

Exo5

```
In [ ]: def exchange(liste,i,j):  
        liste[i],liste[j] = liste[j],liste[i]
```



```
In [ ]: def min_liste(liste,ind):  
        elt_min = liste[ind]  
        ind_min=ind  
        for k in range(ind,len(liste)):  
            if liste[k]<elt_min:  
                elt_min=liste[k]  
                ind_min=k  
        return ind_min
```



```
In [ ]: def tri_selection(liste):  
        longueur = len(liste)  
        for ind in range(longueur):  
            ind_min = min_liste(liste,ind)  
            exchange(liste,ind,ind_min)
```



```
In [ ]: L=[12,19,10,13,11,15,9,14]
```



```
In [ ]:
```



```
In [ ]: def exchange(liste,i,j):  
        liste[i],liste[j] = liste[j],liste[i]
```



```
In [ ]: def max_liste(liste,ind):  
        elt_max = liste[ind]  
        ind_max=ind  
        for k in range(ind,len(liste)):  
            if liste[k]>elt_max:  
                elt_max=liste[k]  
                ind_max=k  
        return ind_max
```



```
In [ ]: def tri_selection_inverse(liste):  
        longueur = len(liste)  
        for ind in range(longueur):  
            ind_max = max_liste(liste,ind)  
            exchange(liste,ind,ind_max)
```



```
In [ ]: L=[12,19,10,13,11,15,9,14]
```



```
In [ ]: def tri_insertion_inverse(liste):  
        for ind in range(0,len(liste)-1):  
            j = ind  
            while liste[j+1]>liste[j] and j>=0:  
                echage(liste,j+1,j)  
                j=j-1
```



```
In [ ]: tri_insertion_inverse(L)  
        print(L)
```

