1- Write a program that takes a number as input and prints whether it's less than 10, equal to 10, or greater than 10.

اكتب برنامجًا يأخذ رقمًا كمدخل ويطبعه سواء كان أقل من 10 أو يساوي 10 أو أكبر من 10.

## Input

```
Enter a number: 12
```

## Output

```
The number is greater than 10.
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    switch (num) {
        case 10:
            printf("The number is equal to 10.\n");
            break;
        case 11 ... 100:
            printf("The number is greater than 10.\n");
            break;
        default:
            printf("The number is less than 10.\n");
    }

    return 0;
}
```

2- Write a program that checks if a given year is a leap year.

اكتب برنامجًا يتحقق مما إذا كانت سنة معينة سنة كبيسة.

## Input

```
Enter a year: 2004
```

## Output

```
2004 is a leap year.
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    switch (year % 4) {
        case 0:
            switch (year % 100) {
                case 0:
                    switch (year % 400) {
                        case 0:
                            printf("%d is a leap year.\n", year);
                            break;
                        default:
                            printf("%d is not a leap year.\n", year);
                    }
                    break;
                default:
                    printf("%d is a leap year.\n", year);
            }
            break;
        default:
            printf("%d is not a leap year.\n", year);
    }

    return 0;
}
```

3- Write a program that categorizes a student's score into different ranges.

اكتب برنامجًا يصنف درجات الطالب إلى نطاقات مختلفة.

## Input

```
Enter the student's score: 90
```

## Output

```
Grade: A
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int score;
    printf("Enter the student's score: ");
    scanf("%d", &score);

    switch (score / 10) {
        case 9 ... 10:
            printf("Grade: A\n");
            break;
        case 8:
            printf("Grade: B\n");
            break;
        case 7:
            printf("Grade: C\n");
            break;
        case 6:
            printf("Grade: D\n");
            break;
        default:
            printf("Grade: F\n");
    }

    return 0;
}
```

---

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

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

## Input

```
Enter a number: -6
```

## Output

```
The number is negative.
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    switch (num > 0) {
        case 1:
            printf("The number is positive.\n");
            break;
        case 0:
            switch (num < 0) {
                case 1:
                    printf("The number is negative.\n");
                    break;
                case 0:
                    printf("The number is zero.\n");
            }
    }

    return 0;
}
```

---

5- Write a program that categorizes a given temperature into different ranges (cold, mild, hot).

اكتب برنامجا يصنف درجة حرارة معينة إلى نطاقات مختلفة (باردة، معتدلة، ساخنة).

## Input

```
Enter the temperature: -9
```

## Output

```
Cold
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    float temperature;
    printf("Enter the temperature: ");
    scanf("%f", &temperature);

    switch ((int)temperature / 10) {
        case -100 ... 0:
            printf("Cold\n");
            break;
        case 1 ... 3:
            printf("Mild\n");
            break;
        case 4 ... 100:
            printf("Hot\n");
            break;
        default:
            printf("Invalid temperature\n");
    }

    return 0;
}
```

---

## 6- Write a program that checks if a given day of the week is a weekend or a weekday.

اكتب برنامجًا يتحقق مما إذا كان أحد أيام الأسبوع هو عطلة نهاية الأسبوع أم أحد أيام الأسبوع.

Input

```
Enter the day of the week (1-7): 6
```

Output

```
Weekend
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int day;
    printf("Enter the day of the week (1-7): ");
    scanf("%d", &day);

    switch (day) {
        case 1 ... 5:
            printf("Weekday\n");
            break;
        case 6 ... 7:
            printf("Weekend\n");
            break;
        default:
            printf("Invalid day\n");
    }

    return 0;
}
```

---

7- Write a program that determines if a given number is even or odd.

أكتب برنامج يحدد إذا كان العدد زوجي أو فردي.

Input

```
Enter a number: 3
```

Output

```
The number is odd.
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    switch (num % 2) {
        case 0:
            printf("The number is even.\n");
            break;
        case 1:
            printf("The number is odd.\n");
    }

    return 0;
}
```

---

8- Write a program that calculates the area of a geometric shape based on user input (1 for circle, 2 for rectangle).

اكتب برنامجًا يحسب مساحة شكل هندسي بناءً على مدخلات المستخدم (1 للدائرة، 2 للمستطيل).

Input & Output

```
Enter 1 for circle or 2 for rectangle: 2
Enter the length and width of the rectangle: 5 6
Area of the rectangle: 30.00
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int choice;
    printf("Enter 1 for circle or 2 for rectangle: ");
    scanf("%d", &choice);

    switch (choice) {
        case 1: {
            float radius;
            printf("Enter the radius of the circle: ");
            scanf("%f", &radius);
            printf("Area of the circle: %.2f\n", 3.14 * radius * radius);
            break;
        }
        case 2: {
            float length, width;
            printf("Enter the length and width of the rectangle: ");
            scanf("%f %f", &length, &width);
            printf("Area of the rectangle: %.2f\n", length * width);
            break;
        }
        default:
            printf("Invalid choice.\n");
    }

    return 0;
}
```

---

## 9- Write a program that checks if a given character is a vowel or a consonant.

اكتب برنامجًا يتحقق مما إذا كان الحرف المعطى حرفًا متحركًا أم ساكنًا.

## Input

```
Enter a character: E
```

## Output

```
E is a vowel.
```

## Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    char ch;
    printf("Enter a character: ");
    scanf(" %c", &ch);

    switch (ch) {
        case 'a': case 'e': case 'i': case 'o': case 'u':
        case 'A': case 'E': case 'I': case 'O': case 'U':
            printf("%c is a vowel.\n", ch);
            break;
        default:
            printf("%c is a consonant.\n", ch);
    }

    return 0;
}
```

---

## 10- Write a program that finds the maximum of three numbers.

اكتب برنامجا يجد الرقم الاكبر لثلاثة أرقام.

### Input

```
Enter three numbers: 3 6 4
```

### Output

```
Maximum: 6
```

# Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int num1, num2, num3;
    printf("Enter three numbers: ");
    scanf("%d %d %d", &num1, &num2, &num3);

    switch (num1 >= num2 && num1 >= num3) {
        case 1:
            printf("Maximum: %d\n", num1);
            break;
        case 0:
            switch (num2 >= num3) {
                case 1:
                    printf("Maximum: %d\n", num2);
                    break;
                case 0:
                    printf("Maximum: %d\n", num3);
            }
    }

    return 0;
}
```

---