

1- Write a program that searches for the number of cars of a specific brand in an exhibition and prints the count.

كتابة برنامج يبحث عن عدد السيارات من ماركة معينة في المعرض وطباعة العدد.

Input

```
Enter the brand: BMW
```

Output

```
Number of cars of brand BMW: 2
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    for (int i = 0; i < 6; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
        }
    }

    printf("Number of cars of brand %s: %d\n", searchBrand, count);
    return 0;
}
```

2- Write a program with a function to count the number of cars of a specific brand in an exhibition.

اكتب برنامجًا يتضمن function لحساب عدد السيارات من ماركة معينة في المعرض.

Input

Enter the brand: Mazda

Output

Number of cars of brand Mazda: 1

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int countCars(char brands[][100], int size, char searchBrand[]) {
    int count = 0;

    for (int i = 0; i < size; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
        }
    }

    return count;
}

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    int result = countCars(brands, 6, searchBrand);

    printf("Number of cars of brand %s: %d\n", searchBrand, result);
    return 0;
}
```

3- Write a program that counts the occurrences of a specific car brand using a while loop.

اكتب برنامجًا يقوم بإحصاء تكرارات ماركة معينة من السيارات باستخدام حلقة while.

Input

```
Enter the brand: Mercedes
```

Output

```
Number of cars of brand Mercedes: 3
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0, i = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    while (i < 6) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
        }
        i++;
    }

    printf("Number of cars of brand %s: %d\n", searchBrand, count);
    return 0;
}
```

4- Write a program that counts the occurrences of a specific car brand using a do-while loop.

اكتب برنامجًا يقوم بإحصاء عدد مرات ظهور ماركة سيارة معينة باستخدام حلقة do-while.

Input

```
Enter the brand: BMW
```

Output

```
Number of cars of brand BMW: 2
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0, i = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    do {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
        }
        i++;
    } while (i < 6);

    printf("Number of cars of brand %s: %d\n", searchBrand, count);
    return 0;
}
```

5- Write a program that counts the occurrences of a specific car brand and displays their positions.

كتابة برنامج يقوم بإحصاء تكرارات ماركة سيارة معينة ويعرض مواقعها.

Input

```
Enter the brand: BMW
```

Output

```
Car of brand BMW found at position 2
Car of brand BMW found at position 5
Total number of cars of brand BMW: 2
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    for (int i = 0; i < 6; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            printf("Car of brand %s found at position %d\n", searchBrand, i + 1);
            count++;
        }
    }

    printf("Total number of cars of brand %s: %d\n", searchBrand, count);
    return 0;
}
```

6- Write a program that counts the occurrences of a specific car brand and calculates their average position.

اكتب برنامجًا يقوم بإحصاء تكرارات ماركة سيارة معينة ويحسب متوسط موضعها.

Input

```
Enter the brand: BMW
```

Output

```
Average position of cars of brand BMW: 3.50
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0, totalPosition = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    for (int i = 0; i < 6; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            totalPosition += i + 1;
            count++;
        }
    }

    if (count > 0) {
        float averagePosition = (float)totalPosition / count;
        printf("Average position of cars of brand %s: %.2f\n", searchBrand, averagePosition);
    } else {
        printf("No cars found of brand %s\n", searchBrand);
    }

    return 0;
}
```

7- Write a program that counts the occurrences of a specific car brand using pointers.

اكتب برنامجاً يقوم بإحصاء تكرارات ماركة سيارة معينة باستخدام pointers.

Input

Enter the brand: Mazda

Output

Number of cars of brand Mazda: 1

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int count = 0;
    char (*ptr)[100] = brands;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    for (int i = 0; i < 6; i++) {
        if (strcmp(searchBrand, *(ptr + i)) == 0) {
            count++;
        }
    }

    printf("Number of cars of brand %s: %d\n", searchBrand, count);
    return 0;
}
```

8- Write a program that counts the occurrences of a specific car brand within a user-defined range using a function.

اكتب برنامجًا يقوم بإحصاء تكرارات ماركة سيارة معينة ضمن نطاق محدد من قبل المستخدم باستخدام function.

Input

```
Enter the brand: BMW
Enter the range start and end (space-separated): 2 3
```

Output

```
Number of cars of brand BMW in the range: 1
```

Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int countCarsInRange(char brands[][100], int start, int end, char searchBrand[]) {
    int count = 0;

    for (int i = start; i <= end; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
        }
    }

    return count;
}

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int start, end;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    printf("Enter the range start and end (space-separated): ");
    scanf("%d %d", &start, &end);

    int result = countCarsInRange(brands, start - 1, end - 1, searchBrand);

    printf("Number of cars of brand %s in the range: %d\n", searchBrand, result);
    return 0;
}
```

9- Write a program that counts the occurrences of a specific car brand and calculates the sum of their positions within a user-defined range.

اكتب برنامجاً يحصي تكرارات ماركة سيارة معينة ويحسب مجموع مواضعها ضمن نطاق محدد من قبل المستخدم.

Input

```
Enter the brand: BMW
Enter the range start and end (space-separated): 2 6
```

Output

```
Number of cars of brand BMW in the range: 2
Sum of positions: 7
```


Solution

```
// www.gammal.tech

#include <stdio.h>
#include <string.h>

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];
    int start, end, count = 0, sumPositions = 0;

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    printf("Enter the range start and end (space-separated): ");
    scanf("%d %d", &start, &end);

    for (int i = start - 1; i < end; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            count++;
            sumPositions += i + 1;
        }
    }

    if (count > 0) {
        printf("Number of cars of brand %s in the range: %d\n", searchBrand, count);
        printf("Sum of positions: %d\n", sumPositions);
    } else {
        printf("No cars found of brand %s in the range.\n", searchBrand);
    }

    return 0;
}
```

10- Write a program that counts the occurrences of a specific car brand and sorts their positions in ascending order using a function and arrays.

اكتب برنامجًا يقوم بإحصاء تكرارات ماركة سيارة معينة وترتيب مواقعها بترتيب تصاعدي باستخدام function and arrays.

Input

```
Enter the brand: BMW
```

Output

```
Positions of cars of brand BMW: 2 5
```

Solution

```

// www.gammal.tech

#include <stdio.h>
#include <string.h>

void sortPositions(int positions[], int size) {
    for (int i = 0; i < size - 1; i++) {
        for (int j = 0; j < size - i - 1; j++) {
            if (positions[j] > positions[j + 1]) {
                int temp = positions[j];
                positions[j] = positions[j + 1];
                positions[j + 1] = temp;
            }
        }
    }
}

void displayAndSortPositions(char brands[][100], int size, char searchBrand[]) {
    int positions[20];
    int count = 0;

    for (int i = 0; i < size; i++) {
        if (strcmp(searchBrand, brands[i]) == 0) {
            positions[count++] = i + 1;
        }
    }

    if (count > 0) {
        printf("Positions of cars of brand %s: ", searchBrand);

        sortPositions(positions, count);

        for (int i = 0; i < count; i++) {
            printf("%d ", positions[i]);
        }

        printf("\n");
    } else {
        printf("No cars found of brand %s\n", searchBrand);
    }
}

int main() {
    char brands[][100] = {"Mercedes", "BMW", "Mazda", "Mercedes", "BMW", "Mercedes"};
    char searchBrand[100];

    printf("Enter the brand: ");
    scanf("%s", searchBrand);

    displayAndSortPositions(brands, 6, searchBrand);

    return 0;
}
```
