**Assignment - 12 A Job Ready Bootcamp in C++, DSA and IOT MySirG**

**Recursion in C Language**

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

Sol – 1.

#include<stdio.h>

#include<conio.h>

void n\_natural(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d natural numbers are : ",x);

n\_natural(x);

getch();

return 0;

}

void n\_natural(int n)

{

if(n>0)

{

n\_natural(n-1);

printf("%d ",n);

}

}

1. Write a recursive function to print first N natural numbers in reverse order

Sol – 2.

#include<stdio.h>

#include<conio.h>

void n\_natural\_rev(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d natural numbers in reverse order are : ",x);

n\_natural\_rev(x);

getch();

return 0;

}

void n\_natural\_rev(int n)

{

if(n>0)

{

printf("%d ",n);

n\_natural\_rev(n-1);

}

}

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

Sol – 3.

#include<stdio.h>

#include<conio.h>

void n\_odd\_natural(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d odd natural numbers are : ",x);

n\_odd\_natural(x);

getch();

return 0;

}

void n\_odd\_natural(int n)

{

if(n>0)

{

n\_odd\_natural(n-1);

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

}

}

1. Write a recursive function to print first N odd natural numbers in reverse order

Sol – 4.

#include<stdio.h>

#include<conio.h>

void n\_odd\_natural\_rev(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d odd natural numbers in reverse order are : ",x);

n\_odd\_natural\_rev(x);

getch();

return 0;

}

void n\_odd\_natural\_rev(int n)

{

if(n>0)

{

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

n\_odd\_natural\_rev(n-1);

}

}

1. Write a recursive function to print first N even natural numbers

Sol – 5.

#include<stdio.h>

#include<conio.h>

void n\_even\_natural(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d even natural numbers are : ",x);

n\_even\_natural(x);

getch();

return 0;

}

void n\_even\_natural(int n)

{

if(n>0)

{

n\_even\_natural(n-1);

printf("%d ",2\*n);

}

}

1. Write a recursive function to print first N even natural numbers in reverse order

Sol – 6.

#include<stdio.h>

#include<conio.h>

void n\_even\_natural\_rev(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("First %d even natural numbers in reverse order are : ",x);

n\_even\_natural\_rev(x);

getch();

return 0;

}

void n\_even\_natural\_rev(int n)

{

if(n>0)

{

printf("%d ",2\*n);

n\_even\_natural\_rev(n-1);

}

}

1. Write a recursive function to print squares of first N natural numbers

Sol – 7.

#include<stdio.h>

#include<conio.h>

void n\_square\_natural(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("Square of first %d natural numbers are : ",x);

n\_square\_natural(x);

getch();

return 0;

}

void n\_square\_natural(int n)

{

if(n>0)

{

n\_square\_natural(n-1);

printf("%d ",n\*n);

}

}

1. Write a recursive function to print binary of a given decimal number

Sol – 8.

#include<stdio.h>

#include<conio.h>

void bin(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("\nBinary : ");

bin(x);

getch();

return 0;

}

void bin(int n)

{

if(n==1)

printf("1");

else

{

bin(n/2);

printf("%d",n%2);

}

}

OR

#include<stdio.h>

#include<conio.h>

void bin(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("Binary : ");

bin(x);

getch();

return 0;

}

void bin(int n)

{

if(n)

{

bin(n>>1);

printf("%d",n&1);

}

}

1. Write a recursive function to print octal of a given decimal number

Sol – 9.

#include<stdio.h>

#include<conio.h>

#include<math.h>

void oct(int);

int main()

{

int x;

printf("Enter a number in octal : ");

scanf("%d",&x);

printf("Decimal : ");

oct(x);

getch();

return 0;

}

void oct(int n)

{

static int sum=0,count=0;

if(n==0)

printf("%d",sum);

else

{

sum=sum+(n%10)\*pow(8,count);

count++;

oct(n/10);

}

}

1. Write a recursive function to print reverse of a given number

Sol – 10.

#include<stdio.h>

#include<conio.h>

#include<math.h>

void rev(int);

int main()

{

int x;

printf("Enter a number : ");

scanf("%d",&x);

printf("Reverse : ");

rev(x);

getch();

return 0;

}

void rev(int n)

{

if(n/10==0)

printf("%d",n%10);

else

{

printf("%d",n%10);

rev(n/10);

}

}