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BUBBLE SORT

Screenshot code

```
#include <iostream>

using namespace std;

void bubblesort (int arr[], int n)
{
    int i, j, tmp;
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < n - i -1; j++)
        {
            if (arr[j] < arr[j + 1])
            {
                tmp = arr[j];
                arr[j] = arr[j + 1];
                arr[j + 1] = tmp;
            }
        }
    }
}

int main ()
{
    int array[100], n, i, j;
    cout << "Masukkan banyak elemen: ";
    cin >> n;
    cout << "Masukkan nilai: \n";
    for (i = 0; i < n; i++)
    {
        cin >> array[i];
    }
    bubblesort(array, n);
    cout << "Hasil pengurutan dengan algoritma bubble sort:\n";
    for (i = 0; i < n; i++)
    {
        cout << array[i] << " ";
    }

    cout << "\n";
}
```

Screenshot output

```
Masukkan banyak elemen: 3
Masukkan nilai:
4
5
6
Hasil pengurutan dengan algoritma bubble sort:
6 5 4

--------------------------------
Process exited after 4.613 seconds with return value 0
Press any key to continue . . .
```

INSERTION SORT

Screenshot code:

```cpp
#include <iostream>
using namespace std;

int main()
{
    int y;
    cout << "Masukkan banyak array: ";
    cin >> y;
    int x[y];
    for (int i = 0; i < y; i++){
        cout << "Masukkan angka ke-" << i << " : ";
        cin >> x[i];
    }

    for (int i = 1; i < y; i++) {
        int key = x[i];
        int j = i - 1;
        while(j >= 0 && x[j] < key) {
            x[j + 1] = x[j];
            j--;
        }
        x[j + 1] = key;
        cout << "Proses sorting" << endl;
        for (int m = 0; m < y; m++){
            cout << x[m] << ' ';
        }
        cout << endl;
    }
    cout << "Hasil akhir" << endl;
    for (int m = 0; m < y; m++){
        cout << x[m] << ' ';
    }

    return 0;
```

Screenshot output:

```
Masukkan banyak array: 4
Masukkan angka ke-0 : 5
Masukkan angka ke-1 : 6
Masukkan angka ke-2 : 7
Masukkan angka ke-3 : 8
Proses sorting
6 5 7 8
Proses sorting
7 6 5 8
Proses sorting
8 7 6 5
Hasil akhir
8 7 6 5
--------------------------------
Process exited after 6.671 seconds with return value 0
Press any key to continue . . .
```

SELECTION SORT

Screenshot code:

```
#include <iostream>

using namespace std;


void selectionsort (int arr[], int n)
{
    int i, j, minIndex, temp;

    for (i=0; i<n-1; i++)
    {
        minIndex = i;
        for (j = i+1; j < n; j++)
        {
            if (arr[j] > arr[minIndex])
            {
                minIndex = j;
            }
        }

        temp = arr[minIndex];
        arr[minIndex] = arr[i];
        arr[i] = temp;
        cout << "Iterasi ke-" << i+1 << " ";
        for (int k = 0; k < n; k++)
        {
            cout << arr[k] << " ";

        }

        cout << endl;
    }

}
```

Screenshot output:

```
Masukkan jumlah elemen: 5
Masukkan nilai elemen: 3
4
5
6
7
Data sebelum sorting: 3 4 5 6 7
Iterasi ke-1 7 4 5 6 3
Iterasi ke-2 7 6 5 4 3
Iterasi ke-3 7 6 5 4 3
Iterasi ke-4 7 6 5 4 3
Data setelah sorting: 7 6 5 4 3
--------------------------------
Process exited after 37.73 seconds with return value 0
Press any key to continue . . .
```

SORTING BUKU

Screenshot code:

```cpp
#include <iostream>
#include <string>

using namespace std;

void bubblesort (string arr[],int n)
{
    int i, j;
    for (i = 0; i < n; i++)
    {
        for (j = 0; j < n - i -1; j++)
        {
            if (arr[j] > arr[j+1])
            {
                swap(arr[j], arr[j+1]);
            }
        }
    }
}

int main()
{
    int n;

    cout << "Masukkan Jumlah Buku: ";
    cin >> n;
    cin.ignore();

    string words[n];

    cout << endl;

    for (int i = 0; i < n; i++)
    {
```

```
    cout << endl;

    for (int i = 0; i < n; i++)
    {
    cout << "Masukkan Judul Buku ke - " << i+1 << " :";
    getline(cin, words[i]);
    }

    cout << endl;

    bubblesort(words, n);

    cout << "Hasil Pengurutan Judul Buku:\n";
    for (int i = 0; i < n; i++)
    {
        cout << words[i] << "\n";
    }

    return 0;
}
```

Screenshot output:

```
Masukkan Jumlah Buku: 5

Masukkan Judul Buku ke - 1 :matematika
Masukkan Judul Buku ke - 2 :bahasa inggris
Masukkan Judul Buku ke - 3 :indonesia
Masukkan Judul Buku ke - 4 :data
Masukkan Judul Buku ke - 5 :algoritma

Hasil Pengurutan Judul Buku:
algoritma
bahasa inggris
data
indonesia
matematika

--------------------------------
Process exited after 110.3 seconds with return value 0
Press any key to continue . . .
```