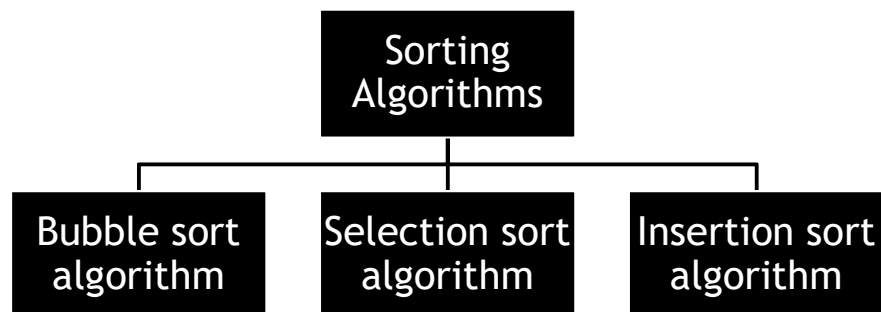


Lab

Basic Sorting Algorithms

Basic Sorting Algorithms

- We will take three algorithms to sorting the data in Array.



Create The Array (1)

```
//Reading an Array from the Console
static void InsertElement(int[] num)
{
    // Give random number
    Random rnd = new Random(100);
    for (int i = 0; i < num.Length; i++)
    {
        num[i] = (int)(rnd.NextDouble() * 100);
    }
}
```

3

Create The Array (2)

```
static void DisplayElement(int[] num)
{
    for (int i = 0; i < num.Length; i++)
    {
        Console.Write(num[i] + " ");
    }
}
```

4

Create The Array (3)

```
static void Main(string[] args){
    int total = int.Parse(Console.ReadLine());
    int[] numbers = new int[total];
    DateTime start = DateTime.Now;
    InsertElement(numbers);
    DisplayElement(numbers);
    //BubbleSortAlgorithm(numbers);
    DisplayElement(numbers);
    TimeSpan end = DateTime.Now.Subtract(start);
    Console.WriteLine("all time is : " + end);}

```

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Bubble Sort

72	15	48	85	10
15	72	48	85	10
15	48	72	85	10
15	48	72	10	85
15	48	10	72	85
15	10	48	72	85
10	15	48	72	85

6

Bubble Sort code

```
static void BubbleSortAlgorithm(int[] num){
    int temp = 0, length = num.Length;
    for (int outer = length; outer >= 1; outer--){
        for (int inner = 0; inner < outer - 1;
            inner++) {
            if ((int)num[inner] > num[inner + 1]){
                temp = num[inner];
                num[inner] = num[inner + 1];
                num[inner + 1] = temp;}}}
}
```

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Selection Sort (cont.)

75	7	47	85	3
----	---	----	----	---

3	7	47	85	75
---	---	----	----	----

3	7	47	75	85
---	---	----	----	----

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Selection Sort code (1)

```
static void SelectionSortAlgorithm(int[]  
num){  
    int min, temp;  
    int length = num.Length - 1;  
    for (int outer = 0; outer <= length;  
        outer++){  
        min = outer;  
        for (int inner = outer + 1; inner <=  
            length; inner++){
```

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Selection Sort code (2)

```
        if (num[inner] < num[min]){  
            min = inner;  
        }  
        temp = num[outer];  
        num[outer] = num[min];  
        num[min] = temp;  
    }  
}
```

10

Insertion Sort (cont.)

85	7	25	3	93
7	85	25	3	93
7	25	85	3	93
3	7	25	85	93

11

Insertion Sort code (1)

```
static void InsertionSortAlgorithm(int[]  
num)  
{  
    int inner, temp,  
    int length = num.Length - 1;  
    for (int outer = 1; outer <= length;  
        outer++)  
    {  
        temp = num[outer];  
        inner = outer;
```

Insertion Sort code (2)

```
while (inner > 0 &&
      num[inner - 1] >= temp)
{
    num[inner] = num[inner - 1];
    inner -= 1;
    num[inner] = temp;
}
```

13

Assignment 3

- Follow next Array by using
1. Bubble Sorting Algorithm
 2. Selection Sorting Algorithm
 3. Insertion Sorting Algorithm

93	12	-4	88	-1	50	100	-120	33
----	----	----	----	----	----	-----	------	----

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