TCS Write a Program Find the nth term of the series.
1,1,2,3,4,9,8,27,16,81,32,243,….

Question. Find the nth term of the series.

1, 1, 2, 3, 4, 9, 8, 27, 16, 81, 32, 243,64, 729, 128, 2187 ….

This series is a mixture of 2 series – all the odd terms in this series form a geometric series and all the even terms form yet another geometric series. Write a program to find the Nth term in the series.

- The value N in a positive integer that should be read from STDIN.
- The Nth term that is calculated by the program should be written to STDOUT.
- Other than value of n th term,no other character / string or message should be written to STDOUT.
- For example , if N=16, the 16th term in the series is 2187, so only value 2187 should be printed to STDOUT.

You can assume that N will not exceed 30.

Test Case 1

- Input- 16
- Expected Output – 2187

Test Case 2

- Input- 13
- Expected Output – 64

(TCS Ninja – Dec 2018 Slot 2)

1, 1, 2, 3, 4, 9, 8, 27, 16, 81, 32, 243,64, 729, 128, 2187 can represented as :

- $2^{(0)}$, $3^{(0)}$,$2^{(1)}$, $3^{(1)}$,$2^{(2)}$, $3^{(2)}$,$2^{(3)}$, $3^{(3)}$,$2^{(4)}$, $3^{(4)}$,$2^{(5)}$, $3^{(5)}$,$2^{(6)}$, $3^{(6)}$ ….

There are two consecutive sub GP's at even and odd positions

- **(GP-1) At Odd Positions (Powers of 2)** – 1, 2, 4, 8, 16, 32, 64, 128
- **(GP-2) At Even Positions (Powers of 3)** – 1, 3, 9, 27, 81, 243, 729, 2187

Clearly, for calculating Nth position value

- If N is Even, Find (N/2) position in sub GP – 2
- If N is Odd, Find (N/2 + 1) position in sub GP – 1

C

```c
#include<stdio.h>
#include<math.h>

int three(int n)
{
    int x;
    //n-1 because powers start from 0 not 1
    x = pow(3,n-1);
    printf("%d",x);
}

int two(int n)
{
    int x;
    //n-1 because powers start from 0 not 1
    x = pow(2,n-1);
    printf("%d",x);
}

int main()
{
    int n;
    scanf("%d",&n);

    //Checking of the nth term will be at even position or odd position
    //Odd positions are powers of 2
    //Even positions are powers of 3
    if(n%2==0)
    {
        //nth position(if even) will be at n/2 position for sub GP-2
        three(n/2);
    }
    else
    {
        //nth position(if odd) will be at (n/2 + 1) position for sub GP-1
        two(n/2 + 1);
    }
    return 0;
}
```

C++
Java
Python

All Coding Questions for TCS

Very Important

- Coding Question 1
- Coding Question 2
- Coding Question 3
- Coding Question 4
- Coding Question 5
- Coding Question 6
- Coding Question 7
- Coding Question 9
- Coding Question 10
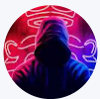
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savita n = int(input("enter the number"))

a=0

b=0

c=0

for i in range(0,n):

if(i % 2 != 0):

if(i==1):

a = 1;

else:

a = a*2;

else:

if(i == 2):

b = 2;

else:

b = 3*b; print(a)

print(b)

i have used python code for above code ,here output doesn't match please correct this code

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muskan — Found this from tv nagaraju Technical channel Youtube

#include

#include

int power(int base, int exp)

{

int p=1,i;

for(i=1;i<=exp;i++)

{

```
p=p*base;
}
return p;
}
void main(int argc, char argv[])
{
int n,x,res;
n=atoi(argv[1]);
if(n%2==0)
{
x=n/2;
res=power(3,x-1);
}
else{
x=n/2+1;
res=power(2,x-1);
}
printf("%d",res);
}
```

Bhuvanesh val=int(input())

```
x,y=1,1
for i in range(3,val+1):
if i%2 != 0:
x+=x
else:
y*=3 if val%2==0:
print(y)
else:
print(x)
```

Sheeri import java.util.Scanner; public class mainClass{

```
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
System.out.println("enter the number ");
int N = sc.nextInt(); System.out.println(N%2==0 ? (int)Math.pow(3, ((N/2)-1)) :
(int)Math.pow(2, (N) )); } }
```

Sheeri CORRECTION: import java.util.Scanner; public class mainClass {

```
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
System.out.println("enter the number ");
int N = sc.nextInt(); System.out.println(N%2==0 ? (int)Math.pow(3, ((N/2)-1)) :
(int)Math.pow(2, (N/2) )); } }
```

2

GRAHEETH #include

using namespace std;

```cpp
int main(){
int n;
cin>>n;
int ans;
if(n%2==0){
ans=pow(3,(n/2)-1);
}
else{
ans=pow(2,n/2);
}
cout<<ans; }
```

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mekala Sekhar python code:

```python
l1=[1]
l2=[1]
for i in range(15):
l1.append(l1[i]*2)
l2.append(l2[i]*3) n=int(input())
if n%2==0:
print(l2[int(n/2)-1])
else:
import math
k=math.floor(n/2)
print(l1[k])
```

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Jatin public class Main {

```java
public static void main(String args[]) {
int n = 5 ;
int ans = 0 ;
if(n %2==0){
int ans1 = n/2;
int any = ans1-1 ;
ans = (int)Math.pow(3,any) ; }
else{
int power = n/2 ;
ans = (int)Math.pow(2,power) ; }
System.out.print(ans) ;
}
}
```

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