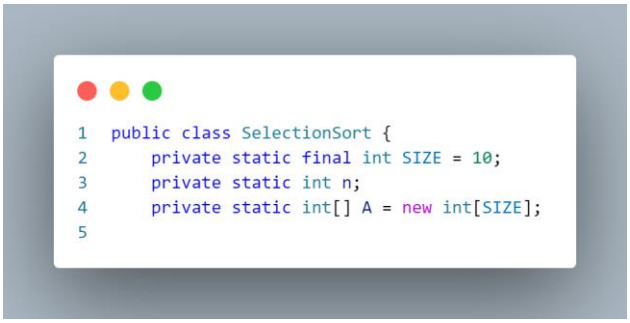
SelectionSort

SelectionSort Class

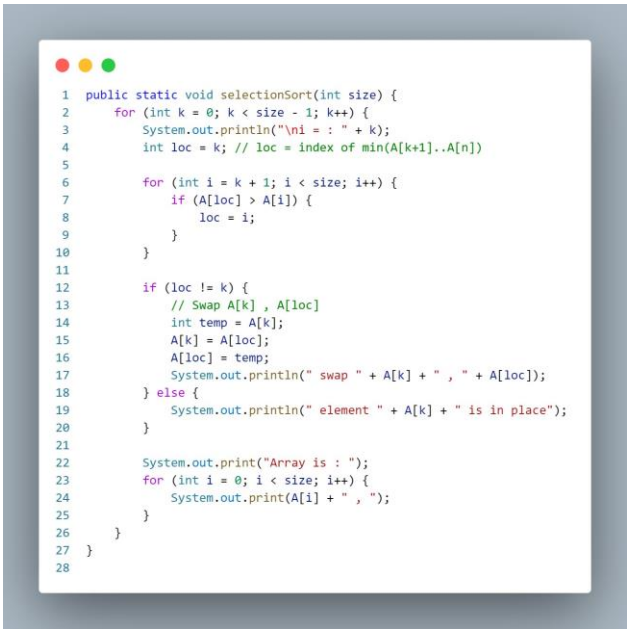


```java
public class SelectionSort {
    private static final int SIZE = 10;
    private static int n;
    private static int[] A = new int[SIZE];

```

Variables

- SIZE: Constant representing the size of the array (A) set to 10.
- n: Variable storing the length of the input array.
- A[]: Array of integers to be sorted.

selectionSort(int size)

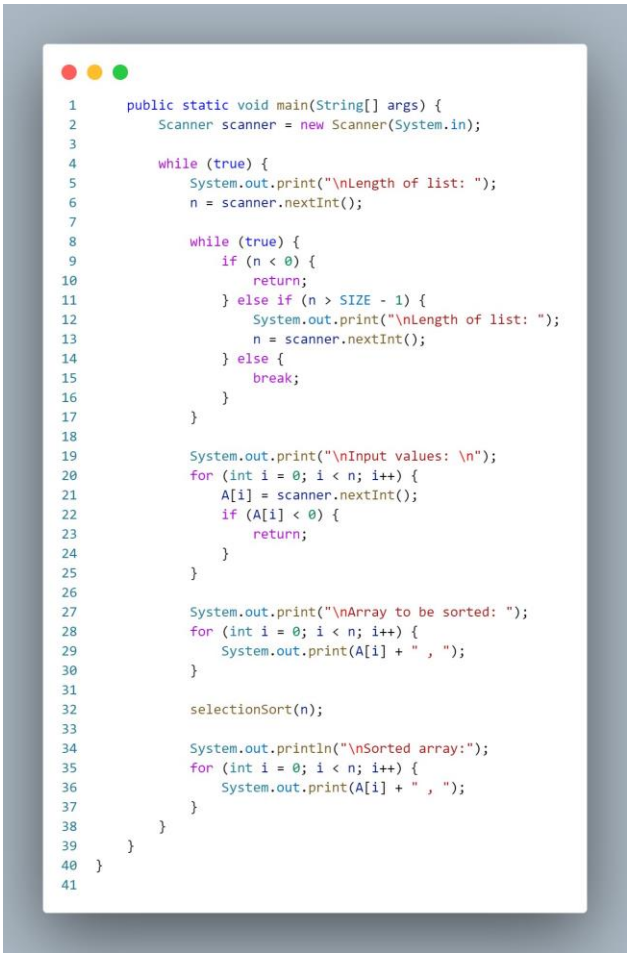


```java
public static void selectionSort(int size) {
    for (int k = 0; k < size - 1; k++) {
        System.out.println("\ni = : " + k);
        int loc = k; // loc = index of min(A[k+1]..A[n])

        for (int i = k + 1; i < size; i++) {
            if (A[loc] > A[i]) {
                loc = i;
            }
        }

        if (loc != k) {
            // Swap A[k] , A[loc]
            int temp = A[k];
            A[k] = A[loc];
            A[loc] = temp;
            System.out.println(" swap " + A[k] + " , " + A[loc]);
        } else {
            System.out.println(" element " + A[k] + " is in place");
        }

        System.out.print("Array is : ");
        for (int i = 0; i < size; i++) {
            System.out.print(A[i] + " , ");
        }
    }
}

```

- Purpose: Performs the selection sort algorithm on the array.
- Parameters: size - Size of the array to be sorted.

- Algorithm:Iterates through the array and for each index, finds the minimum element in the unsorted portion of the array.Swaps the minimum element with the current index element if a smaller element is found.Displays the swapping or the element that is already in place for each iteration.Finally, displays the sorted array.

main(String[] args)



```
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        while (true) {
            System.out.print("\nLength of list: ");
            n = scanner.nextInt();

            while (true) {
                if (n < 0) {
                    return;
                } else if (n > SIZE - 1) {
                    System.out.print("\nLength of list: ");
                    n = scanner.nextInt();
                } else {
                    break;
                }
            }

            System.out.print("\nInput values: \n");
            for (int i = 0; i < n; i++) {
                A[i] = scanner.nextInt();
                if (A[i] < 0) {
                    return;
                }
            }

            System.out.print("\nArray to be sorted: ");
            for (int i = 0; i < n; i++) {
                System.out.print(A[i] + " , ");
            }

            selectionSort(n);

            System.out.println("\nSorted array:");
            for (int i = 0; i < n; i++) {
                System.out.print(A[i] + " , ");
            }
        }
    }
}

```

- Purpose: Allows user input to initialize the array and display the sorted result.
- Behavior:Accepts input for the length of the list (n) and its values.Validates the input length and values to ensure they are within appropriate bounds and not negative.Displays the initial array.Calls the selectionSort() method to sort the array.Displays the sorted array.