1- Display the message "Programming is exciting!"

عرض الرسالة

"Programming is exciting!"

Output

```
Programming is exciting!
```

Solution

```cpp
// www.gammal.tech

#include <iostream>
int main() {
    std::cout << "Programming is exciting!" << std::endl;
    return 0;
}
```

2 - Print the result of adding 8 and 4

اطبع نتيجة جمع 8 و 4

Output

```
12
```

Solution

```
// www.gammal.tech

#include <iostream>
int main() {
    std::cout << 8 + 4 << std::endl;
    return 0;
}
```

3- write a program to print this shape

أكتب برنامج لطباعة هذا الشكل

Output

```
    *
   * *
  *   *
 *     *
  *   *
   * *
    *
```

Solution

```
// www.gammal.tech

#include <iostream>

using namespace std;

int main() {
    cout << "    *\n";
    cout << "   * *\n";
    cout << "  *   *\n";
    cout << "*       *\n";
    cout << "  *   *\n";
    cout << "   * *\n";
    cout << "    *\n";
    return 0;
}
```

4- write a program to print this shape

أكتب برنامج لطباعة هذا الشكل

Output

```
    *
   * *
  *   *
 *     *
  *   *
   * *
    *
   ***
  *****
 *******
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

using namespace std;

int main() {
    cout << "    *\n";
    cout << "   * *\n";
    cout << "  *   *\n";
    cout << " *     *\n";
    cout << "  *   *\n";
    cout << "   * *\n";
    cout << "    *\n";
    cout << "   ***\n";
    cout << "  *****\n";
    cout << " *******\n";
    return 0;
}
```

5- Write a program that asks the user for their age, stores it in an integer variable, and then prints a message based on whether they are eligible to vote (age 18 or older).

اكتب برنامجًا يسأل المستخدم عن عمره، ويخزنه في متغير عدد صحيح، ثم يطبع رسالة بناءً على ما إذا كان مؤهلاً للتصويت (العمر 18 عامًا أو أكبر).

Input

```
Enter your age: 21
```

Output

```
You are eligible to vote!
```

Solution

```cpp
// www.gammal.tech

#include <iostream>
using namespace std;

int main() {
    int age;
    cout << "Enter your age: ";
    cin >> age;

    if (age >= 18) {
        cout << "You are eligible to vote!" << endl;
    } else {
        cout << "You are not eligible to vote yet." << endl;
    }

    return 0;
}
```

6- Create a program that asks the user for their birth year and prints a message.

<div dir="rtl">

أنشئ برنامجًا يسأل المستخدم عن سنة ميلاده ويطبع رسالة.

</div>

Input

```
Enter your birth year: 2002
```

Output

```
You were born in the year 2002.
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

int main() {
    using namespace std;
    cout << "Enter your birth year: ";
    int birthYear;
    cin >> birthYear;
    cout << "You were born in the year " << birthYear << "." << endl;
    return 0;
}
```

7- Write a program that takes two integers as input and prints their difference.

<div dir="rtl">

اكتب برنامجا يأخذ عددين صحيحين كمدخلات ويطبع الفرق بينهما.

</div>

Input

```
Enter two integers: 5 7
```

Output

```
Difference: -2
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

int main() {
    using namespace std;
    cout << "Enter two integers: ";
    int num1, num2;
    cin >> num1 >> num2;
    cout << "Difference: " << num1 - num2 << endl;
    return 0;
}
```

8- Create a program to find the product of digits of a given number using a for

إنشاء برنامج لإيجاد حاصل ضرب أرقام عدد معين باستخدام for

Input

```
Enter a number: 8423
```

Output

```
Product of digits: 192
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

using namespace std;

int main() {
    int number, product = 1;
    cout << "Enter a number: ";
    cin >> number;
    for (; number != 0; number /= 10) {
        product *= number % 10;
    }
    cout << "Product of digits: " << product;
    return 0;
}
```

9- Create a program to find the largest element in an array of 5 integers using a for

قم بإنشاء برنامج للعثور على أكبر عنصر في array مكونة من 5 أعداد صحيحة
باستخدام for

Input

```
Enter 5 integers:
6 9 5 2 1
```

Output

```
Largest element: 9
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

using namespace std;

int main() {
    const int size = 5;
    int numbers[size];

    cout << "Enter 5 integers:\n";
    for (int i = 0; i < size; ++i) {
        cin >> numbers[i];
    }

    int maxNumber = numbers[0];
    for (int i = 1; i < size; ++i) {
        if (numbers[i] > maxNumber) {
            maxNumber = numbers[i];
        }
    }

    cout << "Largest element: " << maxNumber;
    return 0;
}
```

10- Write a program to calculate the sum of natural numbers up to a given positive integer using the formula sum $n * (n + 1) / 2$

اكتب برنامجًا لحساب مجموع الأعداد الطبيعية حتى عدد صحيح موجب باستخدام صيغة المجموع $n * (n + 1) / 2$

Input

```
Enter a positive integer (n): 7
```

Output

```
Sum of natural numbers up to 7: 28
```

Solution

```cpp
// www.gammal.tech

#include <iostream>

using namespace std;

int main() {
    int n;
    cout << "Enter a positive integer (n): ";
    cin >> n;

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

    cout << "Sum of natural numbers up to " << n << ": " << sum;
    return 0;
}
```