Day 3: Loops and Iterations (5-8-2025)

1. Write a program to print numbers from 1 to 100.

IPO:

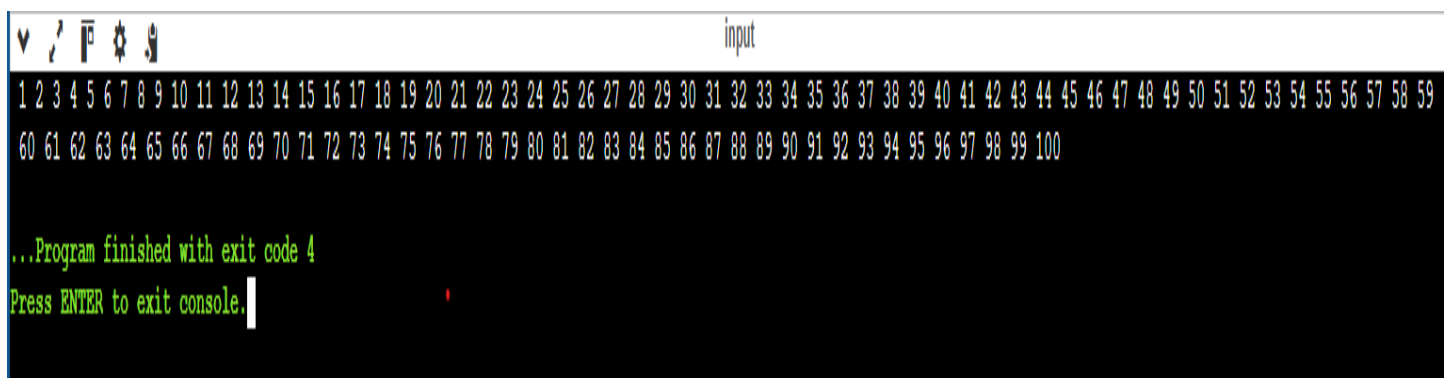**Input: taking an variable i.**

Process: loop from 1 to 100 and print each.

Output: numbers from 1 to 100.

Code:

```
#include <stdio.h>
void main()
{
    int i;
    for (i = 1; i <= 100; i++)
    {
        printf(" %d\n",i);
    }
}
```



```
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59
60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

...Program finished with exit code 4
Press ENTER to exit console.
```

2. Write a program to print even numbers from 1 to 50.

IPO:

Input: taking the variable i.
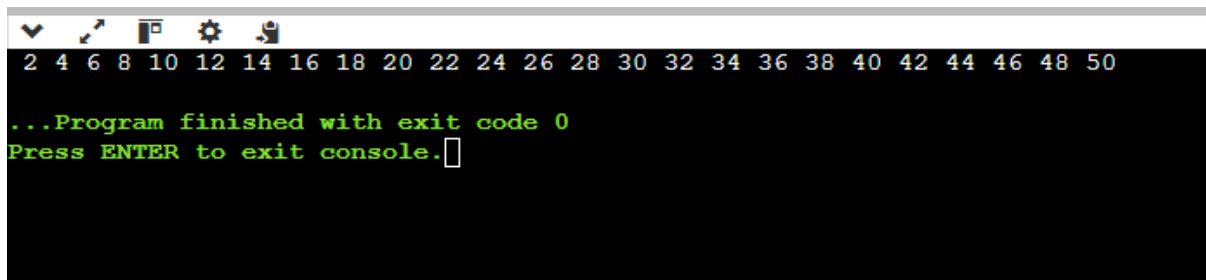
Process: loop from 1 to 50 and check if the number is even.

Output: even numbers from 1 to 50.

Code:

#include <stdio.h>

```c
int main()
{
    int i;
    for (i=1;i<=50; i++)
    {
        if (i%2==0)
        {
            printf(" %d", i);
        }
    }
}
```



```
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50

...Program finished with exit code 0
Press ENTER to exit console.
```

3. Write a program to find the factorial of a number.

IPO:

Input: taking the variable n,i,f=1.

Process: Multiply numbers from 1 to n to get factorial.

Output: Print factorial of the given number.

Code:

```
#include<stdio.h>
Void main()
{
    Int i,n,f=1;
    scanf("%d",&n);
    printf("enter the number:");
    for(i=1;i<=n;i++)
{
    f=f*i;
}
printf("f=%d",f);
}
```
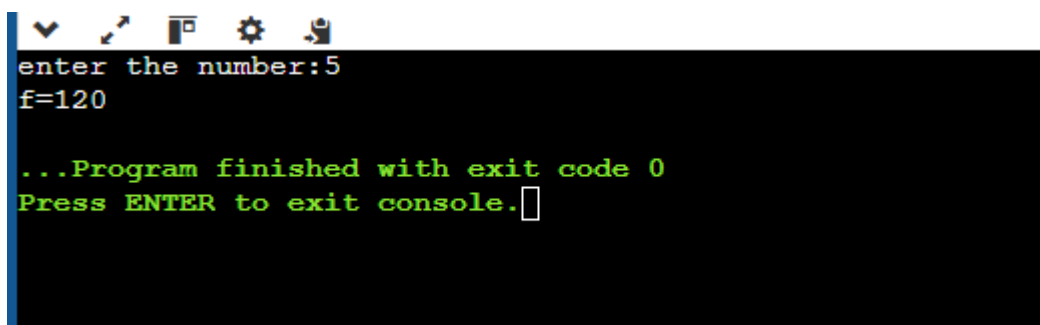
```
enter the number:5
f=120

...Program finished with exit code 0
Press ENTER to exit console.
```

4. Write a program to calculate the sum of digits of a number.

IPO:

Input: taking the variables a,i,s=0.

Process: loop from n and sum the digit.
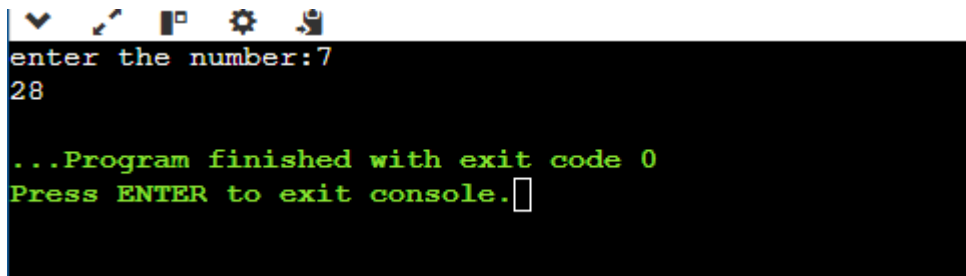
Output: print the sum of digit.

Code:

```
#include<stdio.h>
void main()
```

```c
{
    int a,i,s=0;
    printf("enter the number:");
    scanf("%d",&a);
    for(i=1;i<=a;i++)
    {
        s=s+i;
    }
    printf("%d",s);
}
```



```
enter the number:7
28

...Program finished with exit code 0
Press ENTER to exit console.
```

5. Write a program to reverse a number.

IPO:

Input: taking the number(n)

Process: Extract digits, build reversed number.

Output: print the reverse number.

Code:

#include<stdio.h>
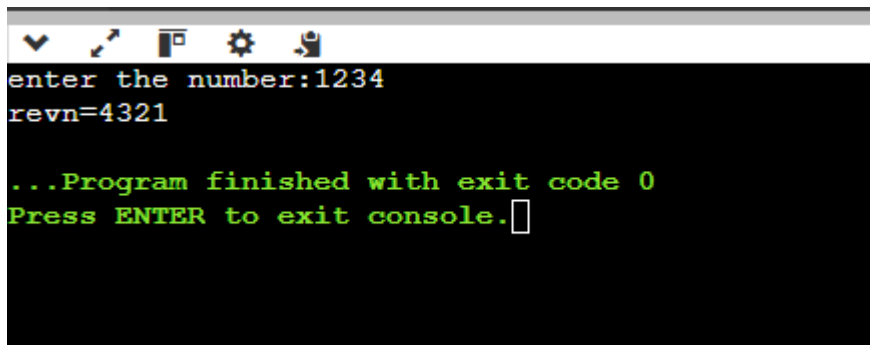
void main()

{

int n, revn=0,r;

printf("enter the number:");

```c
    scanf("%d",&n);
    while(n!=0)
    {
       r=n%10;
       revn=revn*10+r;
       n=n/10;
    }
    printf("revn=%d",revn);
}
```

```
enter the number:1234
revn=4321

...Program finished with exit code 0
Press ENTER to exit console.
```

6. Write a program to check whether a number is a palindrome.

IPO:

Input: taking the integer number.

Process: store the original number.

Reverse the number.

Compare with the original number.

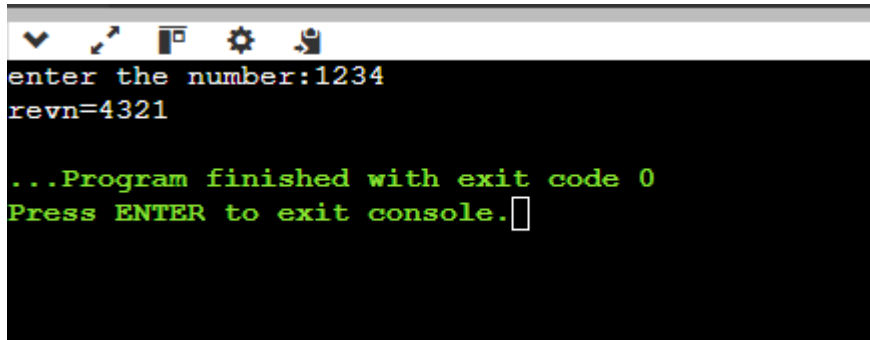**Output: display the number is palindrome or not.**

Code:

#include<stdio.h>

void main()

{

```c
int n,orgn,rev=0,r;
printf("enter the number:");
scanf("%d",&n);
orgn=n;
while(n!=0)
{
    r=n%10;
    rev=rev*10+r;
    n=n/10;
}
printf("rev=%d",rev);
if(orgn==rev)
{
    printf(" number is palindrome");
}
else
{
    printf(" number is not palindrome");
}
}
```

```
enter the number:1234
revn=4321

...Program finished with exit code 0
Press ENTER to exit console.
```

7. Write a program to print a multiplication table of a number.

IPO:

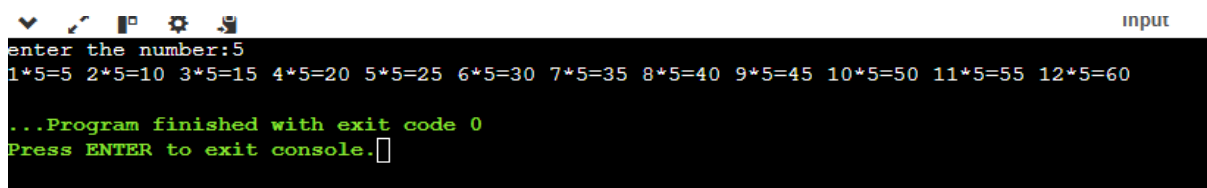**Input: A number n(for which multiplication table is needed).**

Process: multiply the values from 1 to 10 using loop).

Output: display the multiplication table form 1 to 10.

Code:

```
#include<stdio.h>
void main()
{
    int n,i;
    printf("enter the number:");
    scanf("%d",&n);
    for(i=1;i<=12;i++)
    {
        printf("%d*%d=%d ",i,n,i*n);
    }
}
```

```
enter the number:5
1*5=5 2*5=10 3*5=15 4*5=20 5*5=25 6*5=30 7*5=35 8*5=40 9*5=45 10*5=50 11*5=55 12*5=60

...Program finished with exit code 0
Press ENTER to exit console.
```

8. Write a program to count the number of digits in a number.

IPO:

Input: giving the number(positive or negative)
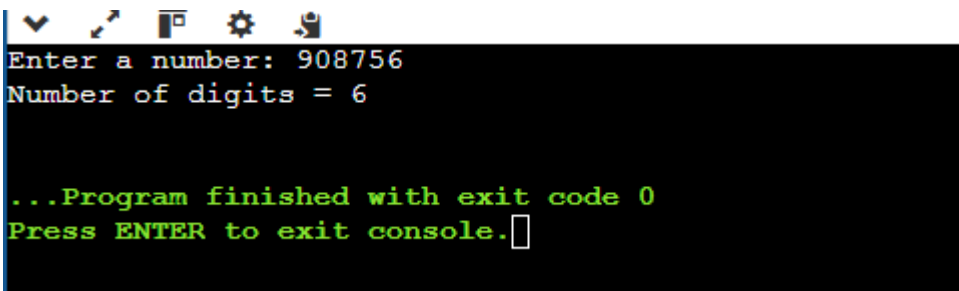
Process: divide the number by 10 repeatedly and count the steps.

Output: total count of digit in the number.

Code:

```c
#include <stdio.h>
void main()
{
    int num, count = 0;
    printf("Enter a number: ");
    scanf("%d", &num);
    if (num == 0)
    {
        count = 1;
    }
    else
    {
        if (num<0)
            num=-num;
        while (num!= 0)
        {
            num = num/10;
            count++;
        }
    }
    printf("Number of digits = %d\n", count);
}
```

```
Enter a number: 908756
Number of digits = 6


...Program finished with exit code 0
Press ENTER to exit console.
```

9. Write a program to print the Fibonacci series up to n terms.

IPO:

Input: number of terms n to generate.

Process: use a loop to generate fibonacci terms: next=first plus second.

Output: print the fibonacci sequence up to n terms.

Code:

```c
#include<stdio.h>
void main()
{
    int n,f=0,s=1,i,nx;
    printf("enter the number:");
    scanf("%d",&n);
    for(i=0;i<=n;i++)
    {
        if(i<=1)
        {
            nx=i;
        }
        else
        {
            nx=f+s;
            f=s;
            s=nx;
        }
        printf(" %d",nx);
    }
```

}

```
enter the number:6
 0 1 1 2 3 5 8

...Program finished with exit code 0
Press ENTER to exit console.▯
```

10. Write a program to calculate the sum of the first n natural numbers.

IPO:

Input: taking an integer n (limit for natural numbers).

Process: add numbers from 1 to n using a loop.

Output: sum of first n natural numbers.

Code:

```c
#include <stdio.h>
void main()
{
    int n, i, s=0;
    printf("Enter the value of n: ");
    scanf("%d",&n);
    for (i = 1; i <= n; i++)
    {
        s=s+i;
    }
    printf("Sum of first %d natural numbers is: %d\n", n,s);
}
```

```
Enter the value of n: 10
Sum of first 10 natural numbers is: 55


...Program finished with exit code 0
Press ENTER to exit console.
```