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MICRO PROJECT REPORT

SUBJECT: Data Structure Using C

Subject Code: 22317; Course: CO3I

Year: 2019-20; Semester: Third; Term:ODD;

ON

"Fibonacci Series Algorithm"

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ACKNOWLEDGEMENT

We have taken efforts In this project. However, it would not have been possible without the kind support and help of many individuals and organization. We would to kind to extend our sincere thanks to all of them.

First and foremost we want to thanks Prof.Kale Suraj H.O.D (Computer Technology) Dyaneshwar Polytechnic, Bhanashivre for giving us an opportunity to work on this project.

We are highly indebted to Prof . Suraj Kale Sir (Project Guide) for his guidance and constant supervision as well as for providing necessary information regarding the project & also for his support in completing the Project.

We would like to express our gratitude towards our Parents &Members of Computer Technology department for their kind co-operation and encomagement which help us In completion of this project.

Our thanks and appreciations also go to our colleague in developing the people who have willing helped us with their abilities.

INDEX

INTRODUCTION

Im currently writing a program which calculates the fibonacci number of a given integer using recursion. I created my own function 'fibonacci' and made the program to run on loops as you can see in the code. The program wants me to use switch statement to operate the menu (The menu is the one where the user gets two options of either choosing to find fibonacci or to exit the program), and I am stuck on how to use switch statement in order to use the menu.

The Fibonacci numbers are the numbers in the following integer sequence. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ……. In mathematical terms, the sequence Fn of Fibonacci numbers is defined by the recurrence relation Fn = Fn-1 + Fn-2 with seed values F0 = 0 and F1 = 1. fibonacci-sequence

Factorial of a number n is the product of all positive numbers less than equal to n. For example, for the number 3 the factorial of 3 will be $3 \times 2 \times \times 1$. The factorial of a number has intensive use in permutations, combinations and probability. The factorial is represented by an exclamation mark $(!)$. Factorials also find their use in number theory, approximations, statistics. There are various functions based on factorials such as double factorial, multifactorials, hyperfactorials and so on. Gamma function is an important concept based on factorial.

Fibonacci Series Algorithm:

- Start.
- Declare variables i, a,b , show.
- Initialize the variables, a=0, b=1, and show =0.
- Enter the number of terms of Fibonacci series to be printed.
- Print First two terms of series.
- Use

1.show=a+b.

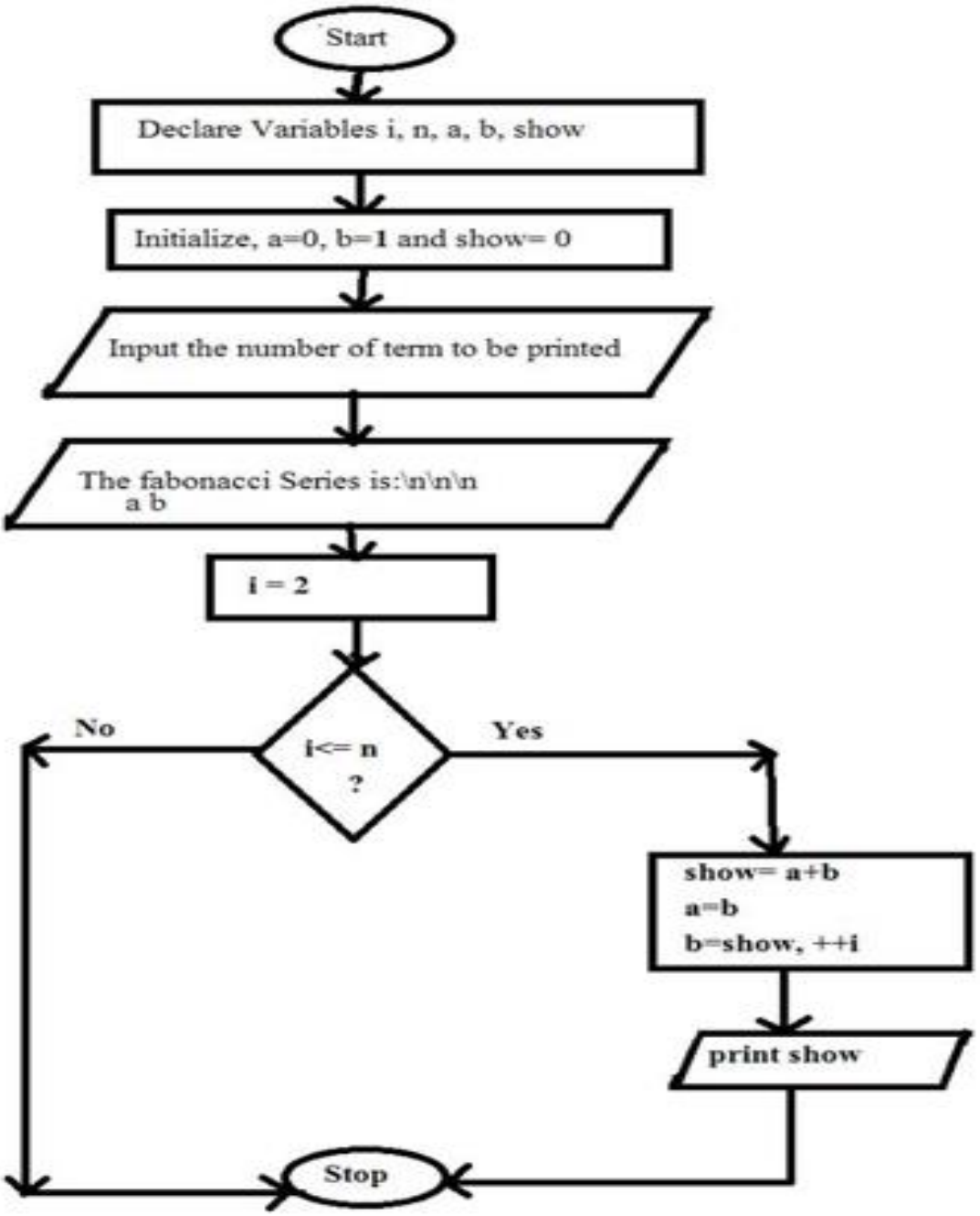
2.a=b.

3.b=show.

4.increase value of I each time by 1.

- print the value of show.
- End.

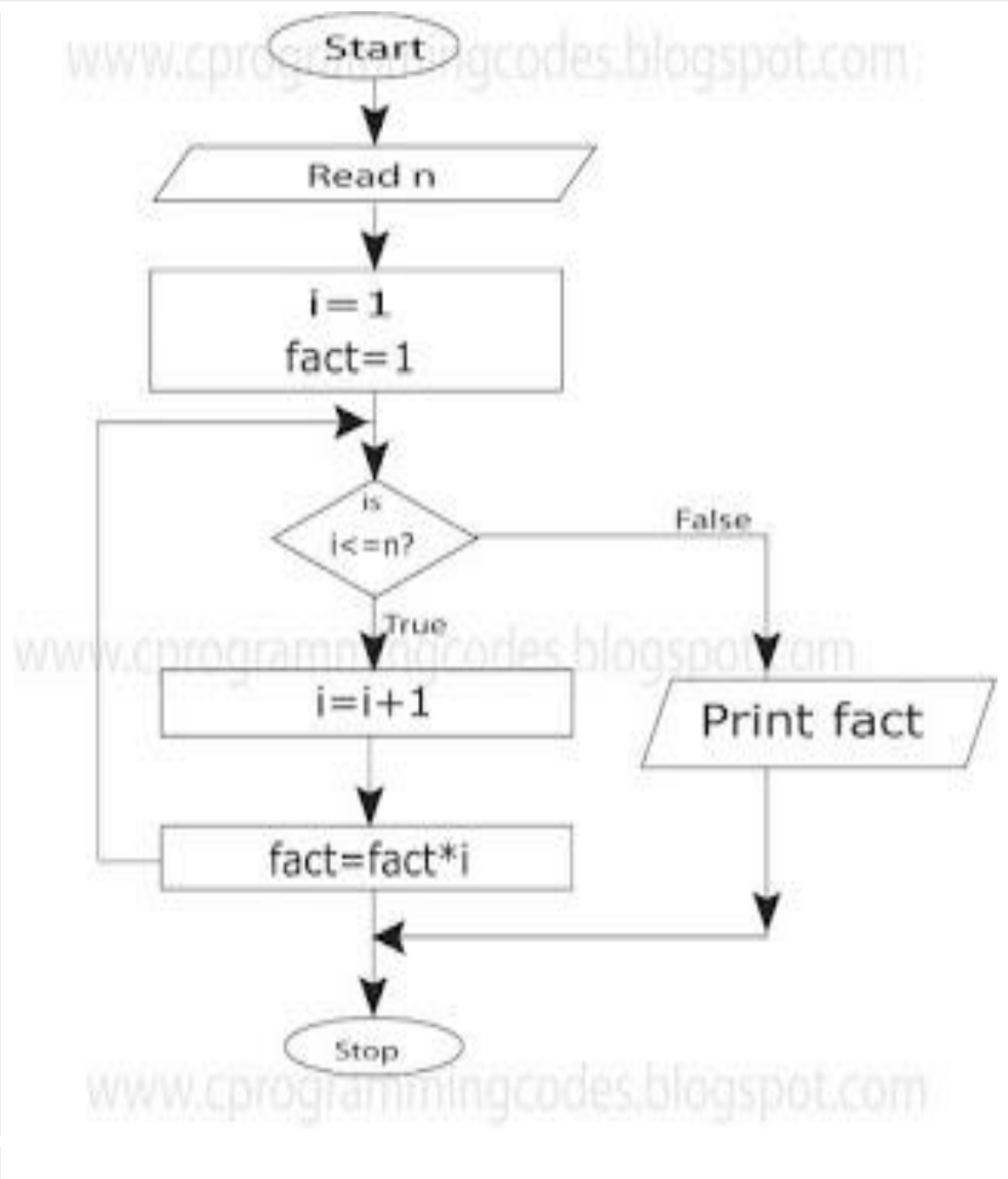
Fibonacci Series Flowchart:



Factorial of no Algorithm:

- Start.
- Read the number n.
- [Initialize]
  i=1, fact=1.
- Repeat step 4 through 6 until i=n.
- fact=fact*i.
- i=i+1.
- Print fact.
- Stop.

Factorial of no Flowchart:



REQUIREMENT ANALYSIS :-

SOFTWARE :-

Turbo c++

Microsoft Word.

HARDWARE:-

Monitor

CPU(Center Processing Unit)

Meter Board

Key-Board

Mouse

CODING:-

INPUT:-

```
#include<stdio.h>
#include<conio.h>
int fact(int n)
{
if(n==1)
return 1;
return n*fact(n-1);
}
int fibo(int n)
{
if(n == 0 || n == 1)
return n;
return fibo(n-1) + fibo(n-2);
}
void main()
{
int i,j=0,m,n,ch;
```

```
clrscr();


while(1)
{
m=0;
printf("\n1.FACTORIAL OF A NUMBER \n2. FIBONACCI
SERIES\n3.exit\n");
printf("Enter your choice :");
scanf("%d",&ch);
switch(ch)
{
case 1:
printf("\nEnter n :");
scanf("%d",&n);
m=fact(n);
printf("factorial of a given number is :%d",m );
break;
case 2:
j=0;
printf("\nEnter n :");
scanf("%d",&n);
printf("fibonanci series of a given number is:");
for ( i = 0 ; i < n ; i++ )
{
printf("%d\n", fibo(j));
```

```
j++;
}
break;
case 3:
exit(0);
default:
printf("Invalid option\n");
break;
}
}
}
```

OUTPUT SCREENSHOT