

Arrays

1. Array of Size 100

```
#include <stdio.h>
```

```
int main() {
```

```
    int arr[100];
```

```
    // Assign numbers 1-100
```

```
    for (int i = 0; i < 100; i++) {
```

```
        arr[i] = i + 1;
```

```
    }
```

```
    // Print all numbers
```

```
    printf("All numbers:\n");
```

```
    for (int i = 0; i < 100; i++) {
```

```
        printf("%d ", arr[i]);
```

```
        if ((i + 1) % 10 == 0) { // Print 10 numbers per line
```

```
            printf("\n");
```

```
        }
```

```
    }
```

```
    // Print even elements
```

```
    printf("\nEven elements:\n");
```

```
    for (int i = 0; i < 100; i++) {
```

```
        if (arr[i] % 2 == 0) {
```

```
            printf("%d ", arr[i]);
```

```
        }
```

```
    }
```

```

// Print odd elements

printf("\n\nOdd elements:\n");
for (int i = 0; i < 100; i++) {
    if (arr[i] % 2 != 0) {
        printf("%d ", arr[i]);
    }
}

// Add 5 to each element and print
printf("\n\nElements after adding 5:\n");
for (int i = 0; i < 100; i++) {
    arr[i] += 5; // Add 5 to each element
    printf("%d ", arr[i]);
    if ((i + 1) % 10 == 0) { // Print 10 numbers per line
        printf("\n");
    }
}

return 0;
}

```

2. Character Array for Name

```

#include <stdio.h>

int main() {
    // Declare a character array without size but initialize it
    char name[] = "John Doe";
    printf("Name: ");
    for (int i = 0; name[i] != '\0'; i++) {

```

```
        printf("%c", name[i]);  
    }  
    printf("\n");  
    return 0;  
}
```

3. Find Largest and Smallest in Array

```
#include <stdio.h>  
  
int main() {  
    int arr[10];  
    int largest, smallest;  
    int largest_index, smallest_index;  
    printf("Enter 10 elements:\n");  
    for (int i = 0; i < 10; i++) {  
        printf("Element %d: ", i + 1);  
        scanf("%d", &arr[i]);  
    }  
    // Initialize with first element  
    largest = smallest = arr[0];  
    largest_index = smallest_index = 0;  
  
    // Find largest and smallest  
    for (int i = 1; i < 10; i++) {  
        if (arr[i] > largest) {  
            largest = arr[i];  
            largest_index = i;  
        }  
    }
```

```

        if (arr[i] < smallest) {
            smallest = arr[i];
            smallest_index = i;
        }
    }

    // Print the array
    printf("\nArray elements: ");
    for (int i = 0; i < 10; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n\nLargest element: %d (at index %d)\n", largest, largest_index);
    printf("Smallest element: %d (at index %d)\n", smallest, smallest_index);
    return 0;
}

```

6. Search Element in Array

```

#include <stdio.h>

// Function to search for an element in an array
int search(int arr[], int size, int element) {
    for (int i = 0; i < size; i++) {
        if (arr[i] == element) {
            return i; // Return index if found
        }
    }
    return -1; // Return -1 if not found
}

int main() {

```

```

int arr[10];

int search_element, result;

printf("Enter 10 elements:\n");

for (int i = 0; i < 10; i++) {

    printf("Element %d: ", i + 1);

    scanf("%d", &arr[i]);

}

printf("\nEnter element to search: ");

scanf("%d", &search_element);

result = search(arr, 10, search_element);

if (result != -1) {

    printf("Element %d found at index %d\n", search_element, result);

} else {

    printf("Element %d not found in the array\n", search_element);

}

return 0;

}

```

7. Print Array in Reverse Order

```

#include <stdio.h>

int main() {

    int arr[10];

    printf("Enter 10 elements:\n");

    for (int i = 0; i < 10; i++) {

        printf("Element %d: ", i + 1);

        scanf("%d", &arr[i]);

    }
}

```

```

printf("\nArray in original order: ");
for (int i = 0; i < 10; i++) {
    printf("%d ", arr[i]);
}
printf("\nArray in reverse order: ");
for (int i = 9; i >= 0; i--) {
    printf("%d ", arr[i]);
}
printf("\n");
return 0;
}

```

8. Reverse an Array By Swapping

```

#include <stdio.h>

int main() {
    int arr[5] = {1, 2, 3, 4, 5};
    int temp;
    int size = 5;
    printf("Original array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", arr[i]);
    }

    // Reverse by swapping elements
    for (int i = 0; i < size / 2; i++) {
        temp = arr[i];
        arr[i] = arr[size - 1 - i];
    }
}

```

```

        arr[size - 1 - i] = temp;
    }
    printf("\nReversed array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
    return 0;
}

```

9. Print Integer in Binary Format

```

#include <stdio.h>

void printBinary(int n) {
    // Binary array to store binary digits
    int binary[32];
    int i = 0;
    // Edge case for 0
    if (n == 0) {
        printf("0");
        return;
    }
    // Store binary digits
    while (n > 0) {
        binary[i] = n % 2;
        n = n / 2;
        i++;
    }
}

```

```

// Print in reverse order

printf("Binary: ");
for (int j = i - 1; j >= 0; j--) {
    printf("%d", binary[j]);
}

printf("\n");
}

int main() {
    int num;

    printf("Enter an integer: ");
    scanf("%d", &num);

    printBinary(num);

    return 0;
}

```

10. Swap Two Arrays in Reverse Order

```

#include <stdio.h>

int main() {
    int array1[5] = {1, 2, 3, 4, 5};
    int array2[5] = {6, 7, 8, 9, 10};
    int temp, size = 5;

    printf("Before swapping:\n");

    printf("Array1: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", array1[i]);
    }

    printf("\nArray2: ");

```



```

for (int i = 0; i < size; i++) {
    printf("%d ", array2[i]);
}

// Swap arrays in reverse order
for (int i = 0; i < size; i++) {
    temp = array1[i];
    array1[i] = array2[size - 1 - i];
    array2[size - 1 - i] = temp;
}

printf("\n\nAfter swapping in reverse order:\n");
printf("Array1: ");
for (int i = 0; i < size; i++) {
    printf("%d ", array1[i]);
}

printf("\nArray2: ");
for (int i = 0; i < size; i++) {
    printf("%d ", array2[i]);
}

printf("\n");
return 0;
}

```

11. Average of Students' Marks

```

#include <stdio.h>

// Function to calculate average of marks
float calculateAverage(int marks[], int size) {
    float sum = 0;

```

```

    for (int i = 0; i < size; i++) {
        sum += marks[i];
    }
    return sum / size;
}

int main() {
    int num_students;

    printf("Enter number of students: ");
    scanf("%d", &num_students);

    if (num_students <= 0) {
        printf("Invalid number of students.\n");
        return 1;
    }

    int marks[num_students];

    printf("Enter marks for each student:\n");
    for (int i = 0; i < num_students; i++) {
        printf("Student %d: ", i + 1);
        scanf("%d", &marks[i]);
    }

    float average = calculateAverage(marks, num_students);
    printf("Average marks: %.2f\n", average);

    return 0;
}

```

12. Convert Negative Numbers to Positive

```
#include <stdio.h>
```

```
// Function to convert negative to positive
```

```
void convertToPositive(int arr[], int size) {  
    for (int i = 0; i < size; i++) {  
        if (arr[i] < 0) {  
            arr[i] = -arr[i];  
        }  
    }  
}  
  
int main() {  
    int size;  
  
    printf("Enter array size: ");  
    scanf("%d", &size);  
  
    if (size <= 0) {  
        printf("Invalid array size.\n");  
        return 1;  
    }  
  
    int arr[size];  
  
    printf("Enter %d elements:\n", size);  
    for (int i = 0; i < size; i++) {  
        printf("Element %d: ", i + 1);  
        scanf("%d", &arr[i]);  
    }  
  
    printf("\nOriginal array: ");  
    for (int i = 0; i < size; i++) {  
        printf("%d ", arr[i]);  
    }  
  
    convertToPositive(arr, size);  
}
```

```

printf("\nArray after converting negatives to positives: ");
for (int i = 0; i < size; i++) {
    printf("%d ", arr[i]);
}
printf("\n");
return 0;
}

```

13. Check if Two Arrays are Equal

```

#include <stdio.h>

// Function to check if arrays are equal
int areArraysEqual(int arr1[], int size1, int arr2[], int size2) {
    // Check if sizes are different
    if (size1 != size2) {
        return 0; // Not equal
    }
    // Check each element
    for (int i = 0; i < size1; i++) {
        if (arr1[i] != arr2[i]) {
            return 0; // Not equal
        }
    }
    return 1; // Equal
}

int main() {
    int size1, size2;
    printf("Enter size of first array: ");

```

```
scanf("%d", &size1);

printf("Enter size of second array: ");

scanf("%d", &size2);

if (size1 <= 0 || size2 <= 0) {

    printf("Invalid array size.\n");

    return 1;

}

int arr1[size1], arr2[size2];

printf("Enter elements for first array:\n");

for (int i = 0; i < size1; i++) {

    printf("Element %d: ", i + 1);

    scanf("%d", &arr1[i]);

}

printf("Enter elements for second array:\n");

for (int i = 0; i < size2; i++) {

    printf("Element %d: ", i + 1);

    scanf("%d", &arr2[i]);

}

int result = areArraysEqual(arr1, size1, arr2, size2);

if (result == 1) {

    printf("Arrays are equal.\n");

} else {

    printf("Arrays are not equal.\n");

}

return 0;

}
```

14. Count Occurrences of Largest Number

```
#include <stdio.h>
```

```
// Function to find largest number and count occurrences
```

```
int countLargestOccurrences(int arr[], int size) {
```

```
    if (size <= 0) {
```

```
        return 0;
```

```
    }
```

```
    // Find the largest number
```

```
    int largest = arr[0];
```

```
    for (int i = 1; i < size; i++) {
```

```
        if (arr[i] > largest) {
```

```
            largest = arr[i];
```

```
        }
```

```
    }
```

```
    // Count occurrences of largest number
```

```
    int count = 0;
```

```
    for (int i = 0; i < size; i++) {
```

```
        if (arr[i] == largest) {
```

```
            count++;
```

```
        }
```

```
    }
```

```
    return count;
```

```
}
```

```
int main() {
```

```
    int size;
```

```
    printf("Enter array size: ");
```

```
scanf("%d", &size);

if (size <= 0) {
    printf("Invalid array size.\n");
    return 1;
}

int arr[size];

printf("Enter %d elements:\n", size);

for (int i = 0; i < size; i++) {
    printf("Element %d: ", i + 1);
    scanf("%d", &arr[i]);
}

int largestCount = countLargestOccurrences(arr, size);

// Find the largest number to display in the output

int largest = arr[0];

for (int i = 1; i < size; i++) {
    if (arr[i] > largest) {
        largest = arr[i];
    }
}

printf("Biggest number %d is repeated %d times.\n", largest, largestCount);

return 0;
}
```