1- Write a program that allows the user to input a number and prints whether the number is found in a predefined array or not.

اكتب برنامجًا يسمح للمستخدم بإدخال رقم وطباعة ما إذا كان الرقم موجودًا في array محددة مسبقًا أم لا.

Input

```
Enter a number: 90
```

Output

```
Not Found
Not Found
Not Found
Found
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, numbers[] = {8, 5, 6, 90, 3, 1};

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

    for (i = 0; i < 6; i++) {
        if (numbers[i] == target) {
            printf("Found\n");
            break;
        } else {
            printf("Not Found\n");
        }
    }

    return 0;
}
```

2- Modify the previous program to handle the case when the number is not the first element in the array.

قم بتعديل البرنامج السابق للتعامل مع الحالة عندما لا يكون الرقم هو العنصر الأول في array.

Input

```
Enter a number: 6
```

Output

```
Found
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, numbers[] = {8, 5, 6, 90, 3, 1};

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

    int found = 0; // Flag to track if the number is found

    for (i = 0; i < 6; i++) {
        if (numbers[i] == target) {
            found = 1;
            break;
        }
    }

    if (found) {
        printf("Found\n");
    } else {
        printf("Not Found\n");
    }

    return 0;
}
```

3- Modify the program to count and print the number of occurrences of the target number in the array.

قم بتعديل البرنامج لحساب وطباعة عدد تكرارات الرقم الهدف في array.

Input

```
Enter a number: 5
```

Output

```
Found 1 times
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, numbers[] = {8, 5, 6, 90, 3, 1};

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

    int count = 0;

    for (i = 0; i < 6; i++) {
        if (numbers[i] == target) {
            count++;
        }
    }

    if (count > 0) {
        printf("Found %d times\n", count);
    } else {
        printf("Not Found\n");
    }

    return 0;
}
```

4- Modify the program to print the indices (positions) where the target number is found in the array.

قم بتعديل البرنامج لطباعة المؤشرات (المواضع) حيث يوجد الرقم المستهدف في array.

Input

```
Enter a number: 90
```

Output

```
Found at index 3
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, numbers[] = {8, 5, 6, 90, 3, 1};

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

    int found = 0;

    for (i = 0; i < 6; i++) {
        if (numbers[i] == target) {
            found = 1;
            printf("Found at index %d\n", i);
        }
    }

    if (!found) {
        printf("Not Found\n");
    }

    return 0;
}
```

5- Modify the program to get number and size of array and target from user

قم بتعديل البرنامج للحصول على رقم وحجم array وtarget من المستخدم

Input

```
Enter the size of the array: 5
Enter 5 numbers for the array:
1 5 5 3 2
Enter a number: 5
```

Output

```
Found at index 1
Found at index 2
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, size;

    printf("Enter the size of the array: ");
    scanf("%d", &size);

    int numbers[size];

    printf("Enter %d numbers for the array:\n", size);
    for (i = 0; i < size; i++) {
        scanf("%d", &numbers[i]);
    }

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

    int found = 0;

    for (i = 0; i < size; i++) {
        if (numbers[i] == target) {
            found = 1;
            printf("Found at index %d\n", i);
        }
    }

    if (!found) {
        printf("Not Found\n");
    }

    return 0;
}
```

6- Modify the program to count and print the total occurrences of all numbers in the array.

قم بتعديل البرنامج لحساب وطباعة إجمالي التكرارات لجميع الأرقام في array.

Input

```
Enter the size of the array: 5
Enter 5 numbers for the array:
2 3 6 6 6
Enter a number: 6
```

Output

```
Found 3 times
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int i, target, size;

    printf("Enter the size of the array: ");
    scanf("%d", &size);

    int numbers[size];

    printf("Enter %d numbers for the array:\n", size);
    for (i = 0; i < size; i++) {
        scanf("%d", &numbers[i]);
    }

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

    int count = 0;

    for (i = 0; i < size; i++) {
        if (numbers[i] == target) {
            count++;
        }
    }

    if (count > 0) {
        printf("Found %d times\n", count);
    } else {
        printf("Not Found\n");
    }

    return 0;
}
```

7- Modify the program to find and print the sum of all numbers in the array.

قم بتعديل البرنامج للعثور على مجموع كافة الأرقام في array وطباعتها.

Input

```
Enter the size of the array: 4
Enter 4 numbers for the array:
1 2 5 9
```

Output

```
Sum of numbers: 17
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    printf("Enter the size of the array: ");
    scanf("%d", &size);

    int numbers[size];

    printf("Enter %d numbers for the array:\n", size);
    for (i = 0; i < size; i++) {
        scanf("%d", &numbers[i]);
        sum += numbers[i];
    }

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

    return 0;
}
```

8- Modify the program to find and print the average of all numbers in the array.

قم بتعديل البرنامج للعثور على متوسط جميع الأرقام في array وطباعته.

Input

```
Enter the size of the array: 5
Enter 5 numbers for the array:
1 2 3 4 5
```

Output

```
Average of numbers: 3.00
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

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

    printf("Enter the size of the array: ");
    scanf("%d", &size);

    int numbers[size];

    printf("Enter %d numbers for the array:\n", size);
    for (i = 0; i < size; i++) {
        scanf("%d", &numbers[i]);
        sum += numbers[i];
    }

    float average = (float)sum / size;

    printf("Average of numbers: %.2f\n", average);

    return 0;
}
```

9- Write a program to copy elements from one array to another.

اكتب برنامجًا لنسخ العناصر من array إلى أخرى.

Output

```
Elements in arr2: 1 2 3 4 5
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int arr1[] = {1, 2, 3, 4, 5};
    int arr2[5];
    int size = sizeof(arr1) / sizeof(arr1[0]);

    for (int i = 0; i < size; i++) {
        arr2[i] = arr1[i];
    }

    printf("Elements in arr2: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", arr2[i]);
    }

    return 0;
}
```

10- Write a program to check if an array is palindrome.

اكتب برنامجًا للتحقق مما إذا كانت array is palindrome..

Output

```
The array is a palindrome.
```

Solution

```c
// www.gammal.tech

#include<stdio.h>

int main() {
    int arr[] = {1, 2, 3, 2, 1};
    int size = sizeof(arr) / sizeof(arr[0]);
    int isPalindrome = 1; // Assume it's a palindrome

    for (int i = 0; i < size / 2; i++) {
        if (arr[i] != arr[size - i - 1]) {
            isPalindrome = 0;
            break;
        }
    }

    if (isPalindrome) {
        printf("The array is a palindrome.\n");
    } else {
        printf("The array is not a palindrome.\n");
    }

    return 0;
}
```
