**Assignment 03 Type 4**

#include <stdio.h>

void OneToTen(int);

void tableOfNum(int);

int sumOfNumdinrange(int, int);

int isPrime(int);

int armstrong(int);

int perfect(int);

int factorial(int);

int strong(int);

int palindrome(int);

int sumOfFirstAndLastDigit(int);

int power(int, int);

int getCount(int);

void main()

{

    int ch = 1;

    int num = 1;

    while (ch)

    {

        printf("\n Eneter your choice : \n");

        printf("1) one to ten: \n");

        printf("2) Table of Num: \n");

        printf("3) Sum of nums in range : \n");

        printf("4) is prime: \n");

        printf("5) Armstrong: \n");

        printf("6) Perfect No: \n");

        printf("7) Factorial: \n");

        printf("8) Strong Num: \n");

        printf("9) Palindrome: \n");

        printf("10) Sum Of Frirst and Last Digit: \n");

        printf("0) Exit : \n");

        scanf("%d", &ch);

        if (ch > 10 || ch <= 0)

        {

            printf("Inavalid Choice !");

        }

        else if (ch == 1)

        {

            OneToTen(num);

        }

        else if (ch == 2)

        {

            printf("Enter a number. \n");

            scanf("%d", &num);

            tableOfNum(num);

        }

        else if (ch == 3)

        {

            int start, end;

            printf("Enter starting range :");

            scanf("%d", &start);

            // printf("\n");

            printf("Enter Ending range : ");

            scanf("%d", &end);

            printf("\n %d is sum", sumOfNumdinrange(start, end));

        }

        else if (ch == 4)

        {

            printf("Enter a number to cheack Prime or Not :");

            scanf("%d", &num);

            isPrime(num) ? printf("num %d is  Prime. \n", num) : printf("num %d is not Prime. \n", num);

        }

        else if (ch == 5)

        {

            printf("Enter A number to cheack armstrong. : ");

            scanf("%d", &num);

            armstrong(num) ? printf("Number %d is Armstrong Number.", num) : printf("Number %d is NOT Armstrong Number.", num);

        }

        else if (ch == 6)

        {

            printf("Enter A number :");

            scanf("%d", &num);

            perfect(num) ? printf("Number %d is perfect number", num) : printf("%d is not perfect number", num);

        }

        else if (ch == 7)

        {

            printf("Enter A number :");

            scanf("%d", &num);

            printf("%d is factorial of entered number", factorial(num));

        }

        else if (ch == 8)

        {

            printf("Enter a number : ");

            scanf("%d", &num);

            strong(num) ? printf("%d is a strong number", num) : printf("%d is Not  strong number", num);

        }

        else if (ch == 9)

        {

            printf("Enter a number : ");

            scanf("%d", &num);

            palindrome(num) ? printf("%d is a palindrome Number.", num) : printf("%d Is not a palindrome number", num);

        }

        else if (ch == 10)

        {

            printf("Enter A number : ");

            scanf("%d", &num);

            printf("%d is sum of first and last digit of given numbr %d.", sumOfFirstAndLastDigit(num), num);

        }

    }

}

void OneToTen(num)

{

    while (num <= 10)

    {

        printf("%d \n", num);

        num++;

    }

    printf("%d is exit value of num.", num);

}

void tableOfNum(int num)

{

    int i = 1;

    while (i <= 10)

    {

        printf("%d \* %d = %d \n", num, i, num \* i);

        i++;

    }

    printf("Exit value of i = %d", i);

}

int sumOfNumdinrange(int start, int end)

{

    int sum = 0;

    int temp = start;

    while (temp <= end)

    {

        sum += temp;

        temp++;

    }

    return sum;

}

int isPrime(int num)

{

    int i = 2, cnt = 0;

    while (i <= num / 2)

    {

        if (num % i == 0)

        {

            return 0;

        }

        i++;

    }

    return 1;

}

int armstrong(int num)

{

    int rem = 0;

    int armN = 0;

    int temp = num;

    int cnt = getCount(temp);

    // printf("\n couynt = %d", cnt);

    while (temp)

    {

        rem = temp % 10;

        armN += power(rem, cnt);

        temp /= 10;

    }

    if (armN == num)

    {

        return 1;

    }

    else

    {

        return 0;

    }

}

int power(int b, int e)

{

    // printf("\n Inside Power");

    while (e)

    {

        // printf("\n %d= b inside powr while", b);

        b \*= b;

        e--;

    }

    return b;

}

int getCount(int num)

{

    // printf("\n Inmside Getcount");

    int count = 0;

    while (num)

    {

        count++;

        num /= 10;

    }

    return count;

}

int perfect(int num)

{

    int i = 1, cnt = 0, sumOfDivisor = 0;

    while (i < num)

    {

        if (num % i == 0)

        {

            sumOfDivisor += i;

            cnt++;

        }

        i++;

    }

    return (sumOfDivisor == num);

}

int factorial(int num)

{

    int Fact = 1;

    if (num < 0)

    {

        printf("Invalid number!");

    }

    else if (num > 0)

    {

        // while (num)

        // {

        //     Fact \*= num;

        //     num--;

        // }

        for (int i = 2; i <= num; i++)

            Fact \*= i;

    }

    return Fact;

}

int strong(int num)

{

    int temp = num;

    int FcatSum = 0;

    while (temp != 0)

    {

        int rem = temp % 10;

        int fact = 1;

        if (rem > 0)

        {

            while (rem)

            {

                fact \*= rem;

                rem--;

            }

            FcatSum += fact;

            temp /= 10;

        }

        else

        {

            FcatSum += fact;

            temp /= 10;

        }

    }

    // printf("%d is factsum.", FcatSum);

    if (FcatSum == num)

    {

        return 1;

    }

    else

    {

        return 0;

        // printf("%d is not a strong number.", num);

    }

}

int palindrome(int num)

{

    int temp = num;

    int rev = 0;

    while (temp > 0)

    {

        int rem = temp % 10;

        rev = (rev \* 10) + rem;

        temp /= 10;

    }

    return (rev == num);

}

int sumOfFirstAndLastDigit(int num)

{

    int lastDigit, firstDigit;

    lastDigit = num % 10;

    firstDigit = num / 10;

    while (firstDigit >= 10)

    {

        firstDigit /= 10;

    }

    return (firstDigit + lastDigit);

}

Output :

PS C:\Code> & 'c:\Users\bhagv\.vscode\.....\TDM-GCC-64\bin\gdb.exe' '--interpreter=mi'

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

1

1

2

3

4

5

6

7

8

9

10

11 is exit value of num.

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

2

Enter a number.

3

3 \* 1 = 3

3 \* 2 = 6

3 \* 3 = 9

3 \* 4 = 12

3 \* 5 = 15

3 \* 6 = 18

3 \* 7 = 21

3 \* 8 = 24

3 \* 9 = 27

3 \* 10 = 30

Exit value of i = 11

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

3

Enter starting range :4

Enter Ending range : 44

984 is sum

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

5

Enter A number to cheack armstrong. : 6

Number 6 is NOT Armstrong Number.

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

5

Enter A number to cheack armstrong. : 555

Number 555 is NOT Armstrong Number.

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

6

Enter A number :6

Number 6 is perfect number

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

7

Enter A number :6

720 is factorial of entered number

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

8

Enter a number : 6

6 is Not strong number

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

9

Enter a number : 212

2

212 is a palindrome Number.

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

10

Enter A number : 122

3 is sum of first and last digit of given numbr 122.

Eneter your choice :

1) one to ten:

2) Table of Num:

3) Sum of nums in range :

4) is prime:

5) Armstrong:

6) Perfect No:

7) Factorial:

8) Strong Num:

9) Palindrome:

10) Sum Of Frirst and Last Digit:

0) Exit :

0

Inavalid Choice !

PS C:\Code>