授業で使用したコード

```python
def quick_sort(left,right):
    i=left
    j=right
    p=data[(left+right)//2]
    while True:
        while data[i]<p:
            i=i+1
        while data[j]>p:
            j=j-1
        if i>=j:
            break
        data[i],data[j]=data[j],data[i]
        i=i+1
        j=j-1
    if left < i-1:
        quick_sort(left,i-1)
    if right>j+1:
```

別のコード

```python
def partition(nums, beginning, ending):
    i = beginning - 1
    pivot = nums[ending]
    for j in range(beginning, ending):
        if nums[j] <= pivot:
            i += 1
            nums[i], nums[j] = nums[j], nums[i]
    nums[i + 1], nums[ending] = nums[ending], nums[i + 1]
    return i+1


def quick_sort(nums, beginning, ending):
    if beginning < ending:
        pivot_index = partition(nums, beginning, ending)
        quick_sort(nums, beginning, pivot_index - 1)
        quick_sort(nums, pivot_index + 1, ending)
    return nums
```