1- Write a program that takes a number as input and calculates the sum of its digits using a loop.

اكتب برنامجًا يأخذ رقمًا كمدخل ويحسب مجموع أرقامه باستخدام Loop.

Input

```
Enter a number: 7
```

Output

```
Sum = 28
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int n, i, sum = 0;

    printf("Enter a number: ");
    scanf("%d", &n);

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

    printf("Sum = %d\n", sum);

    return 0;
}
```

2- Modify the previous program to calculate the sum using the formula n * (n + 1) / 2.

عدل البرنامج السابق لحساب المجموع باستخدام الصيغة 2 / (n + 1) * n.

Input

```
Enter a number: 5
```

Output

```
Sum = 15
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int n, sum;

    printf("Enter a number: ");
    scanf("%d", &n);

    sum = (n * (n + 1)) / 2;

    printf("Sum = %d\n", sum);

    return 0;
}
```

3- Write a program that takes an integer as input and prints its digits in reverse order.

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويطبع أرقامه بترتيب عكسي.

Input

```
Enter a number: 789456
```

Output

```
Reversed digits: 6 5 4 9 8 7
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, digit;

    printf("Enter a number: ");
    scanf("%d", &num);

    printf("Reversed digits: ");
    while (num > 0) {
        digit = num % 10;
        printf("%d ", digit);
        num /= 10;
    }

    return 0;
}
```

4- Write a program that takes a number as input and counts the number of digits in it.

اكتب برنامجًا يأخذ رقمًا كمدخل ويحسب عدد الأرقام فيه.

Input

```
Enter a number: 2687
```

Output

```
Number of digits: 4
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, count = 0;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num != 0) {
        num /= 10;
        count++;
    }

    printf("Number of digits: %d\n", count);

    return 0;
}
```

5- Write a program that takes an integer as input and calculates the sum of its even digits.

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويحسب مجموع أرقامه الزوجية.

Input

```
Enter a number: 1598
```

Output

```
Sum of even digits: 8
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, digit, sum = 0;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num > 0) {
        digit = num % 10;
        if (digit % 2 == 0) {
            sum += digit;
        }
        num /= 10;
    }

    printf("Sum of even digits: %d\n", sum);

    return 0;
}
```

6- Write a program that takes an integer as input and calculates the product of its odd digits.

اكتب برنامجًا يأخذ عددًا صحيحًا كمدخل ويحسب حاصل ضرب أرقامه الفردية.

Input

```
Enter a number: 159
```

Output

```
Product of odd digits: 45
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, digit, product = 1;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num > 0) {
        digit = num % 10;
        if (digit % 2 != 0) {
            product *= digit;
        }
        num /= 10;
    }

    printf("Product of odd digits: %d\n", product);

    return 0;
}
```

7- Write a program that takes an integer as input and checks if it is a palindrome or not.

اكتب برنامجًا يأخذ عددًا صحيحًا كمدخل ويتحقق مما إذا كان palindrome أم لا.

Input

```
Enter a number: 171
```

Output

```
Palindrome
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, original, reversed = 0, digit;

    printf("Enter a number: ");
    scanf("%d", &num);

    original = num;

    while (num > 0) {
        digit = num % 10;
        reversed = reversed * 10 + digit;
        num /= 10;
    }

    if (original == reversed) {
        printf("Palindrome\n");
    } else {
        printf("Not a palindrome\n");
    }

    return 0;
}
```

8- Write a program that takes an integer as input and counts the number of zeros in it.

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويحسب عدد الأصفار فيه.

Input

```
Enter a number: 1098006
```

Output

```
Number of zeros: 3
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, count = 0, digit;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num > 0) {
        digit = num % 10;
        if (digit == 0) {
            count++;
        }
        num /= 10;
    }

    printf("Number of zeros: %d\n", count);

    return 0;
}
```

9- Write a program that takes an integer as input and calculates the sum of the squares of its digits.

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويحسب مجموع مربعات أرقامه.

Input

```
Enter a number: 349
```

Output

```
Sum of squares of digits: 106
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, digit, sum = 0;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num > 0) {
        digit = num % 10;
        sum += digit * digit;
        num /= 10;
    }

    printf("Sum of squares of digits: %d\n", sum);

    return 0;
}
```

10- Write a program that takes an integer as input and counts the number of even and odd digits.

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويحسب عدد الأرقام الزوجية والفردية.

Input

```
Enter a number: 159642
```

Output

```
Even digits count: 3
Odd digits count: 3
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num, digit, evenCount = 0, oddCount = 0;

    printf("Enter a number: ");
    scanf("%d", &num);

    while (num > 0) {
        digit = num % 10;
        if (digit % 2 == 0) {
            evenCount++;
        } else {
            oddCount++;
        }
        num /= 10;
    }

    printf("Even digits count: %d\n", evenCount);
    printf("Odd digits count: %d\n", oddCount);

    return 0;
}
```