
1- Write a program that takes an integer as input and determines whether it is positive, negative, or zero.

اكتب برنامجًا يأخذ عددًا صحيحًا كمدخل ويحدد ما إذا كان موجبًا أم سالبًا أم صفرًا.

Input

```
Enter a number: 5
```

Output

```
Positive
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

void status(int y) {
    printf(y > 0 ? "Positive\n" : (y < 0 ? "Negative\n" : "Zero\n"));
}

int main() {
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    status(x);

    return 0;
}
```

2- Write a program that takes an integer as input and checks if it is even or odd.

اكتب برنامجًا يأخذ عددًا صحيحًا كمدخل ويتحقق مما إذا كان زوجيًا أم فرديًا.

Input

```
Enter a number: 2
```

Output

```
Even
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

void status(int y) {
    printf(y % 2 ? "Odd\n" : "Even\n");
}

int main() {
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    status(x);

    return 0;
}
```

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

اكتب برنامجا يأخذ عددا صحيحا كمدخل ويحسب عدد الأرقام فيه.

Input

```
Enter a number: 1264
```

Output

```
Number of digits: 4
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

int digits(int x) {
    int count = 1;
    while (x /= 10) {
        count++;
    }
    return count;
}

int main() {
    int x;
    printf("Enter a number: ");
    scanf("%d", &x);
    int count = digits(x);
    printf("Number of digits: %d\n", count);

    return 0;
}
```

4- Write a program that takes blood test results as input and analyzes the data.

اكتب برنامجًا يأخذ نتائج blood test كمدخلات ويحلل البيانات.

Input

```
Enter blood test result: 6
```

Output

```
Blood Test Analysis:
Result: Positive
Number of digits: Even
Number of digits: 1
First digit is Not Prime
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

void analyzeBloodTest(int result) {
    printf("Blood Test Analysis:\n");

    // Check if the result is negative, positive, or zero
    printf(result > 0 ? "Result: Positive\n" : (result < 0 ? "Result: Negative\n" : "Result:
Zero\n"));

    // Check if the result is even or odd
    printf(result % 2 ? "Number of digits: Odd\n" : "Number of digits: Even\n");

    // Count the number of digits in the result
    int digitCount = 1;
    int temp = result;
    while (temp /= 10) {
        digitCount++;
    }
    printf("Number of digits: %d\n", digitCount);

    // Check if the first digit is prime
    printf(isPrime(result) ? "First digit is Prime\n" : "First digit is Not Prime\n");
}

int isPrime(int x) {
    int i;
    for (i = 2; i < x; i++)
        if (x % i == 0)
            return 0;
    return 1;
}

int main() {
    int bloodTestResult;
    printf("Enter blood test result: ");
    scanf("%d", &bloodTestResult);

    analyzeBloodTest(bloodTestResult);

    return 0;
}
```

5- Modify the previous program to run continuously and prompt the user for blood test results until they decide to exit.

قم بتعديل البرنامج السابق ليعمل بشكل مستمر ومطالبة المستخدم بنتائج blood test حتى يقرر الخروج.

Input & Output

```
Enter blood test result (or enter 0 to exit): 6
Blood Test Analysis:
Result: Positive
Number of digits: Even
Number of digits: 1
First digit is Not Prime
Enter blood test result (or enter 0 to exit): 5
Blood Test Analysis:
Result: Positive
Number of digits: Odd
Number of digits: 1
First digit is Prime
Enter blood test result (or enter 0 to exit): 0
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

void analyzeBloodTest(int result) {
    printf("Blood Test Analysis:\n");

    // Check if the result is negative, positive, or zero
    printf(result > 0 ? "Result: Positive\n" : (result < 0 ? "Result: Negative\n" : "Result:
Zero\n"));

    // Check if the result is even or odd
    printf(result % 2 ? "Number of digits: Odd\n" : "Number of digits: Even\n");

    // Count the number of digits in the result
    int digitCount = 1;
    int temp = result;
    while (temp /= 10) {
        digitCount++;
    }
    printf("Number of digits: %d\n", digitCount);

    // Check if the first digit is prime
    printf(isPrime(result) ? "First digit is Prime\n" : "First digit is Not Prime\n");
}

int isPrime(int x) {
    int i;
    for (i = 2; i < x; i++)
        if (x % i == 0)
            return 0;
    return 1;
}

int main() {
    int bloodTestResult;

    while (1) {
        printf("Enter blood test result (or enter 0 to exit): ");
        scanf("%d", &bloodTestResult);

        if (bloodTestResult == 0) {
            break;
        }

        analyzeBloodTest(bloodTestResult);
    }

    return 0;
}
```

6- Write a program that checks if a given number is positive, negative, or zero.

اكتب برنامجًا يتحقق مما إذا كان الرقم موجبًا أم سالبًا أم صفرًا.

Input

```
Enter a number: 0
```

Output

```
0 is zero.
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

void checkNumber(int num) {
    if (num > 0) {
        printf("%d is positive.\n", num);
    } else if (num < 0) {
        printf("%d is negative.\n", num);
    } else {
        printf("%d is zero.\n", num);
    }
}

int main() {
    int inputNumber;

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

    checkNumber(inputNumber);

    return 0;
}
```

7- Write a program that checks if a given number is a prime number.

اكتب برنامجًا يتحقق مما إذا كان الرقم المعطى هو عدد أولي.

Input

```
Enter a number: 11
```

Output

```
11 is a prime number.
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

int isPrime(int num) {
    if (num < 2) {
        return 0;  // Not a prime number
    }

    for (int i = 2; i < num; i++) {
        if (num % i == 0) {
            return 0;  // Not a prime number
        }
    }

    return 1;  // Prime number
}

int main() {
    int inputNumber;

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

    if (isPrime(inputNumber)) {
        printf("%d is a prime number.\n", inputNumber);
    } else {
        printf("%d is not a prime number.\n", inputNumber);
    }

    return 0;
}
```

8- Write a program that counts the number of digits in a given number and checks if it is positive, negative, or zero.

اكتب برنامجًا يحسب عدد الأرقام في رقم معين ويتحقق مما إذا كان موجبًا أم سالبًا أم صفرًا.

Input

```
Enter a number: -9865
```

Output

```
Number of digits in -9865: 4
-9865 is negative.
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

int countDigits(int number) {
    int count = 0;

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

    return count;
}

void checkSign(int num) {
    if (num > 0) {
        printf("%d is positive.\n", num);
    } else if (num < 0) {
        printf("%d is negative.\n", num);
    } else {
        printf("%d is zero.\n", num);
    }
}

int main() {
    int inputNumber;

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

    int digitCount = countDigits(inputNumber);

    printf("Number of digits in %d: %d\n", inputNumber, digitCount);

    checkSign(inputNumber);

    return 0;
}
```

9- Write a program that calculates the factorial of a given number.

اكتب برنامجاً يقوم بحساب مضروب عدد معين.

Input

```
Enter a number: 7
```

Output

```
Factorial of 7: 5040
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

int factorial(int num) {
    int result = 1;

    for (int i = 2; i <= num; i++) {
        result *= i;
    }

    return result;
}

int main() {
    int inputNumber;

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

    int result = factorial(inputNumber);

    printf("Factorial of %d: %d\n", inputNumber, result);

    return 0;
}
```

10- Write a program that calculates the power of a given number.

اكتب برنامجًا يحسب power رقم معين.

Input

```
Enter the base: 5
Enter the exponent: 2
```

Output

```
5.00 raised to the power of 2 is: 25.00
```

Solution

```c
// www.gammal.tech

#include <stdio.h>

double power(double base, int exponent) {
    double result = 1.0;

    for (int i = 0; i < exponent; i++) {
        result *= base;
    }

    return result;
}

int main() {
    double base;
    int exponent;

    printf("Enter the base: ");
    scanf("%lf", &base);

    printf("Enter the exponent: ");
    scanf("%d", &exponent);

    double result = power(base, exponent);

    printf("%.2lf raised to the power of %d is: %.2lf\n", base, exponent, result);

    return 0;
}
```
