Assignment - 12

Recursion in C Language

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

```c
#include<stdio.h>
void sum(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    sum(n);
}
void sum(int n)
{
    if(n>1)
    {
        sum(n-1);
    }
    printf("%d\t",n);
}
```

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

```c
#include<stdio.h>
void sum(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    sum(n);
}
void sum(int n)
{
    if(n>0)
```

```c
    {
        printf("%d\t",n);
        sum(n-1);
    }
}
```

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

```c
#include<stdio.h>
void odd(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    odd(n);
}
void odd(int n)
{
    if(n>0)
    {
        {
            odd(n-1);
            printf("%d\t",2*n-1);
        }
    }
}
```

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

```c
#include<stdio.h>
void odd(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
```

```c
      odd(n);
}
void odd(int n)
{
    if(n>0)
    {
        {
            printf("%d\t",2*n-1);
            odd(n-1);
        }
    }
}
```

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

```c
#include<stdio.h>
void even(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    even(n);
}
void even(int n)
{
    if(n>0)
    {
        {
            even(n-1);
            printf("%d\t",2*n);
        }
    }
}
```

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

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

```c
void even(int n);
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    even(n);
}
void even(int n)
{
    if(n>0)
    {
        {
            printf("%d\t",2*n);
            even(n-1);
        }
    }
}
```

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

```c
#include<stdio.h>
void sqr(int);
int main()
{
    int n;
    printf("Enter number: ");
    scanf("%d",&n);
    sqr(n);
}
void sqr(int n1)
{
    if (n1>1)
    {
        sqr(n1-1);
        printf("%d\t",n1*n1);
    }
}
```

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

```c
#include<stdio.h>
int bi(int);
int main()
{
    int n;
    printf("Enter number: ");
    scanf("%d", &n);
    printf("decimal to binary is : %d",bi(n));
    return 0;
}
int bi(int n)
{
    if (n == 0)
        return 0;
    else
        return (n % 2 + 10 *
            bi(n / 2));
}
```

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

```c
#include<stdio.h>
int bi(int);
int main()
{
    int n;
    printf("Enter number: ");
    scanf("%d", &n);
    printf("decimal to octal is : %d",bi(n));
    return 0;
}
int bi(int n)
{
    if (n == 0)
```

```c
        return 0;
    else
        return (n % 8 + 10 *
            bi(n / 8));
}
```

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

```c
#include<stdio.h>
void reverse();
int sum = 0, rem;
int main()
{
    int n;
    printf("\nEnter number: ");
    scanf("%d",&n);
    reverse(n);
}
void reverse(int n)
{
    if(n)
    {
        rem = n % 10;
        sum = sum * 10 + rem;
        reverse(n/10);
    }
    else
    {
        printf("Reverse of a number is: %d",sum);
    }
}
```