\n", num);
    }
    return 0;
}
```

Output:-

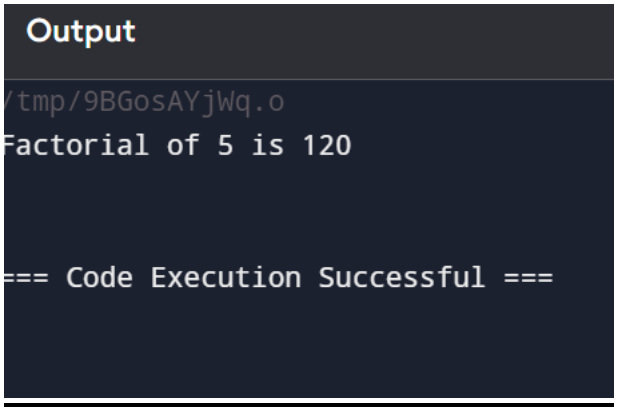


#Factorial number using recursive function

Input:-

```
#include <stdio.h>
int factorial(int n) {
    if (n == 0 || n == 1) {
        return 1;
    }
    else {
        return n * factorial(n - 1);
    }
}
int main() {
    int num = 5;
    printf("Factorial of %d is %d\n", num, factorial(num));
    return 0;
}
```

Output:-


Output
/tmp/9BGosAYjWq.o
Factorial of 5 is 120
=== Code Execution Successful ===