

PRN-23UAI313

EXP-4

```
#include <iostream>
```

```
void swap(int& a, int& b)
```

```
{
```

```
int temp = a;
```

```
a = b;
```

```
b = temp;
```

```
}
```

```
int partition(int a[], int m, int p)
```

```
{
```

```
int v = a[m];
```

```
int i = m; int j = p;
```

```
do
```

```
{
```

```
do {
```

```
i++;
```

```
}
```

```
while(a[i] < v);
```

```
do {
```

```
j--;
```

```
}
```

```
while(a[j] > v);
```

```
if (i < j)
```

```
{
```

```
swap(a[i], a[j]);
```

```
}
```

```
}
```

```
while (i < j);
```

```
a[m] = a[j];
```

```
a[j] = v;
```

```

return j;
}
void quickSort(int a[], int p, int q)
{
if (p < q)
{
int j = partition(a, p, q + 1);
quickSort(a, p, j - 1);
quickSort(a, j + 1, q);
}
}
int main()
{
int n;
std::cout << "Enter the number of elements: ";
std::cin >> n;
int a[n];
std::cout << "Enter the elements: ";
for (int i = 0; i < n; i++)
{
std::cin >> a[i];
}
quickSort(a, 0, n - 1);
std::cout << "Sorted array: ";
for (int i = 0; i < n; i++)
{
std::cout << a[i] << " ";
}
return 0;
}

```