1- Create a program that defines a struct named Student with members name (string), cell (string), and videos (integer). Prompt the user to enter their name, phone number (cell), and the number of videos they have watched. Store the information in a struct variable and print a welcome message along with the entered details.

قم بإنشاء برنامج يحدد struct تسمى الطالب مع اسم الأعضاء (string)، والخلية (سلسلة)، ومقاطع الفيديو (integer). اطلب من المستخدم إدخال اسمه ورقم هاتفه (الخلية) وعدد مقاطع الفيديو التي شاهدها. قم بتخزين المعلومات في متغير struct وطباعة رسالة ترحيب مع التفاصيل المدخلة.

Input

```
What is your name? AbdulRahman
What is your phone number? 0123456789
How many videos have you watched? 31
```

Output

```
Hi AbdulRahman!
Phone number: 0123456789
Number of videos watched: 31
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

// Define the struct Student
struct Student {
    char name[15];
    char cell[20];
    int videos;
};

int main() {
    // Declare a struct variable
    struct Student x;

    // Prompt the user to enter their name
    printf("What is your name? ");
    scanf("%s", x.name);

    // Prompt the user to enter their phone number
    printf("What is your phone number? ");
    scanf("%s", x.cell);

    // Prompt the user to enter the number of videos watched
    printf("How many videos have you watched? ");
    scanf("%d", &x.videos);

    // Print a welcome message along with the entered details
    printf("Hi %s!\n", x.name);
    printf("Phone number: %s\n", x.cell);
    printf("Number of videos watched: %d\n", x.videos);

    return 0;
}
```

2- Write a program that defines a struct called Person with members name (string) and age (integer). Create an instance of the struct, initialize its members, and print the values.

اكتب برنامجًا يحدد struct تسمى "الشخص" مع اسم الأعضاء (string) وعمرهم (integer). قم بإنشاء مثيل struct وتهيئة أعضائها، وطباعة القيم.

Output

```
Name: John
Age: 25
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Person {
    char name[50];
    int age;
};

int main() {
    // Declare and initialize a struct variable
    struct Person person1 = {"John", 25};

    // Print the values of struct members
    printf("Name: %s\n", person1.name);
    printf("Age: %d\n", person1.age);

    return 0;
}
```

3- Create a program that uses a struct to represent a point in 2D space. Prompt the user to enter the coordinates of a point, store the values in a struct variable, and print the point's coordinates.

قم بإنشاء برنامج يستخدم struct لتمثيل نقطة في مساحة ثنائية الأبعاد. اطلب من المستخدم إدخال إحداثيات نقطة ما، وتخزين القيم في متغير struct وطباعة إحداثيات النقطة.

Input

```
Enter x coordinate: 5
Enter y coordinate: 6
```

Output

```
Point coordinates: (5, 6)
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Point {
    int x;
    int y;
};

int main() {
    // Declare a struct variable
    struct Point point1;

    // Prompt the user to enter coordinates
    printf("Enter x coordinate: ");
    scanf("%d", &point1.x);
    printf("Enter y coordinate: ");
    scanf("%d", &point1.y);

    // Print the coordinates of the point
    printf("Point coordinates: (%d, %d)\n", point1.x, point1.y);

    return 0;
}
```

4- Write a program using a struct to represent a book with members title and author. Create an instance of the struct, initialize its members, and print the book information.

اكتب برنامجًا باستخدام struct لتمثيل كتاب بعنوان الأعضاء والمؤلف. قم بإنشاء مثيل struct وتهيئة أعضائها وطباعة معلومات الكتاب.

Output

```
Title: The Catcher in the Rye
Author: J.D. Salinger
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Book {
    char title[50];
    char author[50];
};

int main() {
    // Declare and initialize a struct variable
    struct Book book1 = {"The Catcher in the Rye", "J.D. Salinger"};

    // Print the book information
    printf("Title: %s\n", book1.title);
    printf("Author: %s\n", book1.author);

    return 0;
}
```

5- Write a program using a struct to represent a rectangle with members length and width. Prompt the user to enter the dimensions, store them in a struct variable, and print the rectangle's area.

اكتب برنامجا باستخدام struct لتمثيل مستطيل بطول وعرض الأعضاء. اطلب من المستخدم إدخال الأبعاد وتخزينها في متغير struct وطباعة مساحة المستطيل.

Input

```
Enter length: 5
Enter width: 6
```

Output

```
Rectangle area: 30.00
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Rectangle {
    float length;
    float width;
};

int main() {
    // Declare a struct variable
    struct Rectangle rectangle1;

    // Prompt the user to enter dimensions
    printf("Enter length: ");
    scanf("%f", &rectangle1.length);
    printf("Enter width: ");
    scanf("%f", &rectangle1.width);

    // Calculate and print the area of the rectangle
    float area = rectangle1.length * rectangle1.width;
    printf("Rectangle area: %.2f\n", area);

    return 0;
}
```

6- Write a program that uses a struct to represent a date with members day, month, and year. Prompt the user to enter a date, store it in a struct variable, and print the date.

اكتب برنامجًا يستخدم struct لتمثيل تاريخ الأعضاء باليوم والشهر والسنة. اطلب من المستخدم إدخال تاريخ، وتخزينه في متغير struct وطباعة التاريخ.

Input

```
Enter day: 29
Enter month: 5
Enter year: 2003
```

Output

```
Entered date: 29/5/2003
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Date {
    int day;
    int month;
    int year;
};

int main() {
    // Declare a struct variable
    struct Date currentDate;

    // Prompt the user to enter a date
    printf("Enter day: ");
    scanf("%d", &currentDate.day);
    printf("Enter month: ");
    scanf("%d", &currentDate.month);
    printf("Enter year: ");
    scanf("%d", &currentDate.year);

    // Print the entered date
    printf("Entered date: %d/%d/%d\n", currentDate.day, currentDate.month, currentDate.year);

    return 0;
}
```

7- Write a program that defines a struct called Circle with a member radius (float). Prompt the user to enter the radius of a circle, store it in a struct variable, and print the circle's area.

اكتب برنامجًا يحدد struct تسمى الدائرة ذات نصف قطر (float). اطلب من المستخدم إدخال نصف قطر الدائرة، وتخزينه في متغير struct وطباعة مساحة الدائرة.

Input

```
Enter the radius of the circle: 5.2
```

Output

```
Circle area: 84.91
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Circle {
    float radius;
};

int main() {
    // Declare a struct variable
    struct Circle myCircle;

    // Prompt the user to enter the radius
    printf("Enter the radius of the circle: ");
    scanf("%f", &myCircle.radius);

    // Calculate and print the area of the circle
    float area = 3.14 * myCircle.radius * myCircle.radius;
    printf("Circle area: %.2f\n", area);

    return 0;
}
```

8- Write a program using a struct to represent a triangle with members base and height (both floats). Prompt the user to enter the base and height, store them in a struct variable, and print the triangle's area.

اكتب برنامجًا باستخدام struct لتمثيل مثلث بقاعدة وارتفاعهم (both floats).
اطلب من المستخدم إدخال القاعدة والارتفاع، وتخزينهما في متغير struct وطباعة مساحة المثلث.

Input

```
Enter the base of the triangle: 2.6
Enter the height of the triangle: 6.2
```

Output

```
Triangle area: 8.06
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Triangle {
    float base;
    float height;
};

int main() {
    // Declare a struct variable
    struct Triangle myTriangle;

    // Prompt the user to enter the base and height
    printf("Enter the base of the triangle: ");
    scanf("%f", &myTriangle.base);
    printf("Enter the height of the triangle: ");
    scanf("%f", &myTriangle.height);

    // Calculate and print the area of the triangle
    float area = 0.5 * myTriangle.base * myTriangle.height;
    printf("Triangle area: %.2f\n", area);

    return 0;
}
```

9- Create a program that defines a struct called Employee with members name (string), id (integer), and salary (float). Create an instance of the struct, initialize its members, and print the employee information.

قم بإنشاء برنامج يحدد struct تسمى الموظف مع اسم الأعضاء (string)، والمعرف (integer)، والراتب (float). قم بإنشاء مثيل struct وتهيئة أعضائها، وطباعة معلومات الموظف.

Output

```
Employee Information:
Name: Alice
ID: 101
Salary: $55000.00
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

struct Employee {
    char name[50];
    int id;
    float salary;
};

int main() {
    // Declare and initialize a struct variable
    struct Employee employee1 = {"Alice", 101, 55000.0};

    // Print the employee information
    printf("Employee Information:\n");
    printf("Name: %s\n", employee1.name);
    printf("ID: %d\n", employee1.id);
    printf("Salary: $%.2f\n", employee1.salary);

    return 0;
}
```

10- Create a program that uses a struct named Car to represent information about a car, including its model and price. Instead of initializing the variables directly, prompt the user to input data for two cars and print their information.

قم بإنشاء برنامج يستخدم struct تسمى Car لتمثيل معلومات حول السيارة، بما في ذلك طرازها وسعرها. بدلاً من تهيئة المتغيرات مباشرة، اطلب من المستخدم إدخال بيانات لسيارتين وطباعة معلوماتهما.

Input

```
Enter details for Car 1:
Enter model: Toyota
Enter price: $5000

Enter details for Car 2:
Enter model: Honda
Enter price: $7000
```

Output

```
Car 1:
Model: Toyota
Price: $5000.00

Car 2:
Model: Honda
Price: $7000.00
```

Solution

```c
// www.gammal.tech
#include<stdio.h>

// Define the struct Car
struct Car {
    char model[50];
    float price;
};

int main() {
    // Declare individual variables for two cars
    struct Car car1, car2;

    // Prompt the user to input data for the first car
    printf("Enter details for Car 1:\n");
    printf("Enter model: ");
    scanf("%s", car1.model);
    printf("Enter price: $");
    scanf("%f", &car1.price);

    // Prompt the user to input data for the second car
    printf("\nEnter details for Car 2:\n");
    printf("Enter model: ");
    scanf("%s", car2.model);
    printf("Enter price: $");
    scanf("%f", &car2.price);

    // Print information for the first car
    printf("\nCar 1:\n");
    printf("Model: %s\n", car1.model);
    printf("Price: $%.2f\n", car1.price);
    printf("\n");

    // Print information for the second car
    printf("Car 2:\n");
    printf("Model: %s\n", car2.model);
    printf("Price: $%.2f\n", car2.price);
    printf("\n");

    return 0;
}
```