LOOP Practice questions:

Reverse a digit
Check if a digit is a palindrome
Count number of digits
Sum of the digits
Fibonacci series
Sum of numbers from 1 to N
Factorial of numbers from 1 to N
Check if a number is a perfect number-Homework
Check if a number is an armstrong number-Homework
Check if a number is a prime number-Homework

ARRAY PRACTICE QUESTIONS:

Print Array and Reverse Order:

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Array: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }

    printf("\nReverse Array: ");
    for (int i = n - 1; i >= 0; i--) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

Find Largest and Smallest Element in Array:

```c
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    int largest = arr[0], smallest = arr[0];
    for (int i = 1; i < n; i++) {
        if (arr[i] > largest) largest = arr[i];
        if (arr[i] < smallest) smallest = arr[i];
    }

    printf("Largest: %d\nSmallest: %d\n", largest, smallest);
    return 0;
}
```

3. Sort in Ascending Order & Descending Order

```c
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    // Ascending order
    for (int i = 0; i < n - 1; i++) {
        for (int j = i + 1; j < n; j++) {
            if (arr[i] > arr[j]) {
                int temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
```

```
            }
        }
    }

    printf("Array in Ascending Order: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    // Descending order
    for (int i = 0; i < n - 1; i++) {
        for (int j = i + 1; j < n; j++) {
            if (arr[i] < arr[j]) {
                int temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }

    printf("Array in Descending Order: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");

    return 0;
}
```

4. Second Largest and Second Smallest in Array

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }
```

```
    int largest = arr[0], secondLargest = -1;
    int smallest = arr[0], secondSmallest = -1;

    for (int i = 1; i < n; i++) {
        if (arr[i] > largest) {
            secondLargest = largest;
            largest = arr[i];
        } else if (arr[i] > secondLargest && arr[i] != largest) {
            secondLargest = arr[i];
        }

        if (arr[i] < smallest) {
            secondSmallest = smallest;
            smallest = arr[i];
        } else if (arr[i] < secondSmallest && arr[i] != smallest) {
            secondSmallest = arr[i];
        }
    }

    printf("Second Largest: %d\nSecond Smallest: %d\n", secondLargest, secondSmallest);
    return 0;
}
```

5. Calculate Sum and Average of Elements in Array

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];
    int sum = 0;

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
        sum += arr[i];
    }

    float average = sum / (float)n;
    printf("Sum: %d\nAverage: %.2f\n", sum, average);
    return 0;
```

```
}
```

. Print Even and Odd Elements

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Even Elements: ");
    for (int i = 0; i < n; i++) {
        if (arr[i] % 2 == 0) {
            printf("%d ", arr[i]);
        }
    }

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

    return 0;
}
```

7. Count the Number of Even and Odd Numbers in Array

```
#include <stdio.h>

int main() {
    int n, evenCount = 0, oddCount = 0;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];
```

```
    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    for (int i = 0; i < n; i++) {
        if (arr[i] % 2 == 0) {
            evenCount++;
        } else {
            oddCount++;
        }
    }

    printf("Number of Even elements: %d\n", evenCount);
    printf("Number of Odd elements: %d\n", oddCount);
    return 0;
}
```

8. Print Positive and Negative Elements in Array

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Positive Elements: ");
    for (int i = 0; i < n; i++) {
        if (arr[i] > 0) {
            printf("%d ", arr[i]);
        }
    }

    printf("\nNegative Elements: ");
    for (int i = 0; i < n; i++) {
        if (arr[i] < 0) {
            printf("%d ", arr[i]);
```

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

    return 0;
}
```

. Count Number of Positive and Negative Elements in Array

```
#include <stdio.h>

int main() {
    int n, posCount = 0, negCount = 0;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    for (int i = 0; i < n; i++) {
        if (arr[i] > 0) {
            posCount++;
        } else if (arr[i] < 0) {
            negCount++;
        }
    }

    printf("Number of Positive elements: %d\n", posCount);
    printf("Number of Negative elements: %d\n", negCount);
    return 0;
}
```

Print the Duplicate Elements in Array

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
```

```
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Duplicate Elements: ");
    for (int i = 0; i < n; i++) {
        for (int j = i + 1; j < n; j++) {
            if (arr[i] == arr[j]) {
                printf("%d ", arr[i]);
                break;  // Move to the next element after finding a duplicate
            }
        }
    }
    printf("\n");

    return 0;
}
```

Print the Frequency Count of Each Element in Array

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n], freq[n];

    printf("Enter elements: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
        freq[i] = -1; // Initialize frequency array with -1
    }

    for (int i = 0; i < n; i++) {
        int count = 1;
        for (int j = i + 1; j < n; j++) {
            if (arr[i] == arr[j]) {
                count++;
                freq[j] = 0; // Mark duplicate elements as counted
            }
        }
        if (freq[i] != 0) {
            freq[i] = count;
        }
```

```
    }

    printf("Frequency of Elements:\n");
    for (int i = 0; i < n; i++) {
        if (freq[i] != 0) {
            printf("%d occurs %d times\n", arr[i], freq[i]);
        }
    }

    return 0;
}
```

Copy Elements of One Array to Another

```
#include <stdio.h>

int main() {
    int n;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr1[n], arr2[n];

    printf("Enter elements for array: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr1[i]);
    }

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

    printf("Elements of the copied array: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr2[i]);
    }
    printf("\n");

    return 0;
}
```

Addition and Subtraction of Two Arrays

```
#include <stdio.h>

int main() {
    int n;
```

```
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr1[n], arr2[n], sum[n], diff[n];

    printf("Enter elements for first array: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr1[i]);
    }

    printf("Enter elements for second array: ");
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr2[i]);
    }

    for (int i = 0; i < n; i++) {
        sum[i] = arr1[i] + arr2[i];
        diff[i] = arr1[i] - arr2[i];
    }

    printf("Sum of arrays: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", sum[i]);
    }
    printf("\n");

    printf("Difference of arrays: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", diff[i]);
    }
    printf("\n");

    return 0;
}
```

. Linear Search: Check if an Element is Found in the Array

```
#include <stdio.h>

int main() {
    int n, target, found = 0;
    printf("Enter number of elements: ");
    scanf("%d", &n);
    int arr[n];

    printf("Enter elements: ");
```

```
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    printf("Enter the element to search: ");
    scanf("%d", &target);

    for (int i = 0; i < n; i++) {
        if (arr[i] == target) {
            printf("Element %d found at position %d\n", target, i + 1);
            found = 1;
            break;
        }
    }

    if (!found) {
        printf("Element %d not found in the array.\n", target);
    }

    return 0;
}
```