

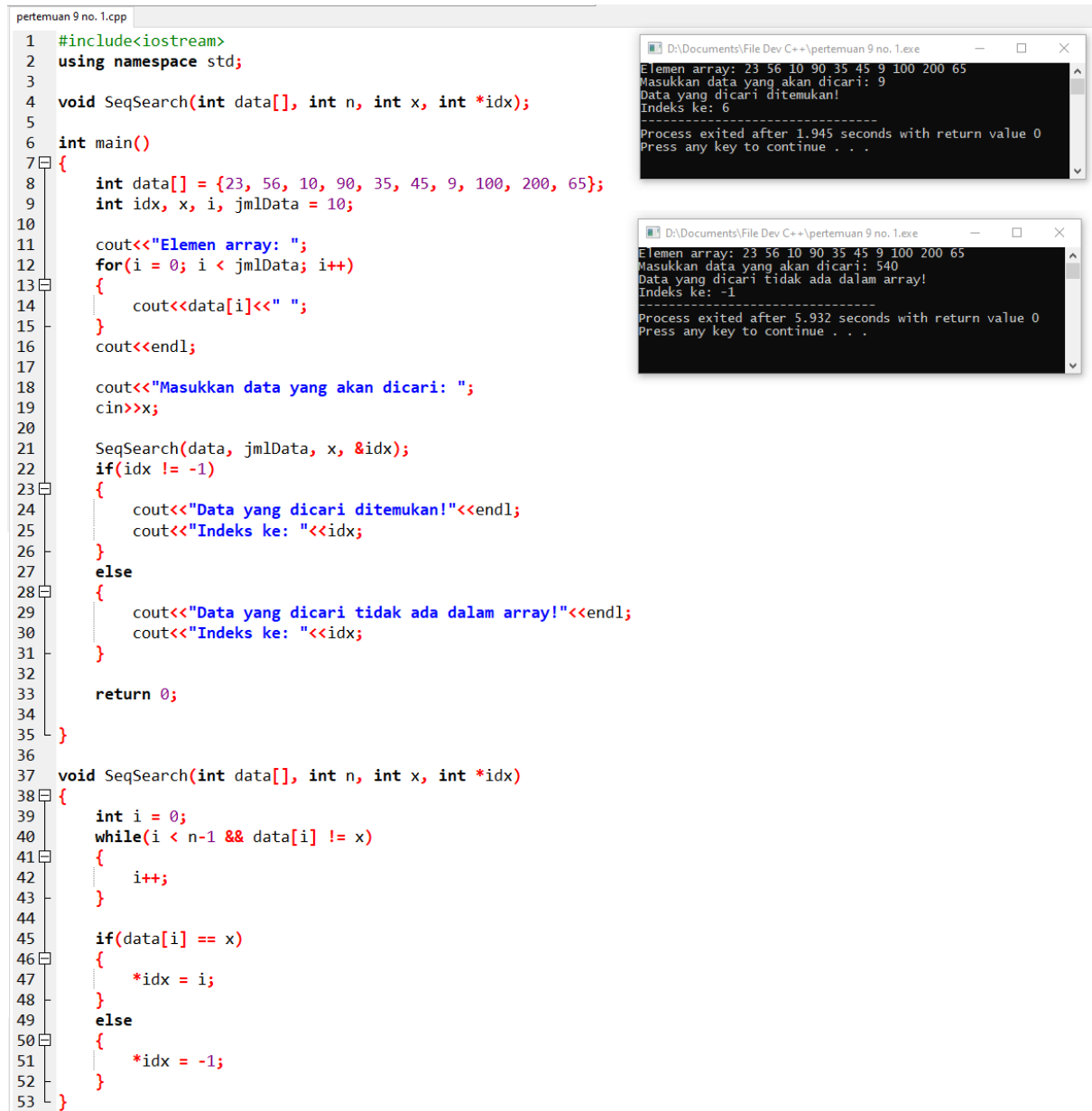
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Kelas : 02TPLP023

Tugas : Algoritma II – Pertemuan 9

1.



The image shows a C++ program in a text editor and two screenshots of its execution. The program is titled 'pertemuan 9 no. 1.cpp' and implements a sequential search algorithm. It defines a function `SeqSearch` that takes an array, its size, a target value, and a pointer to an index. The `main` function initializes an array, prints its elements, prompts the user for a search value, and calls `SeqSearch`. It then checks the returned index and prints the result.

```
1 #include<iostream>
2 using namespace std;
3
4 void SeqSearch(int data[], int n, int x, int *idx);
5
6 int main()
7 {
8     int data[] = {23, 56, 10, 90, 35, 45, 9, 100, 200, 65};
9     int idx, x, i, jmlData = 10;
10
11     cout<<"Elemen array: ";
12     for(i = 0; i < jmlData; i++)
13     {
14         cout<<data[i]<<" ";
15     }
16     cout<<endl;
17
18     cout<<"Masukkan data yang akan dicari: ";
19     cin>>x;
20
21     SeqSearch(data, jmlData, x, &idx);
22     if(idx != -1)
23     {
24         cout<<"Data yang dicari ditemukan!"<<endl;
25         cout<<"Indeks ke: "<<idx;
26     }
27     else
28     {
29         cout<<"Data yang dicari tidak ada dalam array!"<<endl;
30         cout<<"Indeks ke: "<<idx;
31     }
32
33     return 0;
34 }
35
36 void SeqSearch(int data[], int n, int x, int *idx)
37 {
38     int i = 0;
39     while(i < n-1 && data[i] != x)
40     {
41         i++;
42     }
43
44     if(data[i] == x)
45     {
46         *idx = i;
47     }
48     else
49     {
50         *idx = -1;
51     }
52 }
53 }
```

The first execution screenshot shows the array elements, the search value 9, and the result: "Data yang dicari ditemukan! Indeks ke: 6". The second execution screenshot shows the search value 540, which is not in the array, resulting in "Data yang dicari tidak ada dalam array! Indeks ke: -1".

Source code:

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

void SeqSearch(int data[], int n, int x, int *idx);

int main()
{
    int data[] = {23, 56, 10, 90, 35, 45, 9, 100, 200, 65};
    int idx, x, i, jmlData = 10;

    cout<<"Elemen array: ";
    for(i = 0; i < jmlData; i++)
    {
        cout<<data[i]<<" ";
    }
    cout<<endl;

    cout<<"Masukkan data yang akan dicari: ";
    cin>>x;

    SeqSearch(data, jmlData, x, &idx);
    if(idx != -1)
    {
        cout<<"Data yang dicari ditemukan!"<<endl;
        cout<<"Indeks ke: "<<idx;
    }
    else
    {
        cout<<"Data yang dicari tidak ada dalam array!"<<endl;
        cout<<"Indeks ke: "<<idx;
    }

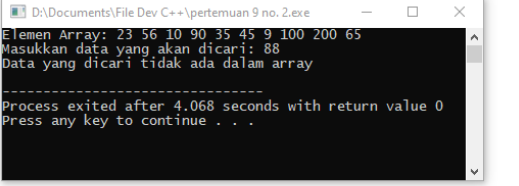
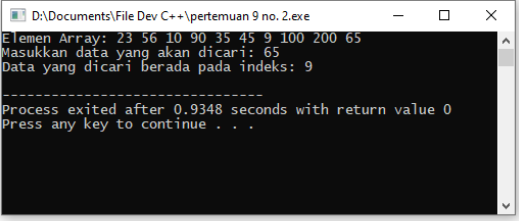
    return 0;
}

void SeqSearch(int data[], int n, int x, int *idx)
{
    int i = 0;
    while(i < n-1 && data[i] != x)
    {
        i++;
    }

    if(data[i] == x)
    {
        *idx = i;
    }
    else
    {
        *idx = -1;
    }
}
```

2.

```
pertemuan 9 no. 2.cpp
1  #include<iostream>
2  using namespace std;
3
4  void SeqSearch(int data[], int n, int x, int *idx);
5
6  int main()
7  {
8      int data[] = {23, 56, 10, 90, 35, 45, 9, 100, 200, 65};
9      int idx, x, i, jmlData = 10;
10
11      cout<<"Elemen Array: ";
12      for(i = 0; i < jmlData; i++)
13      {
14          cout<<data[i]<<" ";
15      }
16      cout<<endl;
17
18      cout<<"Masukkan data yang akan dicari: ";
19      cin>>x;
20
21      SeqSearch(data, jmlData, x, &idx);
22
23      if(idx != -1)
24      {
25          cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
26      }
27      else
28      {
29          cout<<"Data yang dicari tidak ada dalam array"<<endl;
30      }
31  }
32
33  void SeqSearch(int data[], int n, int x, int *idx)
34  {
35      int i = 0;
36      bool ketemu = false;
37
38      while(i < n && !ketemu)
39      {
40          if(data[i] == x)
41          {
42              ketemu = true;
43          }
44          else
45          {
46              i++;
47          }
48      }
49
50      if(ketemu)
51      {
52          *idx = i;
53      }
54      else
55      {
56          *idx = -1;
57      }
58  }
```



Source Code:

```
#include<iostream>

using namespace std;

void SeqSearch(int data[], int n, int x, int *idx);

int main()
{
    int data[] = {23, 56, 10, 90, 35, 45, 9, 100, 200, 65};
    int idx, x, i, jmlData = 10;

    cout<<"Elemen Array: ";
    for(i = 0; i < jmlData; i++)
    {
        cout<<data[i]<<" ";
    }
    cout<<endl;

    cout<<"Masukkan data yang akan dicari: ";
    cin>>x;

    SeqSearch(data, jmlData, x, &idx);

    if(idx != -1)
    {
        cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
    }
    else
    {
        cout<<"Data yang dicari tidak ada dalam array"<<endl;
    }
}

void SeqSearch(int data[], int n, int x, int *idx)
{
```

```
int i = 0;
bool ketemu = false;

while(i < n && !ketemu)
{
    if(data[i] == x)
    {
        ketemu = true;
    }
    else
    {
        i++;
    }
}

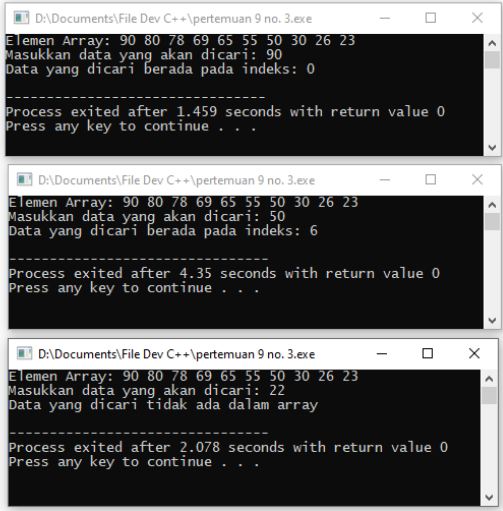
if(ketemu)
{
    *idx = i;
}
else
{
    *idx = -1;
}
}
```

3.

```

pertemuan 9 no. 3.cpp
1  #include<iostream>
2  using namespace std;
3
4  void SeqSearch(int data[], int n, int x, int *idx);
5
6  int main()
7  {
8      int data[] = {90, 80, 78, 69, 65, 55, 50, 30, 26, 23};
9      int idx, x, i, jmlData = 10;
10
11     cout<<"Elemen Array: ";
12     for(i = 0; i < jmlData; i++)
13     {
14         cout<<data[i]<<" ";
15     }
16     cout<<endl;
17
18     cout<<"Masukkan data yang akan dicari: ";
19     cin>>x;
20
21     SeqSearch(data, jmlData, x, &idx);
22     if(idx != -1)
23     {
24         cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
25     }
26     else
27     {
28         cout<<"Data yang dicari tidak ada dalam array"<<endl;
29     }
30 }
31
32
33 void SeqSearch(int data[], int n, int x, int *idx)
34 {
35     int i = 0;
36     while(i < n - 1 && data[i] > x)
37     {
38         i++;
39     }
40
41     if(data[i] == x)
42     {
43         *idx = i;
44     }
45     else
46     {
47         *idx = -1;
48     }
49 }

```



The image shows three screenshots of a C++ program execution. Each screenshot displays the output of the program for a different search value. The first screenshot shows the search for the value 90, which is found at index 0. The second screenshot shows the search for the value 50, which is found at index 6. The third screenshot shows the search for the value 22, which is not found in the array, resulting in the message 'Data yang dicari tidak ada dalam array'.

Execution 1: D:\Documents\File Dev C++\pertemuan 9 no. 3.exe
 Elemen Array: 90 80 78 69 65 55 50 30 26 23
 Masukkan data yang akan dicari: 90
 Data yang dicari berada pada indeks: 0

 Process exited after 1.459 seconds with return value 0
 Press any key to continue . . .

Execution 2: D:\Documents\File Dev C++\pertemuan 9 no. 3.exe
 Elemen Array: 90 80 78 69 65 55 50 30 26 23
 Masukkan data yang akan dicari: 50
 Data yang dicari berada pada indeks: 6

 Process exited after 4.35 seconds with return value 0
 Press any key to continue . . .

Execution 3: D:\Documents\File Dev C++\pertemuan 9 no. 3.exe
 Elemen Array: 90 80 78 69 65 55 50 30 26 23
 Masukkan data yang akan dicari: 22
 Data yang dicari tidak ada dalam array

 Process exited after 2.078 seconds with return value 0
 Press any key to continue . . .

Source Code:

```
#include<iostream>

using namespace std;

void SeqSearch(int data[], int n, int x, int *idx);

int main()
{
    int data[] = {90, 80, 78, 69, 65, 55, 50, 30, 26, 23};
    int idx, x, i, jmlData = 10;

    cout<<"Elemen Array: ";
    for(i = 0; i < jmlData; i++)
    {
        cout<<data[i]<<" ";
    }
    cout<<endl;

    cout<<"Masukkan data yang akan dicari: ";
    cin>>x;

    SeqSearch(data, jmlData, x, &idx);
    if(idx != -1)
    {
        cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
    }
    else
    {
        cout<<"Data yang dicari tidak ada dalam array"<<endl;
    }
}

void SeqSearch(int data[], int n, int x, int *idx)
{
```

```
int i = 0;
while(i < n - 1 && data[i] > x)
{
    i++;
}

if(data[i] == x)
{
    *idx = i;
}
else
{
    *idx = -1;
}
}
```


4.

```

pertemuan 9 no. 3.cpp  pertemuan 9 no. 4.cpp
1  #include<iostream>
2  using namespace std;
3
4  void SeqSearch(int data[], int n, int x, int *idx);
5
6  int main()
7  {
8      int data[] = {23, 26, 30, 50, 55, 65, 69, 78, 80, 90};
9      int idx, x, i, jmlData = 10;
10
11      cout<<"Elemen Array: ";
12      for(i = 0; i < jmlData; i++)
13      {
14          cout<<data[i]<<" ";
15      }
16      cout<<endl;
17
18      cout<<"Masukkan data yang akan dicari: ";
19      cin>>x;
20
21      SeqSearch(data, jmlData, x, &idx);
22      if(idx != -1)
23      {
24          cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
25      }
26      else
27      {
28          cout<<"Data yang dicari tidak ada dalam array"<<endl;
29      }
30  }
31
32
33  void SeqSearch(int data[], int n, int x, int *idx)
34  {
35      bool ketemu = false;
36      int top = n-1, bottom = 0, mid;
37      int i = 0;
38      while(bottom <= top && !ketemu)
39      {
40          mid = (top + bottom) / 2;
41
42          if(data[mid] == x)
43          {
44              ketemu = true;
45          }
46          else
47          {
48              if(data[mid] > x)
49              {
50                  top = mid - 1;
51              }
52              else
53              {
54                  bottom = mid + 1;
55              }
56          }
57      }
58
59      if(ketemu)
60      {
61          *idx = mid;
62      }
63      else
64      {
65          *idx = -1;
66      }
67  }

```

D:\Documents\File Dev C++\pertemuan 9 no. 4.exe

```

Masukkan data yang akan dicari: 30
Data yang dicari berada pada indeks: 2
-----
Process exited after 0.5256 seconds with return value 0
Press any key to continue . . .

```

D:\Documents\File Dev C++\pertemuan 9 no. 4.exe

```

Elemen Array: 23 26 30 50 55 65 69 78 80 90
Masukkan data yang akan dicari: 90
Data yang dicari berada pada indeks: 9
-----
Process exited after 1.705 seconds with return value 0
Press any key to continue . . .

```

D:\Documents\File Dev C++\pertemuan 9 no. 4.exe

```

Elemen Array: 23 26 30 50 55 65 69 78 80 90
Masukkan data yang akan dicari: 56
Data yang dicari tidak ada dalam array
-----
Process exited after 3.168 seconds with return value 0
Press any key to continue . . .

```

Source Code:

```
#include<iostream>

using namespace std;

void SeqSearch(int data[], int n, int x, int *idx);

int main()
{
    int data[] = {23, 26, 30, 50, 55, 65, 69, 78, 80, 90};
    int idx, x, i, jmlData = 10;

    cout<<"Elemen Array: ";
    for(i = 0; i < jmlData; i++)
    {
        cout<<data[i]<<" ";
    }
    cout<<endl;

    cout<<"Masukkan data yang akan dicari: ";
    cin>>x;

    SeqSearch(data, jmlData, x, &idx);
    if(idx != -1)
    {
        cout<<"Data yang dicari berada pada indeks: "<<idx<<endl;
    }
    else
    {
        cout<<"Data yang dicari tidak ada dalam array"<<endl;
    }
}

void SeqSearch(int data[], int n, int x, int *idx)
{
```

```

bool ketemu = false;
int top = n-1, bottom = 0, mid;
int i = 0;
while(bottom <= top && !ketemu)
{
    mid = (top + bottom) / 2;

    if(data[mid] == x)
    {
        ketemu = true;
    }
    else
    {
        if(data[mid] > x)
        {
            top = mid - 1;
        }
        else
        {
            bottom = mid + 1;
        }
    }
}

if(ketemu)
{
    *idx = mid;
}
else
{
    *idx = -1;
}
}

```