Lecture- 21

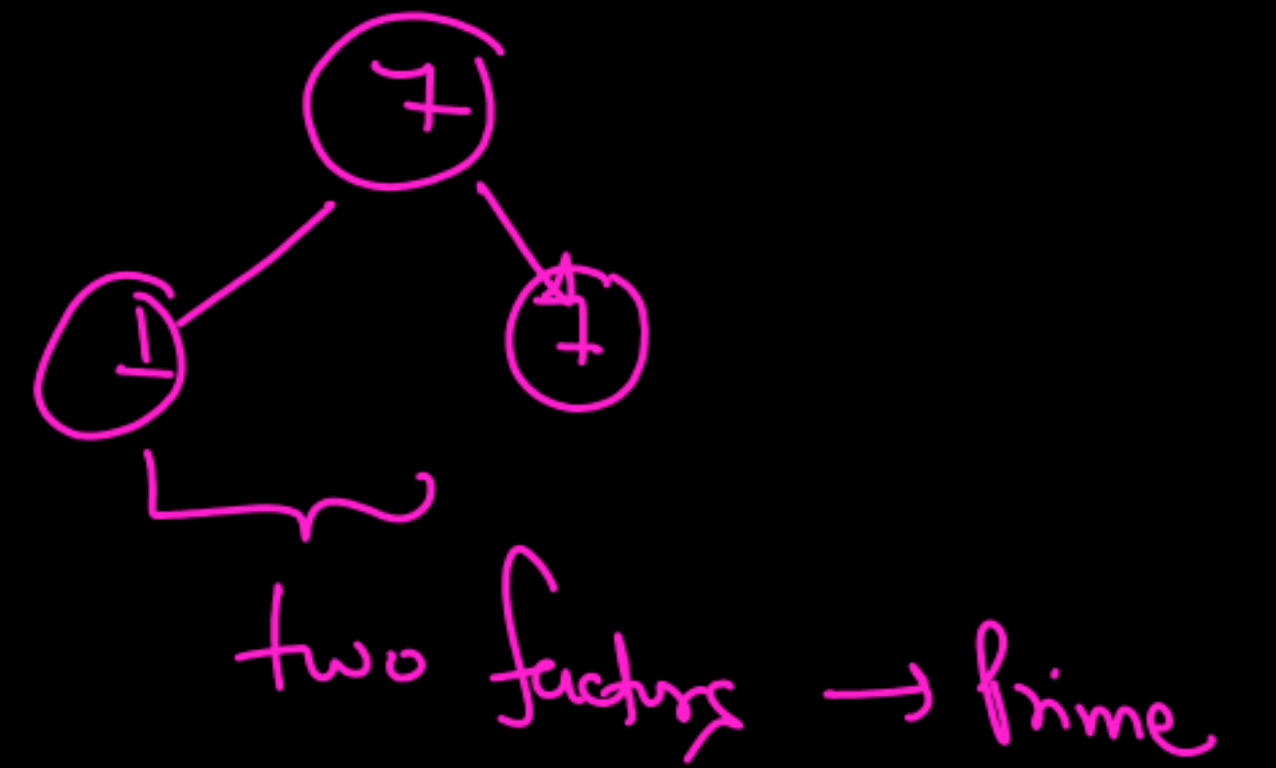## Programming in C

⇒ "DPP on Loops"

Q WAP to check whether the number is Prime or Not.

Prime Number :
→ Only two factors, 1, number itself

two factors → Prime

Algorithm →

number (n) ← input

$n \% 2$, $n \% 3$, $n \% 4$, $n \% 5$ ... $n \% k$ ← $\left[\frac{n}{2} + 1\right]$

flag = 1 (Prime Number)

loop → $i \to \frac{n}{2}$, $\underbrace{n \% i == 0}$

flag = 0

$\underbrace{1, 2, 3 \times 5}$

1, 5, 10

$\boxed{P > 5}$ — $\boxed{\frac{10}{2}}$

10

if flag == 1 → Prime Num

flag = 0 Not Prime

```c
1   #include<stdio.h>
2   #include<conio.h>
3   #include<math.h>
4   int main(){
5       int n, flag = 1; //1 for prime and 0 for not prime
6       printf("Enter a number: \n");
7       scanf("%d", &n);
8       if (n == 2){
9           printf("2 is even prime number.");
10      }
11      else{
12          for (int i = 2; i <= (n/2); i++){
13              if (n % i == 0){
14                  flag = 0;
15                  break;
16              }
17          }
18      }
19      if (flag == 1){
20          printf("The number %d is Prime.", n);
21      }
22      else{
23          printf("The number %d is not prime.", n);
24      }
25      return 0;
26  }
```

Enter a number:

13

The number 13 is Prime

PS C:\Users\sagar\OneDr

ramming in C\Code\DPP C

Q. WAP to print Floyd's triangle:

```
1  1
2  2  3
3  4  5  6
4  7  8  9  10
        ⋮
ₙᵐ    n
```

underline → nested loop

$n \leftarrow$ input (rows)

(n = 5)

$k = 1$

```
for (i=1 ; j<=n; i++) {
    for (j=1 ; j<i ; j++) {
        printf (k)
        k++
```

```
for ( i → n )
  ↳ for (j → i)
      ↳ print (k)
          k → n̂ ixj
```

```c
1   #include <stdio.h>
2   #include <conio.h>
3   #include <math.h>
4   int main()
5   {
6       int n, k = 1;
7       printf("Enter the number of rows you want to print:
8       scanf("%d", &n);
9
10      for (int i = 1; i <= n; i++)
11      {
12          for (int j = 0; j < i; j++)
13          {
14              printf("%d ", k);
15              k++;
16          }
17          printf("\n");
18      }
19      return 0;
20  }
```

```
Enter the number of rows you want to print?
7
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
PS C:\Users\sagar\OneDrive\Desktop\Daily Note
ramming in C\Code\DPP Conditional\DPP Loops>
```
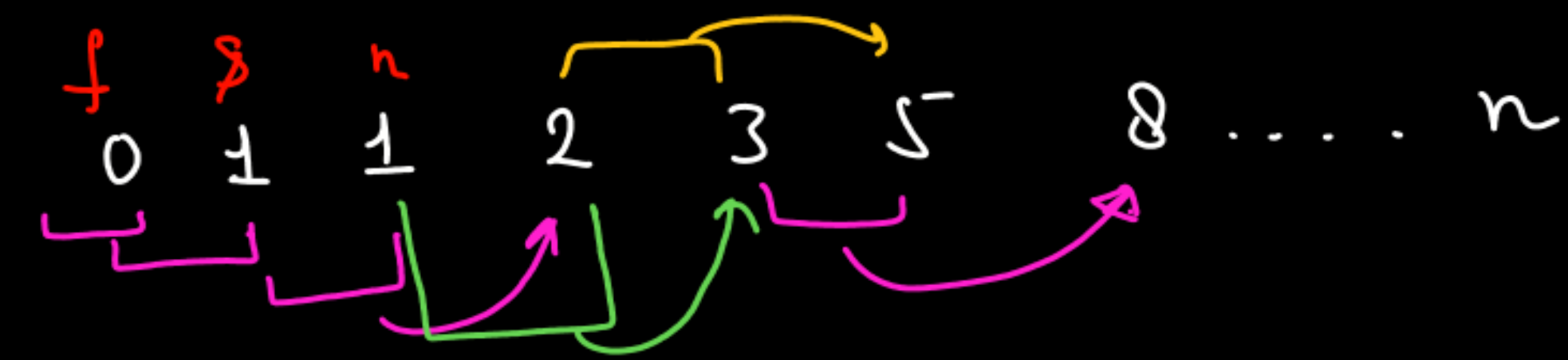
WAP to print fibonacci Series

f s n

0 1 1 2 3 5 8 .... n

① ② ③ ④ ⑤

$f = 0$ 1   1   2   3

$s = 1$ 1   2   3   5

$n = 0+1$ 2   3   5   8 ....
$= 1$

$n = f + s$

first = 0

second = 1

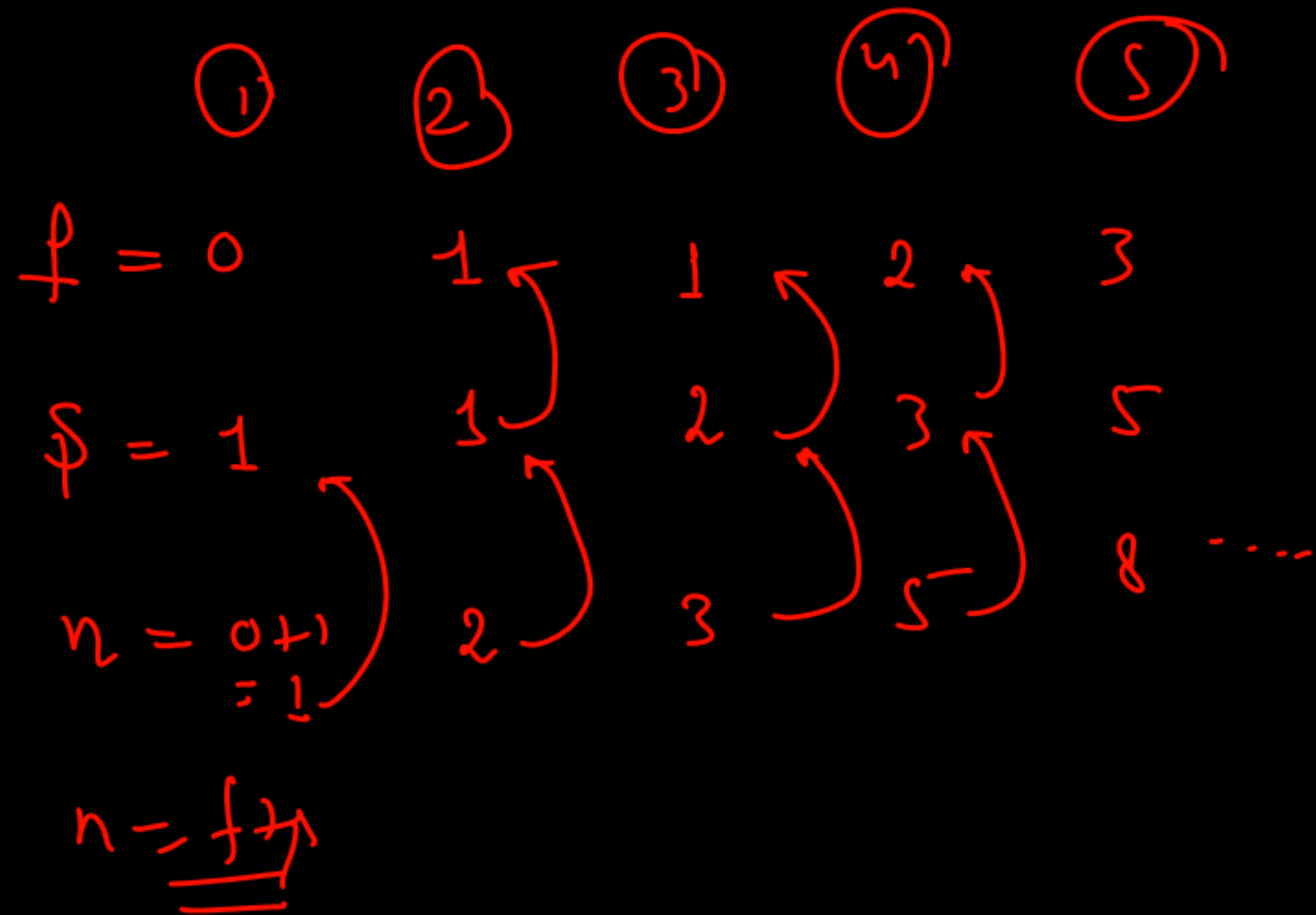next = first + second

$\rightarrow$ Print (f, s)   0, 1

   $n = f + s \rightarrow 1$

   print (n)

    first = second

     second = next

for (int j=0; j<n ; j++){
    next = first + second
    printf (next)

     first = Second;
     Second = next

```c
1    #include<stdio.h>
2    #include<conio.h>
3    #include<math.h>
4    int main(){
5        int n, first=0, second = 1, next;
6        printf("Enter the number of terms you want to print
7        scanf("%d", &n);
8        printf("%d %d ", first, second);
9        for (int i = 0; i<n; i++){
10           next = first+second;
11           printf("%d ", next);
12           first = second;
13           second = next;
14       }
15       return 0;
16   }
```

Enter the number of terms you want to print?
10
0 1 1 2 3 5 8 13 21 34 55 89
PS C:\Users\sagar\OneDrive\Desktop\Daily Notes\
ramming in C\Code\DPP Conditional\DPP Loops>