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

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

```c
#include <stdio.h>

void nat(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    nat(x);
    return 0;
}

void nat(int n)
{
    if (n == 1)
        printf("%d ", n);
    else
    {
        nat(n - 1);
        printf("%d ", n);
    }
}
```

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

```c
#include <stdio.h>

void nat(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    nat(x);
    return 0;
}

void nat(int n)
{
    if (n == 1)
        printf("%d ", n);
    else
    {
        printf("%d", n);
        nat(n - 1);
    }
}
```

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

```c
#include <stdio.h>

void odd(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    odd(x);
    return 0;
}

void odd(int n)
{
    if (n == 1)
        printf("%d ", n);
    else
    {
        odd(n - 1);
        printf("%d ", 2 * n - 1);
    }
}
```

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

```c
#include <stdio.h>

void revOdd(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    revOdd(x);
    return 0;
}

void revOdd(int n)
{
    if (n == 1)
        printf("%d ", n);
    else
    {
        printf("%d ", 2 * n - 1);
        revOdd(n - 1);
    }
}
```

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

```c
#include <stdio.h>

void even(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    even(x);
    return 0;
}

void even(int n)
{
    if (n == 1)
        printf("%d ", 2 * n);
    else
    {
        even(n - 1);
        printf("%d ", 2 * n);
    }
}
```

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

```c
#include <stdio.h>

void revEven(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    revEven(x);
    return 0;
}

void revEven(int n)
{
    if (n == 1)
        printf("%d ", 2 * n);
    else
    {
        printf("%d ", 2 * n);
        revEven(n - 1);
    }
}
```

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

```c
#include <stdio.h>

void square(int);
int main()
{
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    square(x);
    return 0;
}

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

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

```c
#include <stdio.h>
void dec2bin(int);

int main()
{
    int x;
    printf("Enter a number to get its binary: ");
    scanf("%d", &x);
    dec2bin(x);
    return 0;
}
void dec2bin(int n)
{
    if (n == 1)
        printf("%d", n);
    else
    {
        dec2bin(n / 2);
        printf("%d", n % 2);
    }
}
```

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

```c
#include <stdio.h>
void dec2oct(int);

int main()
{
    int x;
    printf("Enter a number to get its octal notation: ");
    scanf("%d", &x);
    dec2oct(x);
    return 0;
}
void dec2oct(int n)
{
    if (n == 0)
        printf("%d", n);
    else
    {
        dec2oct(n / 8);
        printf("%d", n % 8);
    }
}
```

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

```c
#include <stdio.h>
int rev(int);

int main()
{
    int x;
    printf("Enter a number to get its reverse: ");
    scanf("%d", &x);
    printf("%d", rev(x));
    return 0;
}

int r = 0, res = 0;

int rev(int n)
{
    if (n > 0)
    {
        r = n % 10;
        res = res * 10 + r;
        rev(n / 10);
    }
    else
        return res;
    return res;
}
```