**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

#include<stdio.h>

int natural(int n);

int main()

{

    int n;

    printf("Enter the numbers:");

    scanf("%d",&n);

    natural(n);

    return 0;

}

int natural(int n)

{

    if(n>1)

    natural(n-1);

    printf("%d ",n);

}

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

#include<stdio.h>

int natural(int n);

int main()

{

    int n;

    printf("Enter the numbers:");

    scanf("%d",&n);

    natural(n);

    return 0;

}

int natural(int n)

{

    int i;

    for(i=n; i>=1; i--)

    {

        printf("%d ",i);

    }

}

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

#include<stdio.h>

int odd(int,int);

int main()

{

    int i=1,n;

    printf("Enter the number:");

    scanf("%d",&n);

    printf("All odd numbers:\n");

    odd(i,n);

}

int odd(int i,int n)

{

    if(i>n)

        return 1;

        printf("%d ",i);

    return odd(i+2,n);

}

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

#include<stdio.h>

int odd(int n)

{

    int i;

    for(i=n; i>=1; i--)

    {

        if(i%2!=0)

        {

            printf("%d ",i);

        }

    }

}

int main()

{

    odd(10);

}

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

#include<stdio.h>

int even(int n)

{

    int i;

    for(i=2; i<=n; i++)

    {

        if(i%2==0)

        {

            printf("%d ",i);

        }

    }

}

int main()

{

    even(10);

}

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

#include<stdio.h>

int even(int n)

{

    int i;

    for(i=n; i>=2; i--)

    {

        if(i%2==0)

        {

            printf("%d ",i);

        }

    }

}

int main()

{

    even(10);

}

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

#include<stdio.h>

int sqr();

int main()

{

    int c;

    c = sqr();

    printf("%d",c);

}

int sqr()

{

    int a,b;

    printf("Enter the numbers:");

    scanf("%d",&a);

    b = a\*a;

    return b;

}

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

#include <stdio.h>

int bin(int n)

{

    if(n==0)

    return 0;

    else

    return (n%10+2\*bin(n/10));

}

int main()

{

    int n;

    printf("Enter the binary numbers:");

    scanf("%d",&n);

    printf("Decimal Value: %d",bin(n));

}

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

#include <stdio.h>

int bin(int n)

{

    if(n==0)

    return 0;

    else

    return (n%10+8\*bin(n/10));

}

int main()

{

    int n;

    printf("Enter the binary numbers:");

    scanf("%d",&n);

    printf("Decimal Value: %d",bin(n));

}

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

#include <stdio.h>

int rev(int num);

int main()

{

    int num;

    printf("Enter the numbers:");

    scanf("%d", &num);

    printf("Reverse of the numbers:\n");

    rev(num);

}

int rev(int num)

{

    if (num < 10)

    {

        printf("%d ", num);

    }

    else

    {

        printf("%d", num % 10);

        rev(num / 10);

    }

}