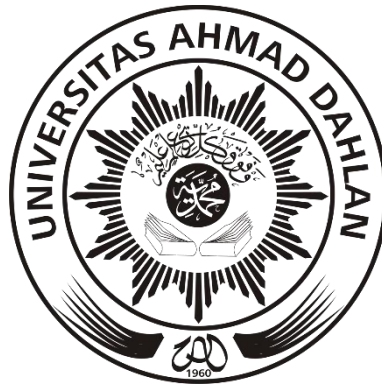


LAPORAN
ALGORITMA PEMORGRAMAN



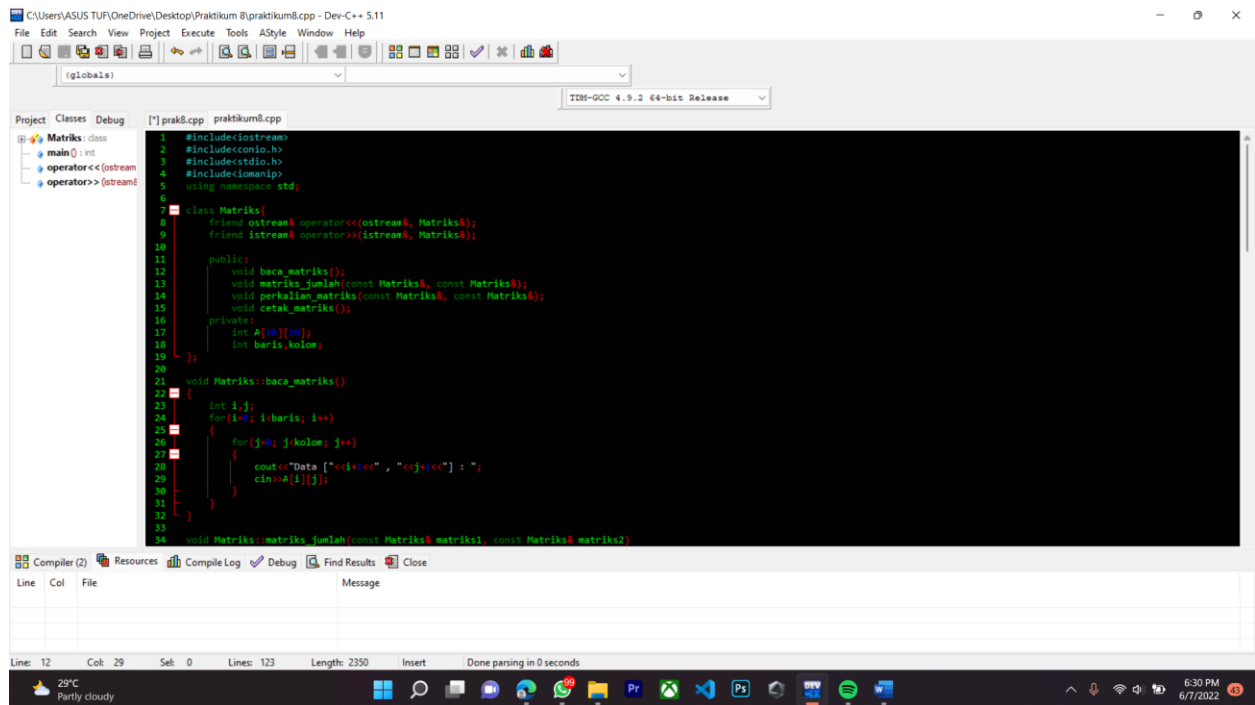
DISUSUN OLEH
RIFAL FEBIYAN (2100018345)
SLOT SELASA 13.30 – KELAS G

PROGRAM STUDI INFORMATIKA FAKULTAS
TEKNOLOGI INDUSTRI
UNIVERSITAS AHMAD DAHLAN
TAHUN AJARAN 2021/2022

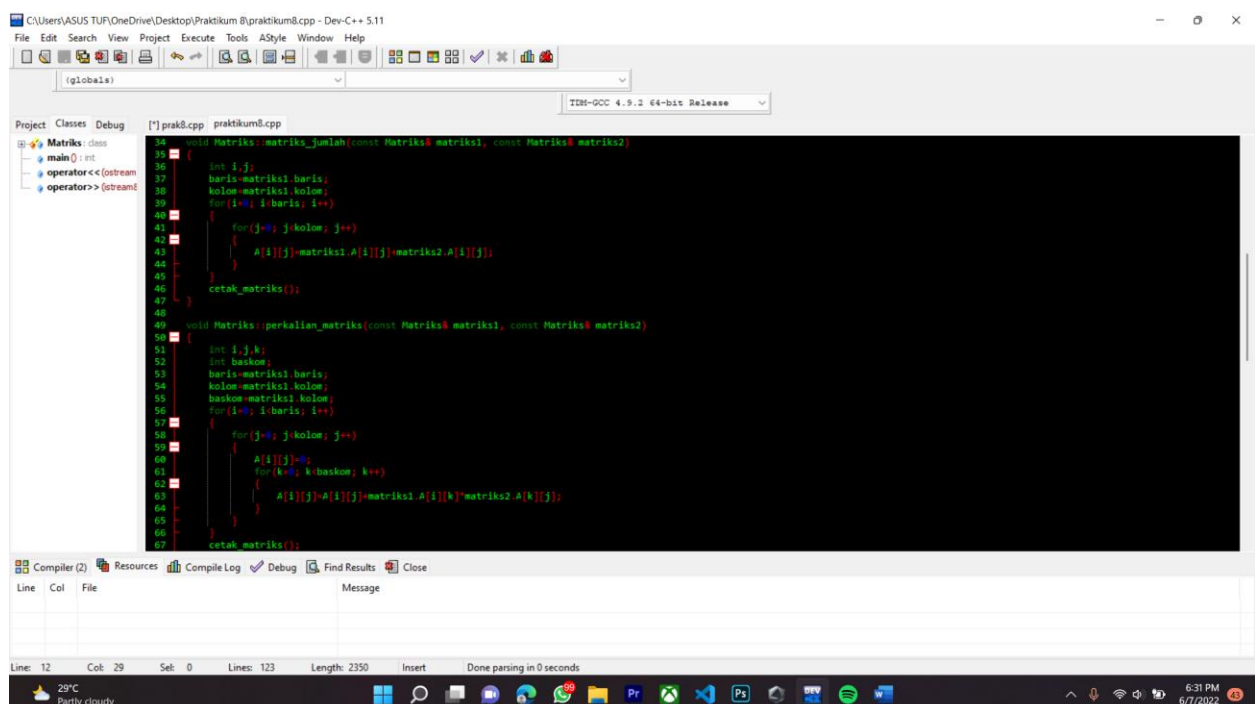
KEGIATAN PRAKTIKUM 8 : ARRAY 2 DIMENSI

Ketiklah program operasi matriks berikut ini. Amati tata cara setiap operasi matriks berlaku pada setiap elemen matriks. Buat kesimpulan tentang pentingnya syarat setiap operasi matriks dapat dilakukan

⇒ Tampilan pada Dev C++



```
1 #include<iostream>
2 #include<conio.h>
3 #include<stdio.h>
4 #include<iomanip>
5 using namespace std;
6
7 class Matriks{
8     friend ostream& operator<<(ostream& os, Matriks& m);
9     friend istream& operator>>(istream& is, Matriks& m);
10
11 public:
12     void baca_matriks();
13     void matriks_jumlah(const Matriks& m1, const Matriks& m2);
14     void perkalian_matriks(const Matriks& m1, const Matriks& m2);
15     void cetak_matriks();
16 private:
17     int A[10][10];
18     int baris, kolom;
19 };
20
21 void Matriks::baca_matriks()
22 {
23     int i, j;
24     for(i=0; i<baris; i++)
25     {
26         for(j=0; j<kolom; j++)
27         {
28             cout<<"Data ["<<i<<" , "<<j<<" : ";
29             cin>>A[i][j];
30         }
31     }
32 }
33
34 void Matriks::matriks_jumlah(const Matriks& matriks1, const Matriks& matriks2)
```



```
35 void Matriks::matriks_jumlah(const Matriks& matriks1, const Matriks& matriks2)
36 {
37     int i, j;
38     baris=matriks1.baris;
39     kolom=matriks1.kolom;
40     for(i=0; i<baris; i++)
41     {
42         for(j=0; j<kolom; j++)
43         {
44             A[i][j]=matriks1.A[i][j]+matriks2.A[i][j];
45         }
46     }
47     cetak_matriks();
48 }
49
50 void Matriks::perkalian_matriks(const Matriks& matriks1, const Matriks& matriks2)
51 {
52     int i, j, k;
53     int baskom;
54     baris=matriks1.baris;
55     kolom=matriks1.kolom;
56     baskom=matriks1.kolom;
57     for(i=0; i<baris; i++)
58     {
59         for(j=0; j<kolom; j++)
60         {
61             A[i][j]=0;
62             for(k=0; k<baskom; k++)
63             {
64                 A[i][j]=A[i][j]+matriks1.A[i][k]*matriks2.A[k][j];
65             }
66         }
67     }
68     cetak_matriks();
69 }
```

C:\Users\ASUS TUF\OneDrive\Desktop\Praktikum 8\praktikum8.cpp - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

(global)

Project Classes Debug

Matrks : class
main() : int
operator<< (ostream
operator>> (istream

praktikum8.cpp

```
67 cetak_matrks();  
68  
69  
70 void Matrks::cetak_matrks()  
71 {  
72     int i,j;  
73     for(i=0; i<baris; i++)  
74     {  
75         for(j=0; j<kolom; j++)  
76             cout<<setw(5)<<A[i][j]<<" ";  
77         cout<<endl;  
78     }  
79 }  
80  
81 istream& operator>>(istream& in, Matrks& A)  
82 {  
83     cout<<"Masukkan Banyak Baris : ";  
84     in>>A.baris;  
85     cout<<"Masukkan Banyak Kolom : ";  
86     in>>A.kolom;  
87     cout<<"Masukkan Data Matrks "<<endl;  
88     A.baca_matrks();  
89     cout<<"Matrks Yang Dibuat Adalah : \n";  
90     A.cetak_matrks();  
91     return in;  
92 }  
93  
94 ostream& operator<<(ostream& out, Matrks& A)  
95 {  
96     int i,j;  
97     for(i=0; i<A.baris; i++)  
98     {  
99         for(j=0; j<A.kolom; j++)  
100             cout<<setw(5)<<A[i][j]<<" ";  
101         cout<<endl;  
102     }  
103     return out;  
104 }  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123
```

Compiler (2) Resources Compile Log Debug Find Results Close

Line Col File Message

Line: 12 Col: 29 Sek: 0 Lines: 123 Length: 2350 Insert Done parsing in 0 seconds

29°C Partly cloudy 6:31 PM 6/7/2022

C:\Users\ASUS TUF\OneDrive\Desktop\Praktikum 8\praktikum8.cpp - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

(global)

Project Classes Debug

Matrks : class
main() : int
operator<< (ostream
operator>> (istream

praktikum8.cpp

```
90 A.cetak_matrks();  
91 return in;  
92 }  
93  
94 ostream& operator<<(ostream& out, Matrks& A)  
95 {  
96     int i,j;  
97     for(i=0; i<A.baris; i++)  
98     {  
99         for(j=0; j<A.kolom; j++)  
100             cout<<setw(5)<<A[i][j]<<" ";  
101         cout<<endl;  
102     }  
103     return out;  
104 }  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123
```

Compiler (2) Resources Compile Log Debug Find Results Close

Line Col File Message

Line: 12 Col: 29 Sek: 0 Lines: 123 Length: 2350 Insert Done parsing in 0 seconds

29°C Partly cloudy 6:31 PM 6/7/2022

Output ➔

Percobaan 1

The screenshot shows a C++ IDE with the file `praktikum8.cpp` open. The code defines a `Matriks` class with methods for input, output, and multiplication of two 3x3 matrices. The output window displays the results of the program execution.

```
Memasukkan Data Matriks I
Masukkan Banyak Baris : 3
Masukkan Banyak Kolom : 3
Masukkan Data Matriks
Data [ 1, 1] : 1
Data [ 1, 2] : 2
Data [ 1, 3] : 3
Data [ 2, 1] : 1
Data [ 2, 2] : 2
Data [ 2, 3] : 3
Data [ 3, 1] : 2
Data [ 3, 2] : 1
Data [ 3, 3] : 2
Matriks Yang Dibuat Adalah :
1 2 3
1 2 3
2 1 2

Memasukkan Data Matriks II
Masukkan Banyak Baris : 3
Masukkan Banyak Kolom : 3
Masukkan Data Matriks
Data [ 1, 1] : 3
Data [ 1, 2] : 2
Data [ 1, 3] : 1
Data [ 2, 1] : 2
Data [ 2, 2] : 3
Data [ 2, 3] : 2
Data [ 3, 1] : 1
Data [ 3, 2] : 2
Data [ 3, 3] : 2
Matriks Yang Dibuat Adalah :
3 2 1
2 3 2
1 2 2

Matrik I & Matrik 2
Hasil Penjumlahan :
4 4 4
3 5 5
3 3 4
Hasil Perkalian :
10 14 11
10 14 11
10 11 8
```

Percobaan 2

The screenshot shows the same C++ IDE with the file `praktikum8.cpp` open. The code is identical to the one in Percobaan 1. The output window displays the results of the program execution for the second test case.

```
Memasukkan Data Matriks I
Masukkan Banyak Baris : 3
Masukkan Banyak Kolom : 3
Masukkan Data Matriks
Data [ 1, 1] : 4
Data [ 1, 2] : 2
Data [ 1, 3] : 3
Data [ 2, 1] : 8
Data [ 2, 2] : 5
Data [ 2, 3] : 9
Data [ 3, 1] : 1
Data [ 3, 2] : 3
Data [ 3, 3] : 7
Matriks Yang Dibuat Adalah :
4 2 3
8 5 9
1 3 7

Memasukkan Data Matriks II
Masukkan Banyak Baris : 3
Masukkan Banyak Kolom : 3
Masukkan Data Matriks
Data [ 1, 1] : 1
Data [ 1, 2] : 3
Data [ 1, 3] : 7
Data [ 2, 1] : 8
Data [ 2, 2] : 5
Data [ 2, 3] : 9
Data [ 3, 1] : 3
Data [ 3, 2] : 2
Data [ 3, 3] : 3
Matriks Yang Dibuat Adalah :
1 3 7
8 5 9
3 2 3

Matrik I & Matrik 2
Hasil Penjumlahan :
5 5 10
16 10 18
4 5 10
Hasil Perkalian :
29 28 55
75 67 128
46 32 55
```

Source Code

```
#include<iostream>
#include<conio.h>
#include<stdio.h>
#include<iomanip>
using namespace std;

class Matriks{
    friend ostream& operator<<(ostream&, Matriks&);
    friend istream& operator>>(istream&, Matriks&);

    public:
        void baca_matriks();
        void matriks_jumlah(const Matriks&, const Matriks&);
        void perkalian_matriks(const Matriks&, const Matriks&);
        void cetak_matriks();
    private:
        int A[10][10];
        int baris,kolom;
};

void Matriks::baca_matriks()
{
    int i,j;
    for(i=0; i<baris; i++)
    {
        for(j=0; j<kolom; j++)
        {
            cout<<"Data ["<<i+1<<" , "<<j+1<<" : ";
            cin>>A[i][j];
        }
    }
}

void Matriks::matriks_jumlah(const Matriks& matriks1, const Matriks& matriks2)
{
    int i,j;
    baris=matriks1.baris;
    kolom=matriks1.kolom;
    for(i=0; i<baris; i++)
    {
        for(j=0; j<kolom; j++)
        {
            A[i][j]=matriks1.A[i][j]+matriks2.A[i][j];
        }
    }
}
```

```

        cetak_matriks();
    }

void Matriks::perkalian_matriks(const Matriks& matriks1, const Matriks& matriks2)
{
    int i,j,k;
    int baskom;
    baris=matriks1.baris;
    kolom=matriks1.kolom;
    baskom=matriks1.kolom;
    for(i=0; i<baris; i++)
    {
        for(j=0; j<kolom; j++)
        {
            A[i][j]=0;
            for(k=0; k<baskom; k++)
            {
                A[i][j]=A[i][j]+matriks1.A[i][k]*matriks2.A[k][j];
            }
        }
    }
    cetak_matriks();
}

void Matriks::cetak_matriks()
{
    int i,j;
    for(i=0; i<baris; i++)
    {
        for(j=0; j<kolom; j++)
            cout<<setw(5)<<A[i][j]<<" ";
        cout<<endl;
    }
}

istream& operator>>(istream& in, Matriks& A)
{
    cout<<"Masukkan Banyak Baris : ";
    in>>A.baris;
    cout<<"Masukkan Banyak Kolom : ";
    in>>A.kolom;
    cout<<"Masukkan Data Matriks "<<endl;
    A.baca_matriks();
    cout<<"Matriks Yang Dibuat Adalah : \n";
    A.cetak_matriks();
    return in;
}

```

```

}

ostream& operator<<(ostream& out, Matriks& A)
{
    int i,j;
    for(i=0; i<A.baris; i++)
    {
        for(j=0; j<A.kolom; j++)
        {
            cout<<setw(5)<<A.A[i][j]<<" ";
            cout<<endl;
        }
    }
    return out;
}

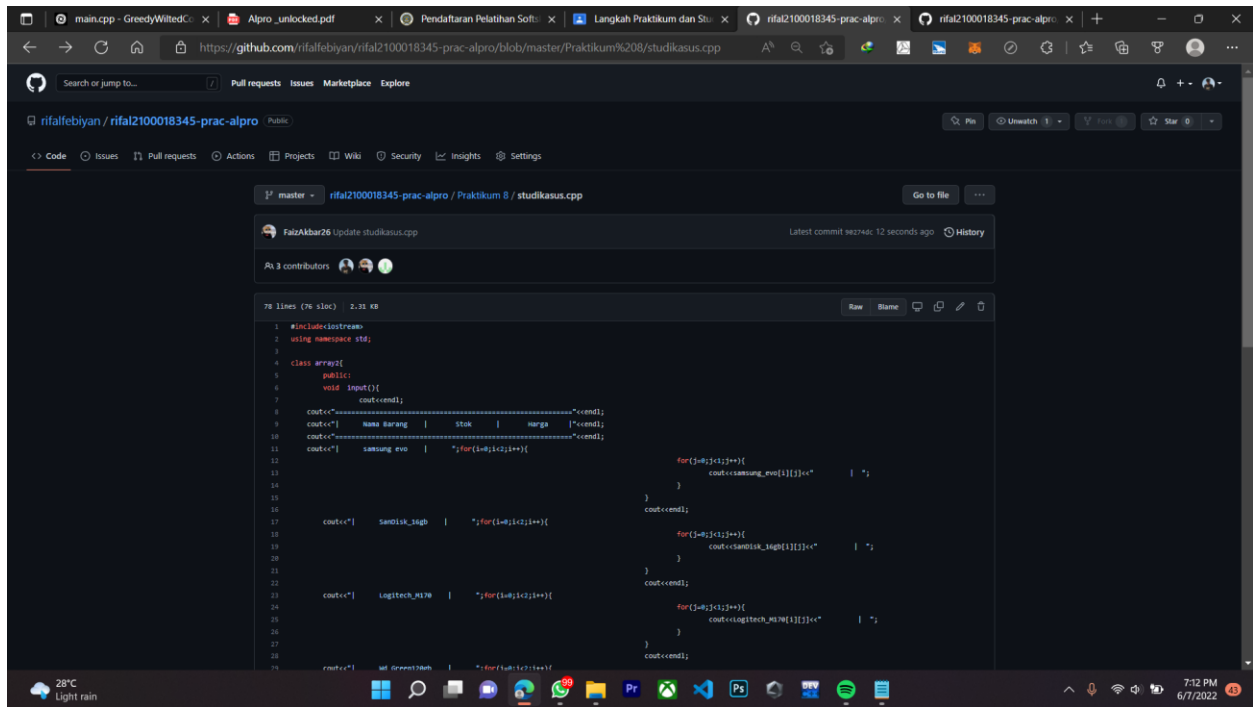
int main()
{
    Matriks matriks1, matriks2;
    Matriks jumlah;
    cout<<"Memasukkan Data Matriks I "<<endl;
    cin>>matriks1;
    cout<<"Memasukkan Data Matriks II "<<endl;
    cin>>matriks2;
    cout<<endl;
    cout<<"Hasil Penjumlahan : "<<endl;
    jumlah.matriks_jumlah(matriks1, matriks2);
    cout<<"Hasil Perkalian : "<<endl;
    jumlah.perkalian_matriks(matriks1, matriks2);
    getch();
    return 0;
}

```

Kesimpulan :

- 1). Pada operasi penjumlahan matriks, syarat matriks dapat dijumlahkan apabila keduanya memiliki ordo yang sama. Hasil operasi penjumlahannya adalah matriks baru yang memiliki ordo sama dengan matriks semula, dengan elemen-elemennya terdiri dari hasil penjumlahan elemen-elemen pada matriks.
- 2). Pada operasi perkalian matriks, syarat dua buah matriks dapat dikalikan jika memiliki jumlah kolom matriks pertama yang sama dengan jumlah baris matriks ke dua. Ordo matriks hasil perkalian dua matriks adalah jumlah baris pertama dikali jumlah kolom ke dua.

Screenshot dan Link Repository



The screenshot shows a web browser displaying a GitHub repository page. The repository is named 'rifalfebiyan/rifal2100018345-prac-alpro'. The file 'studikasus.cpp' is selected, showing 78 lines of C++ code. The code includes headers for `iostream` and `string`, and defines a class `array` with a `public` section containing a `void input()` function. The function uses `cout` and `cin` to interact with the user, displaying a menu of products and their prices, and allowing the user to input quantities. The code uses loops to iterate over the menu items and calculate the total cost. The browser's address bar shows the URL: <https://github.com/rifalfebiyan/rifal2100018345-prac-alpro/blob/master/Praktikum%208/studikasus.cpp>. The bottom of the screen shows a Windows taskbar with various application icons and a system tray indicating the time as 7:12 PM on 6/7/2022.

```
1 #include<iostream>
2 using namespace std;
3
4 class array{
5 public:
6     void input(){
7         cout<<endl;
8         cout<<"=====<pre>
9         cout<<"   nama barang   |   stok   |   harga   |"<pre>
10        cout<<"=====<pre>
11        cout<<"   samsung evo   |   "<pre>
12
13
14
15
16
17        cout<<"   samolisk_high   |   "<pre>
18
19
20
21
22
23        cout<<"   logitech_M170   |   "<pre>
24
25
26
27
28
29        cout<<"   set GreenNoteh   |   "<pre>
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
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65
66
67
68
69
70
71
72
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78
```

[rifal2100018345-prac-alpro/studikasus.cpp at master · rifalfebiyan/rifal2100018345-prac-alpro \(github.com\)](https://github.com/rifalfebiyan/rifal2100018345-prac-alpro/blob/master/Praktikum%208/studikasus.cpp)