**Assignment: - 03/ Loops, while and for loops**

**Write a C program to calculate y = xn, where x and n are user inputs, using loop.**

#include<stdio.h>

int main()

{

int i=1, x, n, ans=1;

printf("Enter x and power n \n");

scanf("%d \n %d", &x, &n);

while (i<=n)

{

ans = ans\*x;

i = i+1;

}

printf("%d to the power %d is %d", x, n, ans);

return 0;

}

Enter x and power n

2

8

2 to the power 8 is 256

--------------------------------

Process exited after 8.21 seconds with return value 0

Press any key to continue . . .

**Write a C program to generate Fibonacci Series up-to n terms using loop.**

#include <stdio.h>

int main() {

int i, n, t1 = 0, t2 = 1, nextTerm;

printf("Enter the number of terms: ");

scanf("%d", &n);

printf("Fibonacci Series: ");

for (i = 1; i <= n; ++i) {

printf("%d, ", t1);

nextTerm = t1 + t2;

t1 = t2;

t2 = nextTerm;

}

return 0;

}

Enter the number of terms: 5

Fibonacci Series: 0, 1, 1, 2, 3,

--------------------------------

Process exited after 2.32 seconds with return value 0

Press any key to continue . . .

**Write a C program to check whether a number is Prime**

#include<stdio.h>

int main()

{

int n, c;

printf("Enter a number to check if it's prime\n");

scanf("%d", &n);

for (c = 2; c <= n/2; c++)

{

if (n%c == 0)

{

printf("%d is a composite number.\n", n);

break;

}

}

if (c == n/2 + 1)

printf("%d is prime.\n", n);

return 0;

}

Enter a number to check if it's prime

4

4 is a composite number.

--------------------------------

Process exited after 2.977 seconds with return value 0

Press any key to continue . . .

Enter a number to check if it's prime

5

5 is prime.

--------------------------------

Process exited after 1.49 seconds with return value 0

Press any key to continue . . .

**Write a C program to generate all Prime Numbers within a range, where range is user input.**

#include<stdio.h>

int main()

{

int i, prime ,upper, lower, n;

printf(" ENTER THE LOWER LIMIT : ");

scanf("%d", &lower);

printf("\n ENTER THE UPPER LIMIT : ");

scanf("%d", &upper);

printf("\n PRIME NUMBERS LIST IS : ");

for(n=lower+1; n<upper; n++)

{

prime = 1;

for(i=2; i<n/2; i++)

if(n%i == 0)

{

prime = 0;

break;

}

if(prime)

printf("\t%d", n);

}

}

ENTER THE LOWER LIMIT : 1

ENTER THE UPPER LIMIT : 11

PRIME NUMBERS LIST IS : 2 3 4 5 7

--------------------------------

Process exited after 5.329 seconds with return value 0

Press any key to continue . . .

**Write a C program to reverse a number and check whether it is a Palindrome.**

#include <stdio.h>

main()

{

int num, temp, remainder, reverse = 0;

printf("Enter an integer \n");

scanf("%d", &num);

/\* original number is stored at temp \*/

temp = num;

while (num > 0)

{

remainder = num % 10;

reverse = reverse \* 10 + remainder;

num /= 10;

}

printf("Given number is = %d\n", temp);

printf("Its reverse is = %d\n", reverse);

if (temp == reverse)

printf("Number is a palindrome \n");

else

printf("Number is not a palindrome \n");

}

Enter an integer

1223

Given number is = 1223

Its reverse is = 3221

Number is not a palindrome

--------------------------------

Process exited after 4.42 seconds with return value 0

Press any key to continue . . .

Enter an integer

1221

Given number is = 1221

Its reverse is = 1221

Number is a palindrome

--------------------------------

Process exited after 4.009 seconds with return value 0

Press any key to continue . . .

**Write three separate C programs to generate the following patterns**

**pattern -1**

#include<stdio.h>

main()

{

int i,j,n=5;

for(i=1;i<=n;i++)

{

for(j=1;j<=i;j++)

{

printf("\* ");

}

printf("\n");

}

}

**Output:**

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

**pattern-2**

#include<stdio.h>

main()

{

int i,j,n=5,k;

char a='A';

for(i=1;i<=n;i++)

{

for(j=n;j>i;j--)

printf(" ");

for(k=1;k<=i;k++)

{

if(a=='Z')

a='A';

printf("%c ",a);

a++;

}

printf("\n");

}

}

**Output:** A

B C

D E F

G H I J

K L M N O

**PATTERN-3**

#include<stdio.h>

main()

{

int i,j,n=5,k;

for(i=1;i<=n;i++)

{

for(j=n;j>i;j--)

printf(" ");

for(k=1;k<=i;k++)

printf("%d",k);

printf("\n");

}

}

**Output-** 1

1 2

1 2 3

1 2 3 4

1 2 3 4 5