

Assignment - 15



Q1. Write a recursive function to print first N natural numbers.

Ans #include <stdio.h>

void natural (int)

int main()

{

int a;

printf ("Enter a number:");

scanf ("%d", &a);

natural(a);

}

void natural (int b)

{

if (b >= 1)

{

natural (b-1);

printf ("%d", b);

}

}

function

output:

Enter a Number: 5

1 2 3 4 5





(2) write a recursive function to print first N natural numbers in reverse order.

Ans

```
#include <stdio.h>
void natural(int);
int main()
{
    int a;
    printf("Enter a number:");
    scanf("%d", &a);
    natural(a);
}
```

Void natural (int b)

```

{
    if (b == 1)
        printf("%d", b);
    natural(b - 1);
}
```

Output:

Enter a number: 5

5 4 3 2 1

Date _____

Q) Write a recursive function to print first N odd natural numbers.

Ans #include <stdio.h>

```
void odd(int);  
int main()  
{  
    int a;  
    printf("Enter a number:");  
    scanf("%d", &a);  
    odd(a);  
}  
  
void odd(int b)  
{  
    if (b >= 1)  
    {  
        odd(b - 1);  
        printf("%d ", b * 2 - 1);  
    }  
}
```

Output: Enter a Number: 5

1 3 5 7 9

Date _____

Q) write a recursive function to print first N odd natural numbers in reverse order.

Ans #include <stdio.h>
void odd (int);
int main ()

{

int a;

printf ("Enter a number: ");
scanf ("%d", &a);

odd (a);

void odd (int b)

{

if (b >= 1)

{

printf ("%d", b * 2 - 1);

odd (b - 1);

{
if (b == 1) "1" printing

output: Enter a Number: 5

9 7 5 3 2

Q5

Date _____
write a recursive function to print first N even natural numbers.

Ans

```
#include <stdio.h>
void Even(int);
int main()
{
    int a;
    printf("Enter a number:");
    scanf("%d", &a);
    Even(a);
}
```

```
void Even(int b)
```

```
{
```

```
    if (b >= 1)
```

```
        Even(b - 1);
```

```
    printf("%d ", b * 2);
```

```
}
```

Output: Enter a Number: 5

2 4 6 8 10.



Q) write a recursive function to print first n even natural numbers in reverse order.

Ans

```
#include<stdio.h>
void Even(int);
int main()
{
    int a;
    printf("Enter a number");
    scanf("%d", &a);
    Even(a);
}

void Even (int n)
{
    if (n >= 1)
        printf ("%d", b*x);
    Even(n-1);
}
```

Output: Enter a number: 5

25 20 18 16 14 12 10 8 6 4 2

7. Write a recursive function to print square of first N natural numbers.

```
#include <stdio.h>
void Squar(int);
int main()
{
    int a;
    printf("Enter a Number");
    scanf("%d", &a);
    Squar(a);
}

void Squar(int n)
{
    if (n >= 1)
    {
        printf("%d", n * n);
        Squar(n - 1);
    }
}
```

Output: Enter a Number 5

25 16 9 4 1

Q. Write a recursive function to calculate sum of first N natural numbers.

Ans #include <stdio.h>
int N_Sum(int);
int main()
{
 int n, a;
 printf ("Enter a Number:");
 scanf ("%d", &a);
 K = N_Sum(a);
 printf ("Sum of first Natural No. is %d", K);

 int N_Sum(int n)
{
 int sum;
 if (n == 1) / If
 {
 sum = 1;
 return sum;
 }
 else / Else
 {
 sum = n + N_Sum(n-1);
 return sum;
 }
 }
}

Output: Sum of first 5 natural numbers : 15

Output: Sum of first 5 natural numbers : 15

Sum of first 5 natural numbers : 15

Date _____

⑨ write a recursive function to calculate sum of first N odd natural numbers.

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

```
int odd (int a);
```

```
int main ():
```

```
{
```

```
    int ka;
```

```
    printf ("Enter a number?");
```

```
    scanf ("%d", &a);
```

```
    k=odd (a);
```

```
    printf ("Sum of first N odd numbers = %d", k);
```

```
int odd (int b)
```

```
{
```

```
    if (b>=1)
```

```
{
```

```
    int s;
```

$$S = (B * 2 - 1) + (B - 1);$$

```
} returns;
```

```
}
```

Output: Enter a number: 5

Sum of first N odd numbers = 25



10.)

Write a recursive function to calculate sum of first N even natural numbers.

Ans #include <stdio.h>

int Even (int)

int main()

{

int ka;

printf ("Enter a number");

scanf ("%d", &a);

y

K = Even(a);

printf ("Even natural number sum is %d", K);

{

int s;

if (b >= 1)

{

s = b * 2 + Even(b - 1);

(b - 1) } return (s);

y

output: Enter a number : 6

Even natural number sum is 42

Date: / /

(ii) write a recursive function to calculate sum of squares of first n natural no.

Ans #include <stdio.h>

```
int square(int);
```

int main()

```
{
```

int ka;

```
pointf ("Enter a number:");
```

```
scanf ("%d", &a);
```

```
int k = square(a);
```

```
pointf ("Sum of first Natural No is %d", k);
```

```
}
```

int square (int b)

```
{
```

int s;

```
if (b >= 1)
```

```
{
```

$$S = b * b + \square(b-1)$$

```
return S;
```

```
}
```

Output: Enter a number: 3

Sum of first Natural No is 14



(13) Write a recursive function to calculate factorial of a given number.

Ans #include <stdio.h>

int fact (int);

int main()

{

int a, k;

Pointf ("Enter a number : ");

scanf ("%d", &a);

k = fact (int);

}

int fact (int b)

{

if (b == 1)

{

return 1;

}

else

m = b * fact (b-1);

return m;

}