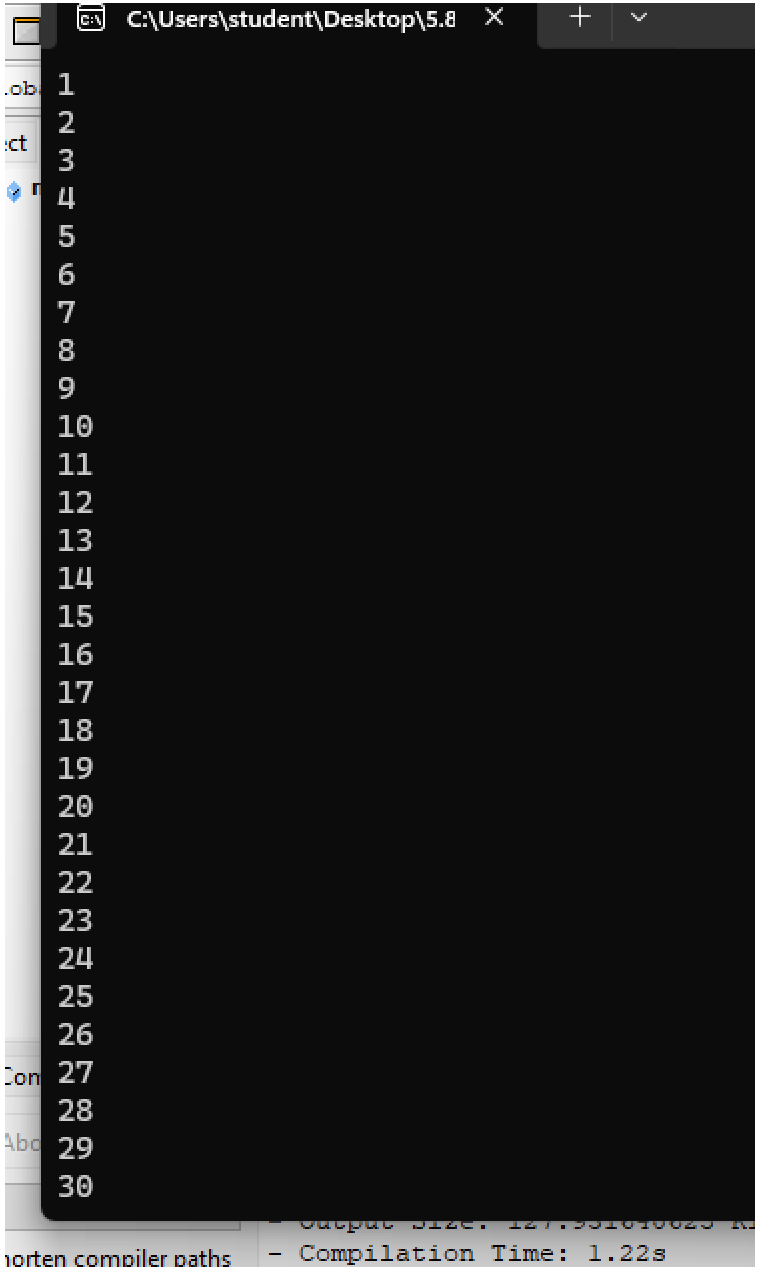
✅ Day : Loops and Iterations (5-8-2025)

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

- □ **Input: None**
- □ **Process: Loop from 1 to 100 and print each number**
- □ **Output: Numbers from 1 to 100**

```
#include <stdio.h>
int main()
{
  int i;
  for(i = 1; i <= 100; i++)
{
    printf("%d\n", i);
  }
  return 0;
}
```



```
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
```

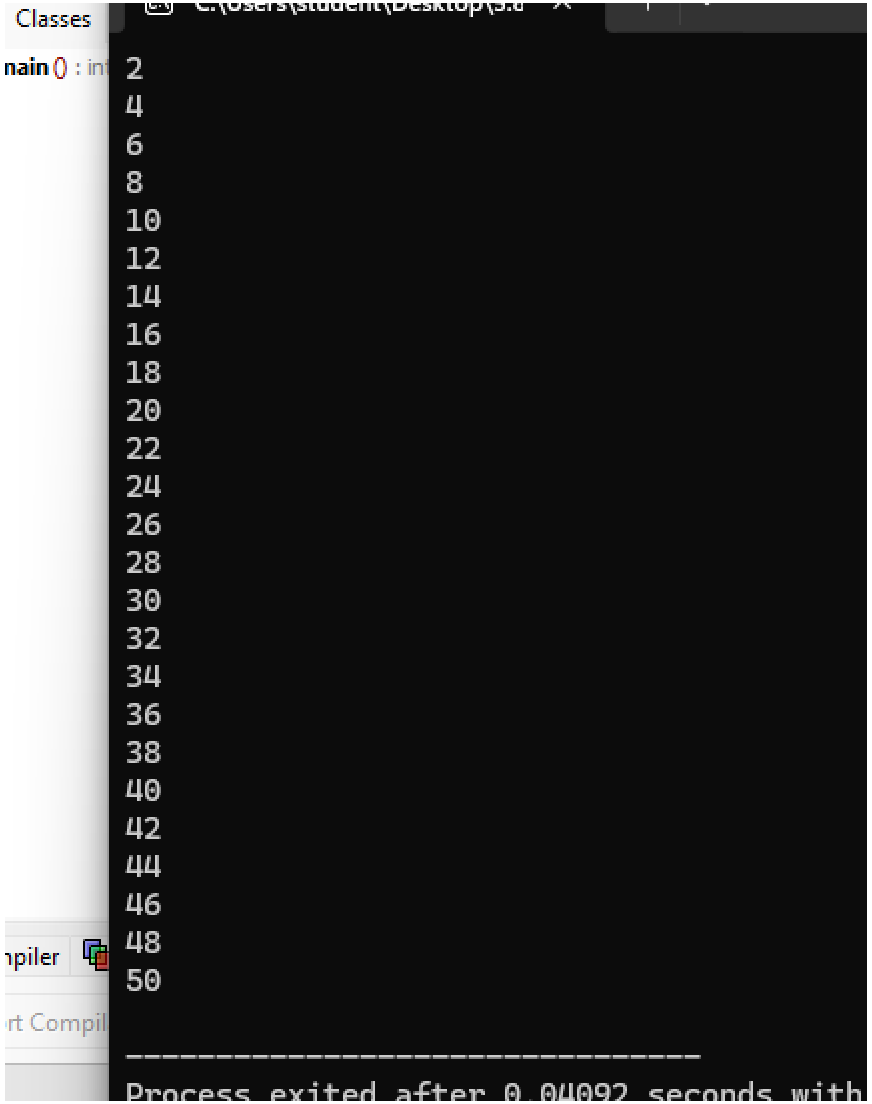
```
- Compilation Time: 1.22s
```

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

- □ **Input: None**
- □ **Process: Use a loop to check and print numbers from 1 to 50 that are divisible by 2 (even numbers)**

- □ **Output: Even numbers from 1 to 50**

```
#include <stdio.h>
int main()
{
   int i;
   for(i = 1; i <= 50; i++)
{
      if(i % 2 == 0)
{
         printf("%d\n", i);
      }
   }
   return 0;
}
```



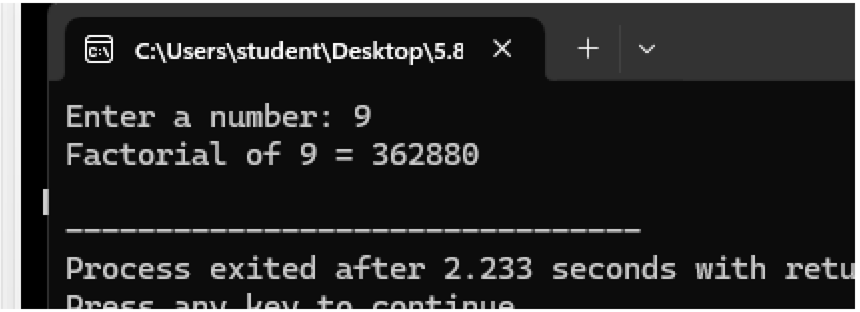
```
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50

--------------------------------
Process exited after 0.04092 seconds with
```

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

- □ **Input: A number**
- □ **Process: Multiply all integers from 1 to n (i.e., 1 × 2 × ... × n)**
- □ **Output: Factorial of the number**

```
#include <stdio.h>
int main()
{
   int n, i;
   unsigned long long factorial = 1;
   printf("Enter a number: ");
   scanf("%d", &n);
   if(n < 0)
{
      printf("Factorial is not defined for negative numbers.\n");
   }
else
{
      for(i = 1; i <= n; i++) {
         factorial *= i;
      }
      printf("Factorial of %d = %llu\n", n, factorial);
   }
   return 0;
}
```



```
Enter a number: 9
Factorial of 9 = 362880

--------------------------------
Process exited after 2.233 seconds with retu
Press any key to continue
```

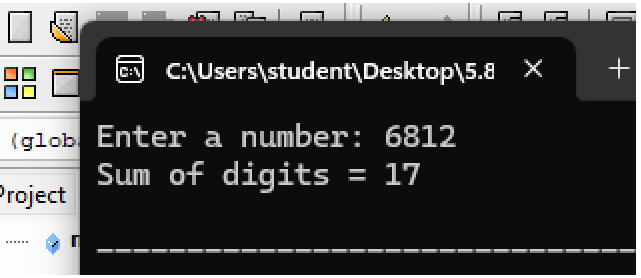
4. Write a program to calculate the sum of digits of a number.

□ **Input: A number**

□ **Process: Extract each digit using modulus (% 10), add it to sum, then reduce the number using division by 10 (/ 10)**

□ **Output: Sum of the digits of the number**

```
#include <stdio.h>
int main()
{
   int n, digit, sum = 0;
   printf("Enter a number: ");
   scanf("%d", &n);
   while(n != 0)
{
      digit = n % 10;
      sum += digit;
      n = n / 10;
}
   printf("Sum of digits = %d\n", sum);
   return 0;
}
```



```
Enter a number: 6812
Sum of digits = 17

------------------------------
```

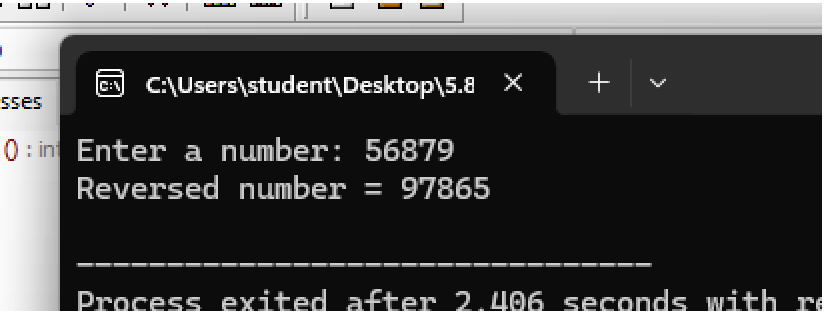
5. Write a program to reverse a number.

- □ **Input: A number**

- □ **Process: Extract digits using % 10 and build reversed number by multiplying previous result by 10 and adding the digit**

- □ **Output: Reversed number**

```
#include <stdio.h>
int main()
{
   int n, digit, reverse = 0;
   printf("Enter a number: ");
   scanf("%d", &n);
   while(n != 0)
{
      digit = n % 10;
      reverse = reverse * 10 + digit;
      n = n / 10;
   }
   printf("Reversed number = %d\n", reverse);
   return 0;
}
```



```
Enter a number: 56879
Reversed number = 97865

--------------------------------
Process exited after 2.406 seconds with re
```

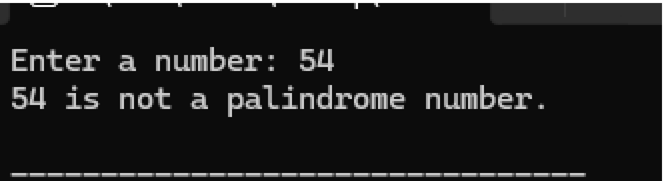
6. Write a program to check whether a number is a palindrome.

□ **Input: A number**

□ **Process: Reverse the number and compare it with the original**

□ **Output: Whether the number is a palindrome or not**

```
#include <stdio.h>
int main()
{
   int n, original, digit, reverse = 0;
   printf("Enter a number: ");
   scanf("%d", &n);
   original = n;
   while(n != 0)
{
      digit = n % 10;
      reverse = reverse * 10 + digit;
      n = n / 10;
   }
   if(original == reverse)
{
      printf("%d is a palindrome number.\n", original);
   } else {
      printf("%d is not a palindrome number.\n", original);
   }
   return 0;
}
```



```
Enter a number: 54
54 is not a palindrome number.

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```
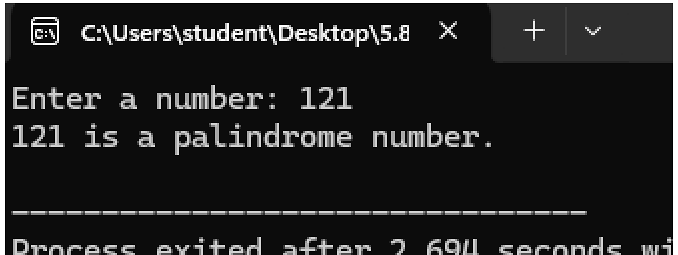



```
Enter a number: 121
121 is a palindrome number.

--------------------------------
Process exited after 2.694 seconds wi
```

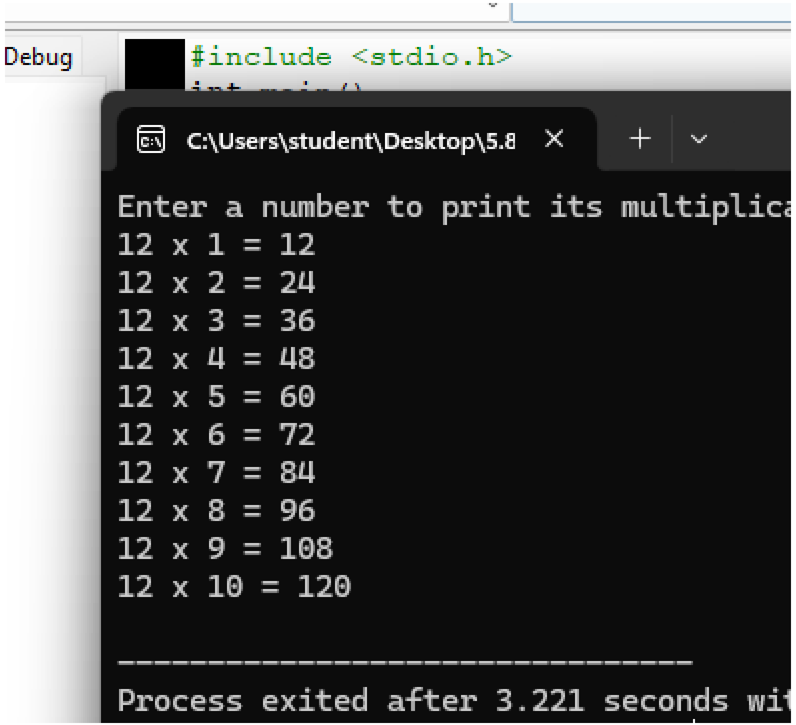
7. Write a program to print multiplication table of a number.

□ **Input: A number n**

□ **Process: Multiply the number with values from 1 to 10**

□ **Output: Multiplication table of the number**

```
#include <stdio.h>
int main()
{
   int n, i;
   printf("Enter a number to print its multiplication table: ");
   scanf("%d", &n);
   for(i = 1; i <= 10; i++)
{
      printf("%d x %d = %d\n", n, i, n * i);
   }
   return 0;
}
```



```
#include <stdio.h>
```

```
Enter a number to print its multiplica
12 x 1 = 12
12 x 2 = 24
12 x 3 = 36
12 x 4 = 48
12 x 5 = 60
12 x 6 = 72
12 x 7 = 84
12 x 8 = 96
12 x 9 = 108
12 x 10 = 120

--------------------------------
Process exited after 3.221 seconds wit
```

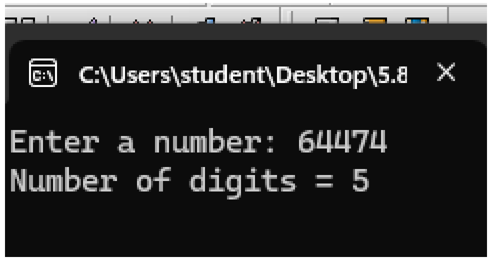
8. Write a program to count the number of digits in a number.

□ **Input: A number**

□ **Process: Divide the number by 10 repeatedly and count how many times it can be divided before it becomes 0**

□ **Output: Number of digits**

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



```
Enter a number: 64474
Number of digits = 5
```

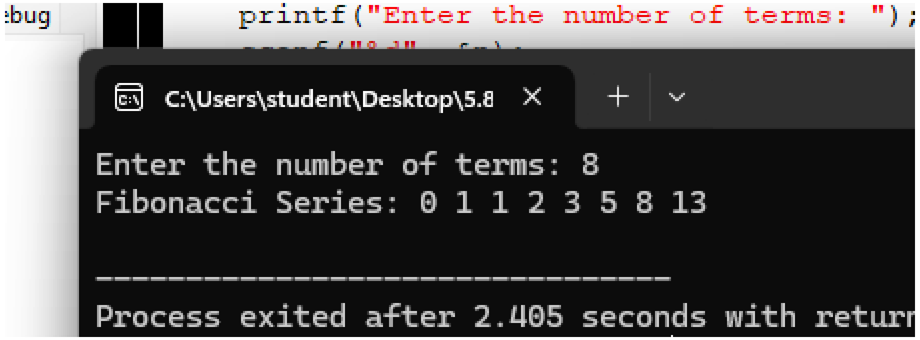
```
#include <stdio.h>
int main()
{
  int n, i;
  int first = 0, second = 1, next;
  printf("Enter the number of terms: ");
  scanf("%d", &n);
  printf("Fibonacci Series: ");
  if(n <= 0)
{
    printf("Invalid input.\n");
  }
else if(n == 1)
{
    printf("%d\n", first);
  }
else
{
    printf("%d %d ", first, second);
    for(i = 3; i <= n; i++) {
      next = first + second;
      printf("%d ", next);
      first = second;
      second = next;
    }
    printf("\n");
  }
  return 0;
}
```

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

□ **Input: Number of terms**

□ **Process: Generate Fibonacci numbers using the rule: `next = first + second`, and shift values**

□ **Output: First n terms of the Fibonacci series**



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

```
Enter the number of terms: 8
Fibonacci Series: 0 1 1 2 3 5 8 13

--------------------------------
Process exited after 2.405 seconds with return
```

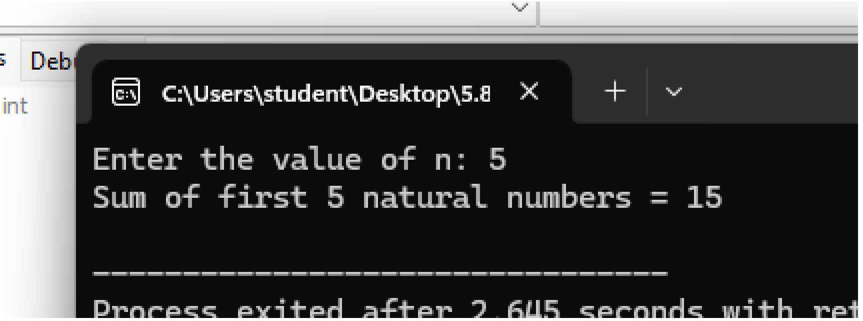
10. Write a program to calculate the sum of the first n natural numbers.

□ **Input: A number**

□ **Process: Add numbers from 1 to n using a loop or formula**

□ **Output: Sum of the first n natural numbers**

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



```
Enter the value of n: 5
Sum of first 5 natural numbers = 15

--------------------------------
Process exited after 2.645 seconds with ret
```