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Matkul : Algoritma dan Struktur Data

## Tugas Algoritma & Stuktur Data

### 1. Penjumlahan, Pengurangan dan Perkalian Matrix

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int rows, cols, i, j;
6     char operasi;
7
8     cout << "Program Perhitungan Matriks" << endl;
9     cout << "-----" << endl;
10    cout << "Jenis Jenis Operasi:";
11    cout << "\n+ = Penjumlahan";
12    cout << "\n- = Pengurangan";
13    cout << "\nx = Perkalian";
14    cout << "\nMasukan Jenis Operasi : ";
15    cin >> operasi;
16    cout << "Masukkan Jumlah Baris : ";
17    cin >> rows;
18    cout << "Masukkan Jumlah Kolom : ";
19    cin >> cols;
20
21    int MatrixX[rows][cols], MatrixY[rows][cols];
22
23    cout << "\nMatrix X : " << endl;
24    for (i = 0; i < rows; i++) {
25        for (j = 0; j < cols; j++) {
26            cout << "Matrix X" << "[" << i << "][" << j << "]: ";
27            cin >> MatrixX[i][j];
28        }
29    }
30
31    cout << "\nMatrix Y : " << endl;
32    for (i = 0; i < rows; i++) {
33        for (j = 0; j < cols; j++) {
34            cout << "Matrix Y" << "[" << i << "][" << j << "]: ";
35            cin >> MatrixY[i][j];
36        }
37    }
38
39    if (operasi == '+') {
40        cout << "\nHasil Penjumlahan Matrix X dan Matrix Y : " << endl;
41        for (i = 0; i < rows; i++) {
42            for (j = 0; j < cols; j++) {
43                cout << MatrixX[i][j] + MatrixY[i][j] << "\t";
44            }
45            cout << endl;
46        }
47    } else if (operasi == '-') {
48        cout << "\nHasil Pengurangan Matrix X dan Matrix Y : " << endl;
49        for (i = 0; i < rows; i++) {
50            for (j = 0; j < cols; j++) {
51                cout << MatrixX[i][j] - MatrixY[i][j] << "\t";
52            }
53            cout << endl;
54        }
55    } else if (operasi == 'x') {
56        cout << "\nHasil Perkalian Matrix X dan Matrix Y : " << endl;
57        for (i = 0; i < rows; i++) {
58            for (j = 0; j < cols; j++) {
59                cout << MatrixX[i][j] * MatrixY[i][j] << "\t";
60            }
61            cout << endl;
62        }
63    } else {
64        cout << "Ga Bisa Dong";
65    }
66
67    return 0;
68 }
69
```

```
Program Perhitungan Matriks
-----
Jenis Jenis Operasi:
+ = Penjumlahan
- = Pengurangan
x = Perkalian
Masukan Jenis Operasi : +
Masukkan Jumlah Baris : 3
Masukkan Jumlah Kolom : 3

Matrix X :
Matrix X[0][0] : 3
Matrix X[0][1] : 3
Matrix X[0][2] : 3
Matrix X[1][0] : 3
Matrix X[1][1] : 3
Matrix X[1][2] : 3
Matrix X[2][0] : 3
Matrix X[2][1] : 3
Matrix X[2][2] : 3

Matrix Y :
Matrix Y[0][0] : 4
Matrix Y[0][1] : 4
Matrix Y[0][2] : 4
Matrix Y[1][0] : 4
Matrix Y[1][1] : 4
Matrix Y[1][2] : 4
Matrix Y[2][0] : 4
Matrix Y[2][1] : 4
Matrix Y[2][2] : 4

Hasil Penjumlahan Matrix X dan Matrix Y :
7      7      7
7      7      7
7      7      7

-----
Process exited after 32.7 seconds with return value 0
Press any key to continue . . . |
```

## 2. Gerobaks Ayam

```
1 #include <iostream>
2 #include <string>
3 using namespace std;
4
5 int main() {
6     const int banyakJenis = 3;
7     const kode [banyakJenis] = {"D", "P", "S"};
8     string jenis [banyakJenis] = {"Dada", "Paha", "Sayap"};
9     int harga [banyakJenis] = {2500, 2000, 1500};
10
11     int jumlahPotong [3], totalHarga [3];
12     string namaPotong [3];
13     int pilihKode;
14     int banyakPesanan;
15
16     cout << "GERBAK FRIED CHICKEN\n";
17     cout << "-----\n";
18     cout << "Kode  Jenis  Harga\n";
19     cout << "-----\n";
20     for (int i = 0; i < banyakJenis; ++i) {
21         cout << "[" << kode[i] << "]    " << jenis[i] << "    Rp. " << harga[i] << "\n";
22     }
23     cout << "-----\n";
24
25     cout << "\nBanyak Jenis: ";
26     cin >> banyakPesanan;
27
28     if (banyakPesanan <= 0) {
29         cout << "Banyak jenis tidak boleh nol atau negatif!\n";
30         return 0;
31     }
32
33     int totalSemua = 0;
34
35     for (int i = 0; i < banyakPesanan; ++i) {
36         cout << "\nJenis ke- " << (i + 1) << " : ";
37         int jenisKe = i;
38         int potongKe = 0;
39         while (true) {
40             cout << "Jenis Potong [D/P/S]: ";
41             string potongKe = "";
42             while (potongKe.empty()) {
43                 potongKe = " ";
44             }
45             int potongKeInt = potongKe[0] - 'D';
46             if (potongKeInt < 0 || potongKeInt > 2) {
47                 cout << "Jenis Potong tidak valid! Silakan ulangi.\n";
48                 continue;
49             }
50             int jumlahPotongKe = 0;
51             while (true) {
52                 cout << "Banyak Potongan: ";
53                 int jumlahPotongKeInt = jumlahPotongKe;
54                 while (jumlahPotongKeInt < 0) {
55                     jumlahPotongKeInt = 0;
56                 }
57                 jumlahPotongKe = jumlahPotongKeInt;
58             }
59             namaPotong[i] = jenis[jenisKe];
60             jumlahPotong[i] += jumlahPotongKe;
61             totalHarga[i] += jumlahPotongKe * harga[jenisKe];
62             totalSemua += totalHarga[i];
63             validKode = true;
64             break;
65         }
66     }
67
68     cout << "\n\nGERBAK FRIED CHICKEN\n";
69     cout << "No.  Jenis Potong  Harga Satuan  Banyak Beli  Jumlah Harga\n";
70     cout << "-----\n";
71     for (int i = 0; i < banyakPesanan; ++i) {
72         cout << (i + 1) << "    " << namaPotong[i] << "    Rp. "
73             << harga[i] << "    " << jumlahPotong[i]
74             << "    Rp. " << totalHarga[i] << "\n";
75     }
76     cout << "-----\n";
77     cout << "Jumlah Bayar : Rp. " << totalSemua << "\n";
78 }
```

```
GERBAK FRIED CHICKEN
-----
Kode  Jenis  Harga
-----
[D]   Dada   Rp. 2500
[P]   Paha   Rp. 2000
[S]   Sayap   Rp. 1500
-----

Banyak Jenis: 3

Jenis ke-1
Jenis Potong [D/P/S]: d
Banyak Potongan: 2

Jenis ke-2
Jenis Potong [D/P/S]: p
Banyak Potongan: 3

Jenis ke-3
Jenis Potong [D/P/S]: s
Banyak Potongan: 5

GERBAK FRIED CHICKEN
-----
No.  Jenis Potong  Harga Satuan  Banyak Beli  Jumlah Harga
-----
1    Dada          Rp. 2500      2            Rp. 5000
2    Paha          Rp. 2500      3            Rp. 6000
3    Sayap         Rp. 2500      5            Rp. 7500
-----
Jumlah Bayar : Rp. 18500

-----
Process exited after 28.5 seconds with return value 0
Press any key to continue . . .
```