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Quick Sort

```
#include <iostream>

using namespace std;

// Swap Function
void swap(int *a, int *b)
{
    int t = *a;
    *a = *b;
    *b = t;
}

// Print Function
void printArray(int array[], int size)
{
    int i;
    for (i = 0; i < size; i++)
        cout << array[i] << " ";
    cout << endl;
}

// function to rearrange array
int partition(int array[], int low, int high)
{

```

```

        int pivot = array[high];
        int i = (low - 1);
        for (int j = low; j < high; j++)
        {
            if (array[j] <= pivot)
            {
                i++;
                swap(&array[i], &array[j]);
            }
        }
        swap(&array[i + 1], &array[high]);
        return (i + 1);
    }
}

```

```

void quickSort(int array[], int low, int high)
{
    if (low < high)
    {
        int pi = partition(array, low, high);
        quickSort(array, low, pi - 1);
        quickSort(array, pi + 1, high);
    }
}

```

```

int main() {
    int x[] = {9,5,0,1,15,2,6,3};
    int n = sizeof(x) / sizeof(x[0]);
    cout << "Unsorted Array: \n";
    printArray(x, n);
    quickSort(x, 0, n - 1);
    cout << "Sorted array in ascending order: \n";
    printArray(x, n);
}

```

}

Unsorted Array:

9 5 0 1 15 2 6 3

Sorted array in ascending order:

0 1 2 3 5 6 9 15

Time Complexity

Best

$O(n \log n)$

Worst

$O(n^2)$

Average

$O(n \log n)$