```c
/*
Write a program to print the first 10 natural numbers using a while loop.
*/
#include<stdio.h>
void main(){
    int i=1;
    while(i<=10)
    {
        printf("%d\n",i++);
    }
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { gcc 64.c -o 64 } ; if ($?) { .\64 }
1
2
3
4
5
6
7
8
9
10
PS D:\projects\quest\C>
```

```c
/*
Write a program to calculate the sum of the digits of a given integer
using a while loop.
*/
#include<stdio.h>
void main(){
    int n,sum=0;
    printf("Enter the number\n");
    scanf("%d",&n);
    while(n!=0)
    {
        sum+=(n%10);
        n =n/10;

    }
    printf("The sum is %d",sum);

}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if
Enter the number
567
The sum is 18
PS D:\projects\quest\C>
```

```c
/*Write a program to compute the factorial of a number using a while
loop.*/
#include<stdio.h>
void main(){
    int n,f=1;
    printf("Enter the number\n");
    scanf("%d",&n);
    while(n!=0)
    {
        f*=n;
        n--;

    }
    printf("Factorial is %d",f);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($
Enter the number
6
Factorial is 720
PS D:\projects\quest\C>
```

```c
/*Write a program to reverse a given number using a while loop.
*/
```

```c
#include<stdio.h>
void main(){
    int r,n,rev=0;
    printf("Enter the number\n");
    scanf("%d",&n);
    while(n!=0)
    {
        r=n%10;
        rev = rev*10 + r;
        n= n/10;
    }
    printf("The reverse is %d",rev);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; i
Enter the number
123456
The reverse is 654321
PS D:\projects\quest\C>
```

```c
/*Write a program to count the number of digits in an integer using a
while loop.*/
#include<stdio.h>
void main(){
    int count=0,n;
    printf("Enter the number\n");
    scanf("%d",&n);
    while(n!=0)
    {
        count++;
        n=n/10;
    }
    printf("%d",count);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { gcc 68.c -o 68 }
Enter the number
159
3
PS D:\projects\quest\C>
```

```c
/*Write a program to print the multiplication table of a given number
using a while loop.*/
#include<stdio.h>
void main()
{
    int n,m,i=1;
    printf("Enter the number and upperlimit\n");
    scanf("%d %d",&n,&m);
    while(i<=m)
    {
        printf("%d x %d = %d\n",i,n,i*n);
        i++;
    }
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest
Enter the number and upperlimit
7 8
1 x 7 = 7
2 x 7 = 14
3 x 7 = 21
4 x 7 = 28
5 x 7 = 35
6 x 7 = 42
7 x 7 = 49
8 x 7 = 56
PS D:\projects\quest\C>
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) {
Enter the number
1234321
It is a pallidrome
PS D:\projects\quest\C>
```

```c
/*Write a program to print all odd numbers between 1 and 50 using a while
loop.*/
#include<stdio.h>
void main()
{   int i=1;
while (i<=50)
{
    if((i%2)==0)
    i++;
    else
    {
        printf("%d \t",i);
        i++;
    }
}


}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { gcc 71.c -o 71 } ; if ($?) { .\71 }
1      3      5      7      9      11     13     15     17     19     21     23     25     27     29     31     33     35     37     39     41  4
3      45     47     49
PS D:\projects\quest\C>
```

```c
/*Write a program to calculate the sum of the series:
S=1+2+3+...+n
using a while loop.*/
#include<stdio.h>
void main(){
    int n,s=0,i=1;
    printf("Enter the number\n");
```

```c
    scanf("%d",&n);
    while (i<=n)
    {
        s=s+i;
        i++;
    }
    printf("Sum is %d",s);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C
Enter the number
10
Sum is 55
PS D:\projects\quest\C> []
```

```c
/*Write a program to compute the GCD of two numbers using a while loop.*/
#include<stdio.h>
void main(){
    int n,m,gcd=0,g=1;
    printf("Enter the two numbers\n");
    scanf("%d %d",&n,&m);
    while(g<=n && g<=m)
    {
        if(n%g==0 && m%g==0)
        gcd=g;
        g++;
    }

printf("The GCD is %d\n",gcd);;
}
```

```c
/*Write a program to print all even numbers between 1 and 100 using a for
loop.*/
#include<stdio.h>
void main()
{
for(int i=1;i<=100;i++)
{
    if(i%2!=0)
    printf("%d \t",i);

}
}
```

1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	4
3	45	47	49	51	53	55	57	59	61	63	65	67	69	71	73	75	77	79	81	83	8
5	87	89	91	93	95	97	99														

```c
/*Write a program to calculate the sum of the first nnn natural numbers
using a for loop.*/
#include<stdio.h>
void main()
{
    int n,sum=0;
    printf("Enter the number\n");
    scanf("%d",&n);
    for(int i=0;i<=n;i++)
    {
        sum +=i;
    }
```

```
    printf("Sum is %d",sum);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ;
Enter the number
10
Sum is 55
PS D:\projects\quest\C>
```

```c
/*Write a program to calculate the factorial of a given number using a for
loop.*/
#include<stdio.h>
void main()
{
    int n,f=1;
    printf("Enter the number\n");
    scanf("%d",&n);
    for(int i=1;i<=n;i++)
    {
        f*=i;
    }
    printf("Factorial is %d \n",f);
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if (
Enter the number
8
Factorial is 40320
PS D:\projects\quest\C>
```

```c
/*Write a program to generate the first nnn terms of the Fibonacci series
using a for loop*/
#include<stdio.h>
void main(){
    int n,a=0,b=1;
    printf("Enter the no: terms\n");
    scanf("%d",&n);
    if(n==1)
    printf("%d \t",a);
    else if(n==2)
    printf("%d %d \t",a,b);
    else
    {
    for(int i=1;i<= n;i++)
    {
        if(i==1)
        printf("%d \t",a);
        else if(i==2)
        printf("%d\t",b);
        else
        {
            printf("%d \t",a+b);
            b= a+b;
            a = b-a;
        }
    }
    }
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { gcc 77.c -o 77 } ; if ($?) { .\77 }
Enter the no: terms
10
0       1       1       2       3       5       8       13      21      34
PS D:\projects\quest\C>
```

```c
/*Write a program to check if a given number is prime using a for loop.*/
#include<stdio.h>
```

```c
void main()
{
    int n,f=1;
    printf("Enter the number\n");
    scanf("%d",&n);
    for (int i=2;i<=n/2;i++)
    {
        if(n%i==0)
        {   f=0;
            break;
        }
    }
    if(f==0)
    printf("The number %d is not a prime\n",n);
    else
    printf("The number %d is a prime\n",n);

}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\
Enter the number
79
The number 79 is a prime
PS D:\projects\quest\C> []
```

```c
/*Print the following pattern using a for loop:
*
**
***
****
*/
#include<stdio.h>
void main()
{
    for(int i=1;i<=4;i++)
    {
```

```
        for(int j=1;j<=i;j++)
        printf("*");
        printf("\n");
    }


}
```

```
PS D:\projects\quest\C> cd "d:\pro
*
**
***
****
PS D:\projects\quest\C>
```

```
/*Write a program to calculate the sum of squares of the first nnn natural
numbers using a for loop.*/
#include<stdio.h>
void main(){
    int n,s=0,sq;
    printf("Enter the number\n");
    scanf("%d",&n);
    for(int i=1;i<=n;i++)
    {
        sq=i*i;
        s+=sq;
    }
    printf("Sum of squares is %d\n",s);
}
```

```c
/*Write a program to compute (x raised to the power y) using a for loop.*/
#include<stdio.h>
void main(){
    int n,p,x=1;
    printf("Enter the number and power\n");
    scanf("%d %d",&n,&p);
    if(p==0)
    printf("The result is 1\n");
    else
    {
    for(int i=1;i<=p;i++)
    {
        x*=n;

    }
    printf("The result of %d raised to %d is %d",n,p,x);
    }
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if
Enter the number and power
7 5
The result of 7 raised to 5 is 16807
```

```c
/*Write a program to print numbers from 100 to 1 in reverse order using a
for loop.*/
#include<Stdio.h>
void main()
{
```

```c
    for (int i=100;i>0;i--)
    {
        printf("%d \t",i);
    }
}
```

```c
/*Write a program to count the divisors of a given number using a for
loop.*/
#include<stdio.h>
void main(){
    int n,count=0;
    printf("Enter the number\n");
    scanf("%d",&n);
    for(int i=1;i<=n/2;i++)
    {
        if(n%i==0)
        count++;
    }
    printf("Number of divisers of %d is %d",n,count);
}
```

```
 PS D:\projects\quest\C> cd "d:\projects\q
 Enter the number
 60
 Number of divisers of 60 is 11
 DS D:\nrojects\quest\C>
```

```c
/*Write a menu-driven calculator using a do-while loop. Continue asking
for user input until they choose to exit.*/
#include<stdio.h>
void main()
{
    int a;
    do
    {
        printf("\tMENU\n");
        printf("\t1.ADD\n");
        printf("\t2.SUBTRACT\n");
        printf("\t3.EXIT\n");
```

```c
        printf("Enter the option\n");
        scanf("%d",&a);
    } while (a!=3);



}
```

```
PS D:\projects\quest\C> cd "d:\project
        MENU
        1.ADD
        2.SUBTRACT
        3.EXIT
Enter the option
1
        MENU
        1.ADD
        2.SUBTRACT
        3.EXIT
Enter the option
2
        MENU
        1.ADD
        2.SUBTRACT
        3.EXIT
Enter the option
3
PS D:\projects\quest\C>
```

```c
/*Write a program to keep accepting numbers from the user and print them
until the user enters zero.*/
#include<stdio.h>
void main()
{    int n;
```

```c
    do
    {
        scanf("%d",&n);
        printf("The number is %d\n",n);
    } while (n!=0);

}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { g
1
The number is 1
2
The number is 2
3
The number is 3
4
The number is 4
5
The number is 5
0
The number is 0
PS D:\projects\quest\C> |
```

```c
/*Write a program that asks for a password until the user provides the
correct one using a do-while loop.*/
#include<stdio.h>
#include<string.h>
void main(){
char s[5];
    do
    {
        printf("Enter the password : ");
        scanf("%s",&s);
    } while (strcmp(s,"hello"));

}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\" ; if ($?) { gcc
Enter the password : hi
Enter the password : rahul
Enter the password : good
Enter the password : hello
PS D:\projects\quest\C>
```

```c
/*Write a program to read integers from the user and compute their sum.
Stop when the user enters a negative number*/
#include<stdio.h>
void main(){
    int a,b;
    do
    {
        printf("Enter the numbers\n");
        scanf("%d %d",&a,&b);
        printf("Sum is %d\n",a+b);
    } while (a >= 0 && b >= 0);

}
```

```
PS D:\projects\quest\C> cd "d:\projec
Enter the numbers
5 4
Sum is 9
Enter the numbers
6 7
Sum is 13
Enter the numbers
22 67
Sum is 89
Enter the numbers
-5 30
Sum is 25
PS D:\projects\quest\C>
```

```c
/*Write a program to repeatedly display the multiplication table of a
number until the user decides to stop.*/
#include<stdio.h>
void main(){
    int n,i=1;
    char c='N';
    printf("Enter the number\n");
    scanf("%d",&n);
    do
    { printf("%d X %d = %d \t",n,i,n*i);
    printf("STOP HERE ?(Y for yes) \n");
    scanf("%c",&c);
    i++;

    } while (c!='Y');

}
```

```
3
3 X 1 = 3         STOP HERE ?(Y for yes)
3 X 2 = 6         STOP HERE ?(Y for yes)

3 X 3 = 9         STOP HERE ?(Y for yes)

3 X 4 = 12        STOP HERE ?(Y for yes)

3 X 5 = 15        STOP HERE ?(Y for yes)

3 X 6 = 18        STOP HERE ?(Y for yes)

3 X 7 = 21        STOP HERE ?(Y for yes)

3 X 8 = 24        STOP HERE ?(Y for yes)
Y
PS D:\projects\quest\C> 
```

```c
/*Write a program where the user guesses a predefined number. Continue the
game until the correct number is guessed.*/
#include<stdio.h>
```

```c
void main()
{
    int n;
    do
    {
        printf("Guess the number\n");
        scanf("%d",&n);
    } while (n!=38);


}
```

```
PS D:\projects\quest\C> cd "d:\pro
Guess the number
3
Guess the number
4
Guess the number
5
Guess the number
38
PS D:\projects\quest\C>
```

```c
/*Write a program to ensure that the user enters a number between 1 and
10. Prompt until a valid number is provided.*/
#include<stdio.h>
void main()
{
    int n;
    do
    {
     printf("Enter a number betweeen 1 and 10\n");
     scanf("%d",&n);
    } while (n>10 || n<1);


}
```

```
Enter a number betweeen 1 and 10
22
Enter a number betweeen 1 and 10
45
Enter a number betweeen 1 and 10
76
Enter a number betweeen 1 and 10
12
Enter a number betweeen 1 and 10
11
Enter a number betweeen 1 and 10
2
PS D:\projects\quest\C>
```

```c
/*Write a program to calculate the average of a series of numbers entered
by the user. Stop when the user enters zero.*/
#include<stdio.h>
void main(){
    int sum=0,avg,n=-1,a;
    do
    {
        n++;
        scanf("%d",&a);
        sum+=a;

    } while (a!=0);
    printf("The avg is %d",sum/n);

}
```

```
PS D:\projects\quest\C> cd "d:\projects
2 4 6 0
The avg is 4
PS D:\projects\quest\C>
```

```c
/*Write a program to print lowercase alphabets from 'a' to 'z' using a
do-while loop*/
#include<stdio.h>
```

```c
void main(){

    char a='a';

    do

    {

        printf("%c \t",a);

        a++;

    } while (a>='a'&& a<='z');


}
```

```c
/*Write a program to count the number of digits in a number entered by the
user using a do-while loop.*/
#include<stdio.h>
void main(){
 int n,count=0;
 printf("Enter the number\n");
 scanf("%d",&n);
 do
 {

        n=n/10;

        count++;


 } while (n!=0);
 printf("number of digits are %d",count);
}
```

```c
/*1. Pascal's Triangle using for loop*/
```

```c
#include <stdio.h>

int main() {
    int n=5, i, j, number;
    for (i = 0; i < n; i++) {
        for (j = 0; j < n - i - 1; j++) {
            printf(" ");
        }
        number = 1;
        for (j = 0; j <= i; j++) {
            printf("%d ", number);
            number = number * (i - j) / (j + 1);
        }
        printf("\n");
    }
    return 0;
}
```

```
PS D:\projects\quest\C> cd "d:\projects
    1
   1 1
  1 2 1
 1 3 3 1
1 4 6 4 1
PS D:\projects\quest\C>
```

```c
/*1. Pascal's Triangle using do while*/
#include <stdio.h>

int main() {
    int n=5, i = 0, j;
    do {
        int spaces = n - i - 1;
        int space_count = 0;
        do {
            printf(" ");
            space_count++;
        } while (space_count < spaces);
        int number = 1;
```

```c
        int num_count = 0;
        do {
            printf("%d ", number);
            number = number * (i - num_count) / (num_count + 1);
            num_count++;
        } while (num_count <= i);
        printf("\n");
        i++;
    } while (i < n);
    return 0;
}
```

```c
/*1
01
101
0101
10101
using forloop
*/
#include <stdio.h>

int main() {
    int n = 5;
    for (int i = 1; i <= n; i++) {
        for (int j = 1; j <= i; j++)
        {
            if ((i + j) % 2 == 0)
```

```c
                printf("1");
            else
                printf("0");


        }
        printf("\n");
    }

    return 0;
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\"
1
01
101
0101
10101
PS D:\projects\quest\C>
```

```c
/*1
01
101
0101
10101
usin do while*/
#include<stdio.h>
void main()
{
    int n=5,i=1;
    do
    {
        int j=1;
        do {
            if ((i + j) % 2 == 0) {
                printf("1");
```

```c
        } else {
            printf("0");
        }
        j++;
    } while (j <= i);

    printf("\n");
    i++;
} while (i<=n);

}
```

```
PS D:\projects\quest\C> cd "d:\projects\q
1
01
101
0101
10101
PS D:\projects\quest\C>
```

```c
/*
3. Floyd's Triangle (Numbers)

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15 using for loop
*/
#include<stdio.h>
void main(){
    int row=5,n=1;
    for(int i=1;i<=row;i++)
    {
        for(int j=1;j<=i;j++)
        {
            printf("%d ",n);
            n++;
```

```
        }
        printf("\n");
    }
}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
PS D:\projects\quest\C>
```

```c
/*
3. Floyd's Triangle (Numbers)

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15 using do while
*/
#include<stdio.h>
void main()
{
    int row=5,i=1,n=1;
    do
    {
        int j=1;
        do
        {
            printf("%d ",n);
            n++;
            j++;
        } while (j<=i);
        printf("\n");
        i++;
```

```
    } while (i<=5);

}
```

```
/*12345
1234
123
12
1
using forloop*/
#include<stdio.h>
void main(){
    for(int i=5;i>=1;i--)
    {
        for (int j=1;j<=i;j++)
        printf("%d",j);
        printf("\n");
    }
}
```

```c
/*12345
1234
123
12
1
using do while*/
#include<stdio.h>
void main(){
int i=5;
do
{ int j=1;
    do
    {
        printf("%d",j);
        j++;
    } while (j<=i);
    printf("\n");
    i--;

} while (i>=1);


}
```

```
PS D:\projects\quest\C> cd "d:\projects\quest\C\
12345
1234
123
12
1
PS D:\projects\quest\C>
```

```
/*
    *
   ***
  *****
 *******
```

```c
 * * * * * * * * *
  * * * * * * *
   * * * * *
    * * *
     *

using forloop
*/
#include <stdio.h>
void main() {
    int n = 5;
    for (int i = 1; i <= n; i++) {

        for (int j = i; j < n; j++) {
            printf(" ");
        }

        for (int j = 1; j <= (2 * i - 1); j++) {
            printf("*");
        }
        printf("\n");
    }
    for (int i = n - 1; i >= 1; i--) {
        for (int j = n; j > i; j--) {
            printf(" ");
        }
        for (int j = 1; j <= (2 * i - 1); j++) {
            printf("*");
        }
        printf("\n");
    }

}
```

```
PS D:\projects\quest\C> cd "d:\p
     *
    ***
   *****
  *******
 *********
  *******
   *****
    ***
     *
PS D:\projects\quest\C>
```

```c
/*
     *
    * * *
   * * * * *
  * * * * * * *
 * * * * * * * * *
  * * * * * * *
   * * * * *
    * * *
     *
using do while
*/
#include <stdio.h>
void main() {
    int n = 5;
    int i = 1;
    do {
        int j = 1;
        do {
            if(i!=n)
            printf(" ");
            j++;
        } while (j <= n - i);
        j = 1;
        do {
            printf("*");
```

```c
            j++;
        } while (j <= 2 * i - 1);

        printf("\n");
        i++;
    } while (i <= n);
    i = n - 1;
    do {
        int j = 1;
        do {
            printf(" ");
            j++;
        } while (j <= n - i);
        j = 1;
        do {
            printf("*");
            j++;
        } while (j <= 2 * i - 1);
        printf("\n");
        i--;
    } while (i >= 1);
}
```

```
PS D:\projects\quest\C> cd "
     *
    ***
   *****
  *******
 *********
  *******
   *****
    ***
     *
PS D:\projects\quest\C>
```

```c
/*
inverted pyramid using forloop
*/

#include <stdio.h>
```

```c
int main() {
    int n = 5;
    for (int i = n; i >= 1; i--) {
        for (int j = 0; j < n - i; j++) {
            printf(" ");
        }
        for (int j = 0; j < 2 * i - 1; j++) {
            printf("*");
        }
        printf("\n");
    }

    return 0;
}
```

```
PS D:\projects\quest\C> cd "d:
*********
 *******
  *****
   ***
    *
PS D:\projects\quest\C>
```

```c
/*
inverted pyramid using do while
*/
#include <stdio.h>
int main() {
    int n = 5;
    int i = n;
    do {
        int j = 1;
        do {if(i!=n)
            printf(" ");
            j++;
        } while (j <= n - i);
        j = 1;
        do {
```

```c
            printf("*");
            j++;
        } while (j <= 2 * i - 1);
        printf("\n");
        i--;
    } while (i >= 1);
    return 0;
}
```

```
PS D:\projects\quest\C>
*********
 *******
  *****
   ***
    *
PS D:\projects\quest\C>
```