Assignment - 12

Recursion in C Language

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

Code

#include<stdio.h>

int print\_n\_terms(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    print\_n\_terms(n);

    return 0;

}

int print\_n\_terms(int n)

  {

    if(n==0)

    return 0;

     print\_n\_terms(n-1);

     printf("%d",n);

  }

Output

Enter number of terms 6

123456

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

Code

#include<stdio.h>

int reverse\_print\_n\_terms(int,int);

int main()

{     int k,n;

     printf("Enter number of terms");

     scanf("%d",&n);

     k=n;

    reverse\_print\_n\_terms(n,k);

    return 0;

}

int reverse\_print\_n\_terms(int n , int k)

  {

   int s;

    if(n==0)

    return 1;

   s= 1+ (k- reverse\_print\_n\_terms(n-1,k));

    printf("%d\t",s);

    return n+1;

  }

Output

Enter number of terms 10

10 9 8 7 6 5 4 1

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

Code

#include<stdio.h>

int first\_odd\_numbers(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    first\_odd\_numbers(n);

    return 0;

}

int first\_odd\_numbers(int n)

  {

     int s;

    if(n==0)

    return 0;

    first\_odd\_numbers(n-1);

    printf("%d",2\*n-1);

    return n;

  }

Output

Enter number of terms 5

13579

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

Code

#include<stdio.h>

int first\_reverse\_odd\_numbers(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    first\_reverse\_odd\_numbers(n);

    return 0;

}

int first\_reverse\_odd\_numbers(int n)

  {

     int s;

    if(n==0)

    return 0;

    printf("%d",2\*n-1);

    first\_reverse\_odd\_numbers(n-1);

    return n;

  }

Output

Enter number of terms 5

97531

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

Code

#include<stdio.h>

int first\_even\_numbers(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    first\_even\_numbers(n);

    return 0;

}

int first\_even\_numbers(int n)

  {

     int s;

    if(n==0)

    return 0;

    first\_even\_numbers(n-1);

    printf("%d",2\*n);

    return n;

  }

Output

Enter number of terms5

246810

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

Code

#include<stdio.h>

int first\_reverse\_even\_numbers(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    first\_reverse\_even\_numbers(n);

    return 0;

}

int first\_reverse\_even\_numbers(int n)

  {

     int s;

    if(n==0)

    return 0;

     printf("%d",2\*n);

    first\_reverse\_even\_numbers(n-1);

    return n;

  }

Output

Enter number of terms 5

108642

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

Code

#include<stdio.h>

int first\_square\_numbers(int);

int main()

{     int n;

     printf("Enter number of terms");

     scanf("%d",&n);

    first\_square\_numbers(n);

    return 0;

}

int first\_square\_numbers(int n)

  {

     int s;

    if(n==0)

    return 0;

    first\_square\_numbers(n-1);

    printf("%d ",n\*n);

    return n;

  }

Output

Enter number of terms 5

1 4 9 16 25

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

Code

#include<stdio.h>

int binary(int);

int main()

{     int n;

     printf("Enter a number");

     scanf("%d",&n);

    binary(n);

    return 0;

}

int binary(int n)

  {

    if(n==0)

    return 0;

                          // binary 25 11001

    binary(n/2);  //return 1100

     printf("%d",n%2);  // print 1

   return n;

  }

Output

Enter a number 5

101

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

Code

#include<stdio.h>

int binary(int);

int main()

{     int n;

     printf("Enter a number");

     scanf("%d",&n);

    binary(n);

    return 0;

}

int binary(int n)

  {

    if(n==0)

    return 0;

    binary(n/8);

     printf("%d",n%8);

   return n;

  }

Output

Enter a number 12

14

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

Code

#include<stdio.h>

int binary(int);

int main()

{     int n;

     printf("Enter a number");

     scanf("%d",&n);

    binary(n);

    return 0;

}

int binary(int n)

  {

    if(n==0)

    return 0;

    printf("%d",n%10);

    binary(n/10);

   return n;

  }

Output

Enter a number 345

543