

LAPORAN TUGAS KECIL 1

Penyelesaian Permainan Kartu 24 dengan Algoritma

Brute Force

Ditujukan untuk memenuhi salah satu tugas kecil mata kuliah IF2211 Strategi Algoritma
pada Semester II Tahun Akademik 2022/2023

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2023

A. Algoritma *Brute Force*

Algoritma *brute force* merupakan penyelesaian suatu masalah dengan pendekatan yang sederhana, langsung, jelas, dan mudah dipahami. Dengan menggunakan algoritma *brute force*, penyelesaian suatu masalah cenderung dilakukan dengan mencari dan meninjau semua kasus yang ada. Dengan demikian, algoritma *brute force* dapat dikatakan sebagai algoritma yang lempang (*straight forward*). Keunggulan dari algoritma ini adalah cukup mudah untuk dipahami dan dapat diterapkan untuk hamper semua permasalahan komputasi. Akan tetapi, kekurangan dari algoritma ini adalah tidak efisien karena membutuhkan langkah yang banyak dalam penyelesaiannya sehingga membutuhkan waktu yang cukup lama.

Aplikasi dari algoritma *brute force* dalam persoalan komputasi cukup banyak salah satunya yaitu 24 Game Solver. Pertama-tama, program akan menampilkan opsi atau pilihan apakah pengguna ingin input sendiri secara manual atau random (program men-generate 4 angka atau hurufnya sendiri secara random). Untuk input manual, maka pengguna akan diarahkan mengisi 4 angka atau huruf. Pengguna hanya dapat mengisi 4 buah angka, 4 buah huruf, ataupun kombinasi dari angka dan huruf sejumlah 4 buah. Dalam menginputkan suatu nilai, pengguna hanya bisa menginputkan A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K. Apabila salah satu input bernilai selain A, 2, 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K maka program akan mengeluarkan pesan “Masukan tidak sesuai”. Jika pengguna memilih secara random, maka akan diacak 4 angka yang hasilnya akan ditampilkan ke pengguna. Adapun selanjutnya dilakukan algoritma *brute force* yang langkah-langkahnya sebagai berikut.

Ada beberapa hal yang perlu diperhatikan agar dapat mengcover semua kemungkinan solusi yang ada dalam permainan kartu 24 ini.

Pertama, hal yang harus diperhatikan dalam permainan kartu 24 ini adalah jenis operasi. Input yang dimiliki program dapat berupa angka atau huruf yang nantinya dikonversi ke angka. Dalam proses perhitungan ada 3 operator bilangan yang pasti terlibat di dalamnya. Sehingga 4 operator yang tersedia yaitu “+”, “-”, “*”, dan “/” harus pernah ada di 3 posisi yang tersedia di operator.

Kedua, hal yang harus diperhatikan yaitu posisi dari 4 input yang dimiliki yang mungkin bisa saja posisinya berubah-ubah. Ada 24 kemungkinan yang berasal dari $4!$, dimana 4 berasal dari jumlah input yang dimiliki. Untuk mengcover ini, maka dilakukan kondisional sebanyak 24 kali. Dengan posisi keempat input itu diubah-ubah. Dalam kondisional itu juga diperhatikan posisi kurung yang akan dibahas pada langkah berikutnya.

Ketiga, hal yang harus diperhatikan adalah posisi kurung. Dalam matematika, posisi kurung ini cukup diperhatikan karena operasi yang terlibat kurung didalamnya harus diolah sebelum penyelesaiannya. Terdapat 5 kemungkinan posisi kurung yang dapat terjadi pada 4 angka yang telah diinputkan. Misalkan input yang ada adalah bilangan a,b,c, dan d maka kemungkinan posisi kurungnya adalah sebagai berikut a op (b op (c op d)), a op ((b op c) op d), (a op b) op (c op d), (a op (b op c)) op d, ((a op b) op c) op d. Untuk meng-cover ini dilakukan juga kondisional.

Dengan ketiga langkah tersebut semua kemungkinan operasi yang dapat menghasilkan hasil bernilai 24 dapat ditampilkan.

B. Source Program

Source code program ditulis dalam bahasa pemrograman C++ dan dibungkus hanya dalam 1 file Bernama main.cpp. Berikut adalah source code yang terdapat dalam file main.cpp

```
// Nama : Ferindya Aulia Berlianty
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// Deskripsi : Tugas Kecil 1 Penyelesaian Permainan Kartu 24 dengan Algoritma Brute Force

#include <iostream>
#include <ctime>
#include <stdlib.h>
#include <vector>
#include <fstream>
#include <time.h>
using namespace std;

// Definisi fungsi dan prosedur yang digunakan
bool valid(float b, float c, float d, float e);
// Mengecek apakah input b, c, d, e merupakan bilangan positif
void swap(int x, float *b, float *c, float *d, float *e, float r, float s, float t, float u);
// Mengubah urutan posisi
void hitung1(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung b ... c ... d ... e
void hitung2(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung (b ... c) ... d ... e
void hitung3(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung b ... (c ... d) ... e
void hitung4(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung b ... c ... (d ... e)
void hitung5(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung (b ... (c ... d)) ... e
void hitung6(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung ((b ... c) ... d) ... e
void hitung7(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban);
// menghitung (b ... c) ... (d ... e)
void convert(string input, float *value);
// mengubah masukan string (kartu) menjadi integer
```

```

int main() {
    srand(time(0));
    bool check;
    int i, x, y;
    int count;
    string a, j, q, k;
    float b, c, d, e;
    float r, s, t, u;
    float time;

    vector<string> jawaban;
    check = false;
    count = 0;

    while (!check) {
        printf("Pilih masukan: \n");
        printf("Ketik 1 untuk Input Manual\n");
        printf("Ketik 2 untuk Random\n");
        int input;
        cin >> input;
        if(input == 1)
        {
            printf("\n Masukkan 4 angka/huruf : ");
            cin >> a >> j >> q >> k;
            convert(a,&b);
            convert(j,&c);
            convert(q,&d);
            convert(k,&e);
            check = valid(b, c, d, e);
        }
        else if(input == 2)
        {
            b = (rand()%13)+1;
            c = (rand()%13)+1;
            d = (rand()%13)+1;
            e = (rand()%13)+1;
            check = valid(b, c, d, e);
        }
    }
}

```

```

if (!check) {
    printf("\n Masukan tidak sesuai ");
    printf("\n press enter to continue\n ");
    cin.get();
    cin.get();
    system("cls");
}

r = b;
s = c;
t = d;
u = e;
time = clock();

for (i = 0; i <= 24; i++) {
    for (x = 1; x <= 4; x++) {
        for (y = 1; y <= 4; y++) {
            hitung1(x, y, b, c, d, e, &count, jawaban);
            hitung2(x, y, b, c, d, e, &count, jawaban);
            hitung3(x, y, b, c, d, e, &count, jawaban);
            hitung4(x, y, b, c, d, e, &count, jawaban);
            hitung5(x, y, b, c, d, e, &count, jawaban);
            hitung6(x, y, b, c, d, e, &count, jawaban);
            hitung7(x, y, b, c, d, e, &count, jawaban);
        }
    }
    swap(i, &b, &c, &e, r, s, t, u);
}

time = (clock() - time) / CLOCKS_PER_SEC;

if (count == 0) {
    printf("\n Tidak ada solusi\n");
} else {
    printf("\n %d solutions found\n", count);
}

```

```

// tulis ke layar
for (int i = 0; i < jawaban.size(); i++){
    cout << jawaban[i] << endl;
}
// tulis ke file
string ans, namaFile;
printf("Apakah ingin menyimpan solusi ? (y/n)\n");
cin >> ans;
if (ans == "y") {
    printf("Masukkan nama file (dengan format.txt): \n");
    cin >> namaFile;
    printf("Hasil berhasil disimpan dalam file.\n");
    ofstream file;
    file.open("../test/" + namaFile);
    for (int i = 0 ;i < jawaban.size(); i++){
        file << jawaban[i] << endl;
    }
    file.close();
}
else if (ans == "n") {
    printf("Hasil tidak disimpan dalam file.\n");
}

printf("Waktu Eksekusi Program = %.5f detik\n", time);
return 0;
}

```

```

void convert(string input, float *value)
{
    if(input == "A") {
        *value = 1;
    }
    else if (input == "J") {
        *value = 11;
    }
    else if (input == "Q") {
        *value = 12;
    }
    else if (input == "K") {
        *value = 13;
    }
    else if (input == "2") {
        *value = 2;
    }
    else if (input == "3") {
        *value = 3;
    }
    else if (input == "4") {
        *value = 4;
    }
    else if (input == "5") {
        *value = 5;
    }
    else if (input == "6") {
        *value = 6;
    }
    else if (input == "7") {
        *value = 7;
    }
    else if (input == "8") {
        *value = 8;
    }
    else if (input == "9") {
        *value = 9;
    }
}

```

```

        else if (input == "9") {
            *value = 9;
        }
        else if (input == "10") {
            *value = 10;
        } else {
            *value = -1;
        }
    }

bool valid(float b, float c, float d, float e) {
    bool cek;
    cek = true;
    if ((b < 0) || (c < 0) || (d < 0) || (e < 0)) {
        cek = false;
    }
    return cek;
}

void swap(int x, float *b, float *c, float *d, float *e, float r, float s, float t, float u) {
    switch (x) {
        case 1:
        {
            *b = r; *c = s; *d = t; *e = u;
            break;
        }
        case 2:
        {
            *b = r; *c = s; *d = u; *e = t;
            break;
        }
        case 3:
        [
            *b = s; *c = r; *d = t; *e = u;
            break;
        ]
    }
}

```

```

    case 4:
    {
        *b = s; *c = r; *d = u; *e = t;
        break;
    }
    case 5:
    {
        *b = u; *c = t; *d = s; *e = r;
        break;
    }
    case 6:
    {
        *b = t; *c = u; *d = s; *e = r;
        break;
    }
    case 7:
    {
        *b = u; *c = t; *d = r; *e = s;
        break;
    }
    case 8:
    {
        *b = t; *c = u; *d = r; *e = s;
        break;
    }
    case 9:
    {
        *b = r; *c = u; *d = s; *e = t;
        break;
    }
    case 10:
    {
        *b = r; *c = u; *d = t; *e = s;
        break;
    }
    case 11:
    {

```

```

        *b = t; *c = r; *d = u; *e = s;
        break;
    }
    case 12:
    {
        *b = t; *c = r; *d = s; *e = u;
        break;
    }
    case 13:
    {
        *b = s; *c = u; *d = t; *e = r;
        break;
    }
    case 14:
    {
        *b = s; *c = u; *d = r; *e = t;
        break;
    }
    case 15:
    {
        *b = u; *c = s; *d = r; *e = t;
        break;
    }
    case 16:
    {
        *b = u; *c = s; *d = t; *e = r;
        break;
    }
    case 17:
    {
        *b = r; *c = t; *d = u; *e = s;
        break;
    }
    case 18:
    {
        *b = r; *c = t; *d = s; *e = u;
        break;
    }

```

```

    case 18:
    {
        *b = r; *c = t; *d = s; *e = u;
        break;
    }
    case 19:
    {
        *b = t; *c = s; *d = r; *e = u;
        break;
    }
    case 20:
    {
        *b = t; *c = s; *d = u; *e = r;
        break;
    }
    case 21:
    {
        *b = s; *c = t; *d = r; *e = u;
        break;
    }
    case 22:
    {
        *b = s; *c = t; *d = u; *e = r;
        break;
    }
    case 23:
    {
        *b = u; *c = r; *d = t; *e = s;
        break;
    }
    case 24:
    {
        *b = u; *c = r; *d = s; *e = t;
        break;
    }
}

```

```

void hitung1(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = b + c + d + e;
                    hasil2 = b + c + d - e;
                    hasil3 = b + c + d * e;
                    hasil4 = b + c + d / e;
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + %.0f - %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f * %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f * %.0f / %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    break;
                }
            }
        }
    }
}

```

```

case 2: {
    hasil1 = b + c - d + e;
    hasil2 = b + c - d - e;
    hasil3 = b + c - d * e;
    hasil4 = b + c - d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = b + c * d + e;
    hasil2 = b + c * d - e;
    hasil3 = b + c * d * e;
    hasil4 = b + c * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f * %0f - %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f * %0f * %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f * %0f / %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = b + c / d + e;
        hasil2 = b + c / d - e;
        hasil3 = b + c / d * e;
        hasil4 = b + c / d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f / %0f + %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f / %0f - %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f / %0f * %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%d. %0f + %0f / %0f / %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 2: {
        switch (y) {
            case 1: {
                hasil1 = b - c + d + e;
                hasil2 = b - c + d - e;
                hasil3 = b - c + d * e;
                hasil4 = b - c + d / e;
                if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%d. %0f - %0f + %0f + %0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%d. %0f - %0f + %0f - %0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%d. %0f - %0f + %0f * %0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%d. %0f - %0f + %0f / %0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
            }
        }
    }
}

```

```

        break;
    }
    case 2: {
        hasil1 = b - c - d + e;
        hasil2 = b - c - d - e;
        hasil3 = b - c - d * e;
        hasil4 = b - c - d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 3: {
        hasil1 = b - c * d + e;
        hasil2 = b - c * d - e;
        hasil3 = b - c * d * e;
        hasil4 = b - c * d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = b - c / d + e;
        hasil2 = b - c / d - e;
        hasil3 = b - c / d * e;
        hasil4 = b - c / d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f / %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f / %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f / %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f - %.0f / %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}

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        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %0f - %0f / %0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
break;
}
case 3: {
switch (y) {
    case 1: {
        hasil1 = b * c + d + e;
        hasil2 = b * c + d - e;
        hasil3 = b * c + d * e;
        hasil4 = b * c + d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f / %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f + %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f * %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f + %0f / %0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
}
}

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        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = b * c - d + e;
    hasil2 = b * c - d - e;
    hasil3 = b * c - d * e;
    hasil4 = b * c - d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %0f * %0f - %0f + %0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %0f * %0f - %0f - %0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %0f * %0f - %0f * %0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %0f * %0f - %0f / %0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = b * c * d + e;
    hasil2 = b * c * d - e;
    hasil3 = b * c * d * e;
    hasil4 = b * c * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {

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        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f * %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f * %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = b * c / d + e;
    hasil2 = b * c / d - e;
    hasil3 = b * c / d * e;
    hasil4 = b * c / d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f / %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f / %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f / %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f * %.0f / %.0f * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    switch (y) {
        case 1: {
            hasil1 = b / c + d + e;
            hasil2 = b / c + d - e;
            hasil3 = b / c + d * e;
            hasil4 = b / c + d / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f + %.0f + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f + %.0f - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * %.0f + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * %.0f * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}

```

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        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f + %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = b / c - d + e;
    hasil2 = b / c - d - e;
    hasil3 = b / c - d * e;
    hasil4 = b / c - d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f - %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f - %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f - %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f - %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = b / c * d + e;
    hasil2 = b / c * d - e;
    hasil3 = b / c * d * e;
    hasil4 = b / c * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f * %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f * %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = b / c / d + e;
    hasil2 = b / c / d - e;
    hasil3 = b / c / d * e;
    hasil4 = b / c / d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f / %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / %.0f / %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f / %.0f / %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f / %.0f / %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}
break;
}

void hitung2(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = (b + c) + d + e;
                    hasil2 = (b + c) + d - e;
                    hasil3 = (b + c) + d * e;
                    hasil4 = (b + c) + d / e;
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) + %.0f + %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;

```

```

                        sprintf(tmp,"%7d. (%.0f + %.0f) + %.0f - %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) + %.0f * %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) + %.0f / %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    break;
                }
                case 2: {
                    hasil1 = (b + c) - d + e;
                    hasil2 = (b + c) - d - e;
                    hasil3 = (b + c) - d * e;
                    hasil4 = (b + c) - d / e;
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) - %.0f + %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) - %.0f - %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                        (*f)++;

```

```

        sprintf(tmp,"%7d. (%.0f + %.0f) - %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) - %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b + c) * d + e;
    hasil2 = (b + c) * d - e;
    hasil3 = (b + c) * d * e;
    hasil4 = (b + c) * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}

```

```

case 4: {
    hasil1 = (b + c) / d + e;
    hasil2 = (b + c) / d - e;
    hasil3 = (b + c) / d * e;
    hasil4 = (b + c) / d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
break;
}
case 2: {
    switch (y) {
        case 1: {
            hasil1 = (b - c) + d + e;
            hasil2 = (b - c) + d - e;
            hasil3 = (b - c) + d * e;
            hasil4 = (b - c) + d / e;

```

```

        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) + %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) + %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) + %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) + %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 2: {
        hasil1 = (b - c) - d + e;
        hasil2 = (b - c) - d - e;
        hasil3 = (b - c) - d * e;
        hasil4 = (b - c) - d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) - %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) - %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }

```

```

    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b - c) * d + e;
    hasil2 = (b - c) * d - e;
    hasil3 = (b - c) * d * e;
    hasil4 = (b - c) * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        |     break;
    }
    case 4: {
        hasil1 = (b - c) / d + e;
        hasil2 = (b - c) / d - e;
        hasil3 = (b - c) / d * e;
        hasil4 = (b - c) / d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) / %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) / %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) / %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f - %.0f) / %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 3: {
        switch (y) {
            case 1: {
                hasil1 = (b * c) + d + e;
                hasil2 = (b * c) + d - e;
                hasil3 = (b * c) + d * e;
                hasil4 = (b * c) + d / e;
                if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) + %.0f + %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) + %.0f - %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) + %.0f * %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                break;
            }
            case 2: {
                hasil1 = (b * c) - d + e;
                hasil2 = (b * c) - d - e;
                hasil3 = (b * c) - d * e;
                hasil4 = (b * c) - d / e;
                if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) - %.0f + %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) - %.0f - %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. (%.0f * %.0f) - %.0f * %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
            }
        }
    }
}

```

```

        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) - %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 3: {
        hasil1 = (b * c) * d + e;
        hasil2 = (b * c) * d - e;
        hasil3 = (b * c) * d * e;
        hasil4 = (b * c) * c / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) * %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) * %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) * %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) * %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = (b * c) / d + e;

```

```

        hasil2 = (b * c) / d - e;
        hasil3 = (b * c) / d * e;
        hasil4 = (b * c) / c / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) / %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) / %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) / %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * %.0f) / %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    break;
}
case 4: {
    switch (y) {
        case 1: {
            hasil1 = (b / c) + d + e;
            hasil2 = (b / c) + d - e;
            hasil3 = (b / c) + d * e;
            hasil4 = (b / c) + d / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;

```

```

        sprintf(tmp,"%7d. (%.0f / %.0f) + %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) + %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) + %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) + %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = (b / c) - d + e;
    hasil2 = (b / c) - d - e;
    hasil3 = (b / c) - d * e;
    hasil4 = (b / c) - d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) - %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) - %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;

```

```

        sprintf(tmp,"%7d. (%.0f / %.0f) - %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) - %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b / c) * d + e;
    hasil2 = (b / c) * d - e;
    hasil3 = (b / c) * d * e;
    hasil4 = (b / c) * d / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) * %.0f + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) * %.0f - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) * %.0f * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / %.0f) * %.0f / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}

```

```

        }
    case 4: {
        hasil1 = (b / c) / d + e;
        hasil2 = (b / c) / d - e;
        hasil3 = (b / c) / d * e;
        hasil4 = (b / c) / d / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f / %.0f) / %.0f + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f / %.0f) / %.0f - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f / %.0f) / %.0f * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f / %.0f) / %.0f / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}
break;
}
}

```

```

void hitung3(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = b + (c + d) + e;
                    hasil2 = b + (c + d) - e;
                    hasil3 = b + (c + d) * e;
                    hasil4 = b + (c + d) / e;
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + (%.0f + %.0f) + %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + (%.0f + %.0f) - %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    break;
                }
                case 2: {
                    hasil1 = b + (c - d) + e;
                    hasil2 = b + (c - d) - e;
                    hasil3 = b + (c - d) * e;

```

```

        hasil4 = b + (c - d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f - %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f - %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f - %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f - %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 3: {
        hasil1 = b + (c * d) + e;
        hasil2 = b + (c * d) - e;
        hasil3 = b + (c * d) * e;
        hasil4 = b + (c * d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f * %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f * %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f * %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f * %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = b + (c / d) + e;
        hasil2 = b + (c / d) - e;
        hasil3 = b + (c / d) * e;
        hasil4 = b + (c / d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f / %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f / %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f / %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f + (%.0f / %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}

```

```

        }
        break;
    }
}

case 2: {
    switch (y) {
        case 1: {
            hasil1 = b - (c + d) + e;
            hasil2 = b - (c + d) - e;
            hasil3 = b - (c + d) * e;
            hasil4 = b - (c + d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f + %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f + %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 2: {
            hasil1 = b - (c - d) + e;

```

```

            hasil2 = b - (c - d) - e;
            hasil3 = b - (c - d) * e;
            hasil4 = b - (c - d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f - %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f - %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f - %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f - %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 3: {
            hasil1 = b - (c * d) + e;
            hasil2 = b - (c * d) - e;
            hasil3 = b - (c * d) * e;
            hasil4 = b - (c * d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - (%.0f * %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;

```

```

        sprintf(tmp,"%7d. %.0f - (%.0f * %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f - (%.0f * %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f - (%.0f * %.0f) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = b - (c / d) + e;
    hasil2 = b - (c / d) - e;
    hasil3 = b - (c / d) * e;
    hasil4 = b - (c / d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f - (%.0f / %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f - (%.0f / %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f - (%.0f / %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;

```

```

        sprintf(tmp,"%7d. %.0f - (%.0f / %.0f) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    switch (y) {
        case 1: {
            hasil1 = b * (c + d) + e;
            hasil2 = b * (c + d) - e;
            hasil3 = b * (c + d) * e;
            hasil4 = b * (c + d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f + %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f + %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}
```

```

        case 2: {
            hasil1 = b * (c - d) + e;
            hasil2 = b * (c - d) - e;
            hasil3 = b * (c - d) * e;
            hasil4 = b * (c - d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f - %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f - %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f - %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f - %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 3: {
            hasil1 = b * (c * d) + e;
            hasil2 = b * (c * d) - e;
            hasil3 = b * (c * d) * e;
            hasil4 = b * (c * d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f * (%.0f * %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }

```

```

        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f * %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f * %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f * %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = b * (c / d) + e;
        hasil2 = b * (c / d) - e;
        hasil3 = b * (c / d) * e;
        hasil4 = b * (c / d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f / %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f / %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f / %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f / %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }

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        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * (%.0f / %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        switch (y) {
            case 1: {
                hasil1 = b / (c + d) + e;
                hasil2 = b / (c + d) - e;
                hasil3 = b / (c + d) * e;
                hasil4 = b / (c + d) / e;
                if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. %.0f / (%.0f + %.0f) + %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. %.0f / (%.0f + %.0f) - %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. %.0f / (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
                if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                    (*f)++;
                    sprintf(tmp,"%7d. %.0f / (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
                    jawaban.push_back(string(tmp));
                }
            }
        }
    }
}

```

```

case 2: {
    hasil1 = b / (c - d) + e;
    hasil2 = b / (c - d) - e;
    hasil3 = b / (c - d) * e;
    hasil4 = b / (c - d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f - %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f - %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f - %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f - %.0f) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = b / (c * d) + e;
    hasil2 = b / (c * d) - e;
    hasil3 = b / (c * d) * e;
    hasil4 = b / (c * d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f * %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f / (%.0f * %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f / (%.0f * %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f / (%.0f * %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    } break;
}
case 4: {
    hasil1 = b / (c / d) + e;
    hasil2 = b / (c / d) - e;
    hasil3 = b / (c / d) * e;
    hasil4 = b / (c / d) / e;
    if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f / %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f / %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f / (%.0f / %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}
if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
    (*f)++;
    sprintf(tmp,"%7d. %.0f / (%.0f / %.0f) / %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
} break;
}
}

void hitung4(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = b + c + (d + e);
                    hasil2 = b + c + (d - e);
                    hasil3 = b + c + (d * e);
                    hasil4 = b + c + (d / e);
                    if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + (%.0f + %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + (%.0f - %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + (%.0f * %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
                        (*f)++;
                        sprintf(tmp,"%7d. %.0f + %.0f + (%.0f * %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                } break;
            }
        } break;
    }
}

```

```

        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f + (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = b + c - (d + e);
    hasil2 = b + c - (d - e);
    hasil3 = b + c - (d * e);
    hasil4 = b + c - (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) [
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    ]
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f - (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {

    hasil1 = b + c * (d + e);
    hasil2 = b + c * (d - e);
    hasil3 = b + c * (d * e);
    hasil4 = b + c * (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f * (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f * (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f * (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f * (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = b + c / (d + e);
    hasil2 = b + c / (d - e);
    hasil3 = b + c / (d * e);
    hasil4 = b + c / (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f / (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {

```

```

        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f / (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f / (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. %.0f + %.0f / (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
break;
}

case 2: {
    switch (y) {
        case 1: {
            hasil1 = b - c + (d + e);
            hasil2 = b - c + (d - e);
            hasil3 = b - c + (d * e);
            hasil4 = b - c + (d / e);
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f + (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f + (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f + (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f + (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 2: {
            hasil1 = b - c - (d + e);
            hasil2 = b - c - (d - e);
            hasil3 = b - c - (d * e);
            hasil4 = b - c - (d / e);
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f - (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f - (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f - (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f - %.0f - (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}

```

```

case 3: {
    hasil1 = b - c * (d + e);
    hasil2 = b - c * (d - e);
    hasil3 = b - c * (d * e);
    hasil4 = b - c * (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d.%0f - %0f * (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d.%0f - %0f * (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d.%0f - %0f * (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d.%0f - %0f * (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = b - c / (d + e);
    hasil2 = b - c / (d - e);
    hasil3 = b - c / (d * e);
    hasil4 = b - c / (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d.%0f - %0f / (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d.%0f - %0f / (%.0f - %.0f)\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d.%0f - %0f / (%.0f * %.0f)\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d.%0f - %0f / (%.0f / %.0f)\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
break;
}
}
break;
}
case 3: {
    switch (y) {
        case 1: {
            hasil1 = b * c + (d + e);
            hasil2 = b * c + (d - e);
            hasil3 = b * c + (d * e);
            hasil4 = b * c + (d / e);
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d.%0f * %0f + (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d.%0f * %0f + (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
        }
    }
}

```

```

        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f + (%.0f * %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f + (%.0f / %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 2: {
        hasil1 = b * c - (d + e);
        hasil2 = b * c - (d - e);
        hasil3 = b * c - (d * e);
        hasil4 = b * c - (d / e);
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f - (%.0f + %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f - (%.0f - %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f - (%.0f * %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f - (%.0f / %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
    case 3: {
        hasil1 = b * c * (d + e);
        hasil2 = b * c * (d - e);
        hasil3 = b * c * (d * e);
        hasil4 = b * c * (d / e);
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f * (%.0f + %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f * (%.0f - %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f * (%.0f * %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f * (%.0f / %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = b * c / (d + e);
        hasil2 = b * c / (d - e);
        hasil3 = b * c / (d * e);
        hasil4 = b * c / (d / e);
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. %.0f * %.0f / (%.0f + %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
}

```

```

        if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f / (%.0f - %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f / (%.0f * %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %0f * %0f / (%.0f / %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    break;
}
case 4: {
    switch (y) {
        case 1: {
            hasil1 = b / c + (d + e);
            hasil2 = b / c + (d - e);
            hasil3 = b / c + (d * e);
            hasil4 = b / c + (d / e);
            if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001) {
                (*f)++;
                sprintf(tmp,"%7d. %0f / %0f + (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
                (*f)++;
                sprintf(tmp,"%7d. %0f / %0f + (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
        }
        if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %0f / %0f + (%.0f * %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
            (*f)++;
            sprintf(tmp,"%7d. %0f / %0f + (%.0f / %.0f)\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}

```

```

case 2: {
    hasil1 = b / c - (d + e);
    hasil2 = b / c - (d - e);
    hasil3 = b / c - (d * e);
    hasil4 = b / c - (d / e);
    if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %0f / %0f - (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %0f / %0f - (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %0f / %0f - (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001) {
        (*f)++;
        sprintf(tmp,"%7d. %0f / %0f - (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}

```

```

        case 3: {
            hasil1 = b / c * (d + e);
            hasil2 = b / c * (d - e);
            hasil3 = b / c * (d * e);
            hasil4 = b / c * (d / e);
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f * (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 4: {
            hasil1 = b / c / (d + e);
            hasil2 = b / c / (d - e);
            hasil3 = b / c / (d * e);
            hasil4 = b / c / (d / e);
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f / (%.0f + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f / (%.0f - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f / (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. %.0f / %.0f / (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}

void hitungs(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = (b + (c + d)) + e;
                    hasil2 = (b + (c + d)) - e;
                    hasil3 = (b + (c + d)) * e;
                    hasil4 = (b + (c + d)) / e;
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + (%.0f + %.0f)) + %.0f\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                }
            }
        }
    }
}

```

```

        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f + %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f + %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f + %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = (b + (c - d)) + e;
    hasil2 = (b + (c - d)) - e;
    hasil3 = (b + (c - d)) * e;
    hasil4 = (b + (c - d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f - %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f - %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f - %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f - %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b + (c * d)) + e;
    hasil2 = (b + (c * d)) - e;
    hasil3 = (b + (c * d)) * e;
    hasil4 = (b + (c * d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f * %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f * %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f * %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + (%.0f * %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {

```

```

        hasil1 = (b + (c / d)) + e;
        hasil2 = (b + (c / d)) - e;
        hasil3 = (b + (c / d)) * e;
        hasil4 = (b + (c / d)) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + (%.0f / %.0f)) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + (%.0f / %.0f)) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + (%.0f / %.0f)) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + (%.0f / %.0f)) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
}
break;
}
case 2: {
    switch (y) {
        case 1: {
            hasil1 = (b - (c + d)) + e;
            hasil2 = (b - (c + d)) - e;
            hasil3 = (b - (c + d)) * e;
            hasil4 = (b - (c + d)) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - (%.0f + %.0f)) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - (%.0f + %.0f)) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - (%.0f + %.0f)) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - (%.0f + %.0f)) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
        }
        break;
    }
}
case 2: {
    hasil1 = (b - (c - d)) + e;
    hasil2 = (b - (c - d)) - e;
    hasil3 = (b - (c - d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f - %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f - %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
    }
}

```

```

        sprintf(tmp,"%7d. (%.0f - (%.0f - %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b - (c * d)) + e;
    hasil2 = (b - (c * d)) - e;
    hasil3 = (b - (c * d)) * e;
    hasil4 = (b - (c * d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f * %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f * %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f * %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f * %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = (b - (c / d)) + e;
    hasil2 = (b - (c / d)) - e;
    hasil3 = (b - (c / d)) * e;
    hasil4 = (b - (c / d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f / %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f / %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f / %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - (%.0f / %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
}
case 3: {
    switch (y) {
        case 1: {
            hasil1 = (b * (c + d)) + e;
            hasil2 = (b * (c + d)) - e;
            hasil3 = (b * (c + d)) * e;
            hasil4 = (b * (c + d)) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f * (%.0f + %.0f)) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
        }
    }
}

```

```

        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f + %.0f)) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f + %.0f)) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f + %.0f)) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 2: {
        hasil1 = (b * (c - d)) + e;
        hasil2 = (b * (c - d)) - e;
        hasil3 = (b * (c - d)) * e;
        hasil4 = (b * (c - d)) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f - %.0f)) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f - %.0f)) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f - %.0f)) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f - %.0f)) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 3: {
        hasil1 = (b * (c * d)) + e;
        hasil2 = (b * (c * d)) - e;
        hasil3 = (b * (c * d)) * e;
        hasil4 = (b * (c * d)) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f * %.0f)) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f * %.0f)) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f * %.0f)) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f * (%.0f * %.0f)) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = (b * (c / d)) + e;
        hasil2 = (b * (c / d)) - e;

```

```

hasil3 = (b * (c / d)) * e;
hasil4 = (b * (c / d)) / e;
if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. (%.0f * (%.0f / %.0f)) + %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. (%.0f * (%.0f / %.0f)) - %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. (%.0f * (%.0f / %.0f)) * %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. (%.0f * (%.0f / %.0f)) / %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
break;
}
break;
}
case 4: {
    switch (y) {
        case 1: {
            hasil1 = (b / (c + d)) + e;
            hasil2 = (b / (c + d)) - e;
            hasil3 = (b / (c + d)) * e;
            hasil4 = (b / (c + d)) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        break;
    }
}

```

```

        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f + %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}
break;
}
case 2: {
    hasil1 = (b / (c - d)) + e;
    hasil2 = (b / (c - d)) - e;
    hasil3 = (b / (c - d)) * e;
    hasil4 = (b / (c - d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f - %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f - %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f - %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f - %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f - %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = (b / (c * d)) + e;
    hasil2 = (b / (c * d)) - e;
    hasil3 = (b / (c * d)) * e;
    hasil4 = (b / (c * d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f * %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f * %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f * %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f * %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = (b / (c / d)) + e;
    hasil2 = (b / (c / d)) - e;
    hasil3 = (b / (c / d)) * e;
    hasil4 = (b / (c / d)) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f / %.0f)) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f / %.0f)) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f / %.0f)) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f / (%.0f / %.0f)) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
}
}

void hitung6(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {

```

```

switch (y) {
    case 1: {
        hasil1 = ((b + c) + d) + e;
        hasil2 = ((b + c) + d) - e;
        hasil3 = ((b + c) + d) * e;
        hasil4 = ((b + c) + d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) + %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) + %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) + %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) + %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 2: {
        hasil1 = ((b + c) - d) + e;
        hasil2 = ((b + c) - d) - e;
        hasil3 = ((b + c) - d) * e;
        hasil4 = ((b + c) - d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) - %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) - %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) - %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) - %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
    case 3: {
        hasil1 = ((b + c) * d) + e;
        hasil2 = ((b + c) * d) - e;
        hasil3 = ((b + c) * d) * e;
        hasil4 = ((b + c) * d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) * %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) * %.0f) - %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
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            sprintf(tmp,"%7d. ((%.0f + %.0f) * %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. ((%.0f + %.0f) * %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
    }
}

```

```

        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
    case 4: {
        hasil1 = ((b + c) / d) + e;
        hasil2 = ((b + c) / d) - e;
        hasil3 = ((b + c) / d) * e;
        hasil4 = ((b + c) / d) / e;
        if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + %.0f) + %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + %.0f) * %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
            (*f)++;
            sprintf(tmp,"%7d. (%.0f + %.0f) / %.0f\n", (*f), b, c, d, e);
            jawaban.push_back(string(tmp));
        }
        break;
    }
}
case 2: {
    switch (y) {
        case 1: {
            hasil1 = ((b - c) + d) + e;
            hasil2 = ((b - c) + d) - e;
            hasil3 = ((b - c) + d) * e;
            hasil4 = ((b - c) + d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
        }
        break;
    }
}

```

```

        sprintf(tmp,"%7d. ((%.0f - %.0f) * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
        break;
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 3: {
    hasil1 = ((b - c) * d) + e;
    hasil2 = ((b - c) * d) - e;
    hasil3 = ((b - c) * d) * e;
    hasil4 = ((b - c) * d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
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    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = ((b - c) / d) + e;
    hasil2 = ((b - c) / d) - e;
    hasil3 = ((b - c) / d) * e;
    hasil4 = ((b - c) / d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
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    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f - %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
break;
}
case 3: {
    switch (y) {
        case 1: {
            hasil1 = ((b * c) + d) + e;
            hasil2 = ((b * c) + d) - e;
            hasil3 = ((b * c) + d) * e;
            hasil4 = ((b * c) + d) / e;

```

```

    if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) + %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) + %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) + %.0f) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 2: {
    hasil1 = ((b * c) - d) + e;
    hasil2 = ((b * c) - d) - e;
    hasil3 = ((b * c) - d) * e;
    hasil4 = ((b * c) - d) / e;
    if ((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) - %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) - %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. ((%.0f * %.0f) - %.0f) * %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
    (*f)++;
    sprintf(tmp,"%7d. ((%.0f * %.0f) - %.0f) / %.0f\n", (*f), b, c, d, e);
    jawaban.push_back(string(tmp));
}
break;
}

case 3: {
    hasil1 = ((b * c) / d) + e;
    hasil2 = ((b * c) / d) - e;
    hasil3 = ((b * c) / d) * e;
    hasil4 = ((b * c) / d) / e;
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) / %.0f) + %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) / %.0f) - %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) / %.0f) * %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f * %.0f) / %.0f) / %.0f\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
}

```

```

        }
        break;
    }
    break;
}
case 4: {
    switch (y) {
        case 1: {
            hasil1 = ((b / c) + d) + e;
            hasil2 = ((b / c) + d) - e;
            hasil3 = ((b / c) + d) * e;
            hasil4 = ((b / c) + d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) + %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) - %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 2: {
            hasil1 = ((b / c) - d) + e;
            hasil2 = ((b / c) - d) - e;
            hasil3 = ((b / c) - d) * e;
            hasil4 = ((b / c) - d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) - %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) - %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) - %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) - %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 3: {
            hasil1 = ((b / c) * d) + e;
            hasil2 = ((b / c) * d) - e;
            hasil3 = ((b / c) * d) * e;
            hasil4 = ((b / c) * d) / e;
            if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f) + %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f) - %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f) * %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f) / %.0f\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}

```

```

        sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f / %.0f) * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. ((%.0f / %.0f) / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
}
break;
}

void hitung7(int x, int y, float b, float c, float d, float e, int *f, vector<string> &jawaban) {
    float hasil1, hasil2, hasil3, hasil4;
    char tmp[20];
    switch (x) {
        case 1: {
            switch (y) {
                case 1: {
                    hasil1 = (b + c) + (d * e);
                    hasil2 = (b + c) + (d / e);
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) + (%.0f * %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;

```

```

                        sprintf(tmp,"%7d. (%.0f + %.0f) + (%.0f / %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    break;
                }
                case 2: {
                    hasil1 = (b + c) - (d * e);
                    hasil2 = (b + c) - (d / e);
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) - (%.0f * %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) - (%.0f / %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    break;
                }
                case 3: {
                    hasil1 = (b + c) * (d + e);
                    hasil2 = (b + c) * (d - e);
                    hasil3 = (b + c) * (d * e);
                    hasil4 = (b + c) * (d / e);
                    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) * (%.0f + %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
                        (*f)++;
                        sprintf(tmp,"%7d. (%.0f + %.0f) * (%.0f - %.0f)\n", (*f), b, c, d, e);
                        jawaban.push_back(string(tmp));
                    }
                    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
                        (*f)++;

```

```

        sprintf(tmp,"%7d. (%.0f + %.0f) * (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil4 - 24) >= -0.00001 && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) * (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = (b + c) / (d + e);
    hasil2 = (b + c) / (d - e);
    hasil3 = (b + c) / (d * e);
    hasil4 = (b + c) / (d / e);
    if ((hasil1 - 24) >= -0.00001 && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil2 - 24) >= -0.00001 && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil3 - 24) >= -0.00001 && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if ((hasil4 - 24) >= -0.00001 && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f + %.0f) / (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}

```

```

    }
    break;
}
case 2: {
    switch (y) {
        case 1: {
            hasil1 = (b - c) + (d * e);
            hasil2 = (b - c) + (d / e);
            if ((hasil1 - 24) >= -0.00001 && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) + (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if ((hasil2 - 24) >= -0.00001 && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) + (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
        case 2: {
            hasil1 = (b - c) - (d * e);
            hasil2 = (b - c) - (d / e);
            if ((hasil1 - 24) >= -0.00001 && ((hasil1 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) - (%.0f * %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            if ((hasil2 - 24) >= -0.00001 && ((hasil2 - 24) <= 0.00001)) {
                (*f)++;
                sprintf(tmp,"%7d. (%.0f - %.0f) - (%.0f / %.0f)\n", (*f), b, c, d, e);
                jawaban.push_back(string(tmp));
            }
            break;
        }
    }
}
```

```

case 3: {
    hasil1 = (b - c) * (d + e);
    hasil2 = (b - c) * (d - e);
    hasil3 = (b - c) * (d * e);
    hasil4 = (b - c) * (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * (%.0f - %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil4 - 24) >= -0.00001) && ((hasil4 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) * (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
case 4: {
    hasil1 = (b - c) / (d + e);
    hasil2 = (b - c) / (d - e);
    hasil3 = (b - c) / (d * e);
    hasil4 = (b - c) / (d / e);
    if (((hasil1 - 24) >= -0.00001) && ((hasil1 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) / (%.0f + %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil2 - 24) >= -0.00001) && ((hasil2 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) / (%.0f * %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    if (((hasil3 - 24) >= -0.00001) && ((hasil3 - 24) <= 0.00001)) {
        (*f)++;
        sprintf(tmp,"%7d. (%.0f - %.0f) / (%.0f / %.0f)\n", (*f), b, c, d, e);
        jawaban.push_back(string(tmp));
    }
    break;
}
}

```

C. Screenshots input dan output

- Testcase input manual dari pengguna dan output tidak disimpan di file

```
PS D:\Tucill_13521161> cd "d:\Tucill_13521161\src\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { ./main }

Pilih masukan:
ketik 1 untuk Input Manual
ketik 2 untuk Random
1

Masukkan 4 angka/huruf : A 2 3 4

240 solutions found
1. (1 + (2 + 3)) * 4
2. ((1 + 2) + 3) * 4
3. 1 * 2 * 3 * 4
4. (1 * 2) * 3 * 4
5. 1 * (2 * 3) * 4
6. 1 * 2 * (3 * 4)
7. (1 * (2 * 3)) * 4
8. (1 + (2 + 3)) * 4
9. ((1 + 2) + 3) * 4
10. 1 * 2 * 3 * 4
11. (1 * 2) * 3 * 4
12. 1 * (2 * 3) * 4
13. 1 * 2 * (3 * 4)
14. (1 * (2 * 3)) * 4
15. (1 + (2 + 3)) * 4
16. ((1 + 2) + 3) * 4
17. 1 * 2 * 3 * 4
18. (1 * 2) * 3 * 4
```

19. 1 * (2 * 3) * 4
 20. 1 * 2 * (3 * 4)
 21. (1 * (2 * 3)) * 4
 22. 1 * 2 * 4 * 3
 23. (1 * 2) * 4 * 3
 24. 1 * (2 * 4) * 3
 25. 1 * 2 * (4 * 3)
 26. (1 * (2 * 4)) * 3
 27. (2 + (1 + 3)) * 4
 28. ((2 + 1) + 3) * 4
 29. 2 * 1 * 3 * 4
 30. (2 * 1) * 3 * 4
 31. 2 * (1 * 3) * 4
 32. 2 * 1 * (3 * 4)
 33. (2 * (1 * 3)) * 4
 34. 2 / 1 * 3 * 4
 35. (2 / 1) * 3 * 4
 36. 2 / 1 * (3 * 4)
 37. ((2 / 1) * 3) * 4
 38. 2 / (1 / 3) * 4
 39. (2 / (1 / 3)) * 4
 40. 2 * 1 * 4 * 3
 41. (2 * 1) * 4 * 3

42. 2 * (1 * 4) * 3
 43. 2 * 1 * (4 * 3)
 44. (2 * (1 * 4)) * 3
 45. 2 / 1 * 4 * 3
 46. (2 / 1) * 4 * 3
 47. 2 / 1 * (4 * 3)
 48. ((2 / 1) * 4) * 3
 49. 2 / (1 / 4) * 3
 50. (2 / (1 / 4)) * 3
 51. 4 * 3 * 2 * 1
 52. 4 * 3 * 2 / 1
 53. (4 * 3) * 2 * 1
 54. 4 * (3 * 2) * 1
 55. 4 * (3 * 2) / 1
 56. 4 * 3 * (2 * 1)
 57. 4 * 3 * (2 / 1)
 58. (4 * (3 * 2)) * 1
 59. (4 * (3 * 2)) / 1
 60. 3 * 4 * 2 * 1
 61. 3 * 4 * 2 / 1
 62. (3 * 4) * 2 * 1
 63. 3 * (4 * 2) * 1
 64. 3 * (4 * 2) / 1

65. 3 * 4 * (2 * 1)
 66. 3 * 4 * (2 / 1)
 67. (3 * (4 * 2)) * 1
 68. (3 * (4 * 2)) / 1
 69. 4 * 3 * 1 * 2
 70. (4 * 3) * 1 * 2
 71. 4 * (3 * 1) * 2
 72. 4 * 3 * (1 * 2)
 73. (4 * (3 * 1)) * 2
 74. ((4 * 3) / 1) * 2
 75. 4 * 3 / 1 * 2
 76. (4 * 3) / 1 * 2
 77. 4 * (3 / 1) * 2
 78. 4 * 3 / (1 / 2)
 79. (4 * (3 / 1)) * 2
 80. 3 * 4 * 1 * 2
 81. (3 * 4) * 1 * 2
 82. (3 * 4) * 1 / 2
 83. 3 * (4 * 1) * 2
 84. 3 * 4 * (1 * 2)
 85. (3 * (4 * 1)) * 2
 86. ((3 * 4) / 1) * 2
 87. 3 * 4 / 1 * 2

88. $(3 * 4) / 1 * 2$	110. $3 / 1 * (4 * 2)$	132. $2 * (4 * 3) * 1$	154. $4 * 2 * (1 * 3)$
89. $3 * (4 / 1) * 2$	111. $((3 / 1) * 4) * 2$	133. $2 * (4 * 3) / 1$	155. $(4 * (2 * 1)) * 3$
90. $3 * 4 / (1 / 2)$	112. $3 / (1 / 4) * 2$	134. $2 * 4 * (3 * 1)$	156. $((4 * 2) / 1) * 3$
91. $(3 * (4 / 1)) * 2$	113. $(3 / (1 / 4)) * 2$	135. $2 * 4 * (3 / 1)$	157. $4 * 2 / 1 * 3$
92. $1 * 4 * 2 * 3$	114. $(3 + (1 + 2)) * 4$	136. $(2 * (4 * 3)) * 1$	158. $(4 * 2) / 1 * 3$
93. $(1 * 4) * 2 * 3$	115. $((3 + 1) + 2) * 4$	137. $(2 * (4 * 3)) / 1$	159. $4 * (2 / 1) * 3$
94. $1 * (4 * 2) * 3$	116. $(3 + 1) * (2 + 4)$	138. $(2 + 4) * (1 + 3)$	160. $4 * 2 / (1 / 3)$
95. $1 * 4 * (2 * 3)$	117. $3 * 1 * 2 * 4$	139. $2 * 4 * 1 * 3$	161. $(4 * (2 / 1)) * 3$
96. $(1 * (4 * 2)) * 3$	118. $(3 * 1) * 2 * 4$	140. $(2 * 4) * 1 * 3$	162. $(4 + 2) * (3 + 1)$
97. $1 * 4 * 3 * 2$	119. $3 * (1 * 2) * 4$	141. $2 * (4 * 1) * 3$	163. $4 * 2 * 3 * 1$
98. $(1 * 4) * 3 * 2$	120. $3 * 1 * (2 * 4)$	142. $2 * 4 * (1 * 3)$	164. $4 * 2 * 3 / 1$
99. $1 * (4 * 3) * 2$	121. $(3 * (1 * 2)) * 4$	143. $(2 * (4 * 1)) * 3$	165. $(4 * 2) * 3 * 1$
100. $1 * 4 * (3 * 2)$	122. $3 / 1 * 2 * 4$	144. $((2 * 4) / 1) * 3$	166. $4 * (2 * 3) * 1$
101. $(1 * (4 * 3)) * 2$	123. $(3 / 1) * 2 * 4$	145. $2 * 4 / 1 * 3$	167. $4 * (2 * 3) / 1$
102. $(3 + 1) * (4 + 2)$	124. $3 / 1 * (2 * 4)$	146. $(2 * 4) / 1 * 3$	168. $4 * 2 * (3 * 1)$
103. $3 * 1 * 4 * 2$	125. $((3 / 1) * 2) * 4$	147. $2 * (4 / 1) * 3$	169. $4 * 2 * (3 / 1)$
104. $(3 * 1) * 4 * 2$	126. $3 / (1 / 2) * 4$	148. $2 * 4 / (1 / 3)$	170. $(4 * (2 * 3)) * 1$
105. $3 * (1 * 4) * 2$	127. $(3 / (1 / 2)) * 4$	149. $(2 * (4 / 1)) * 3$	171. $(4 * (2 * 3)) / 1$
106. $3 * 1 * (4 * 2)$	128. $(2 + 4) * (3 + 1)$	150. $(4 + 2) * (1 + 3)$	172. $(1 + 3) * (4 + 2)$
107. $(3 * (1 * 4)) * 2$	129. $2 * 4 * 3 * 1$	151. $4 * 2 * 1 * 3$	173. $1 * 3 * 4 * 2$
108. $3 / 1 * 4 * 2$	130. $2 * 4 * 3 / 1$	152. $(4 * 2) * 1 * 3$	174. $(1 * 3) * 4 * 2$
109. $(3 / 1) * 4 * 2$	131. $(2 * 4) * 3 * 1$	153. $4 * (2 * 1) * 3$	175. $1 * (3 * 4) * 2$

176. $1 * 3 * (4 * 2)$	199. $3 * 2 * 4 * 1$	221. $2 * 3 * 4 * 1$
177. $(1 * (3 * 4)) * 2$	200. $3 * 2 * 4 / 1$	222. $2 * 3 * 4 / 1$
178. $(1 + (3 + 2)) * 4$	201. $(3 * 2) * 4 * 1$	223. $(2 * 3) * 4 * 1$
179. $((1 + 3) + 2) * 4$	202. $3 * (2 * 4) * 1$	224. $2 * (3 * 4) * 1$
180. $(1 + 3) * (2 + 4)$	203. $3 * (2 * 4) / 1$	225. $2 * (3 * 4) / 1$
181. $1 * 3 * 2 * 4$	204. $3 * 2 * (4 * 1)$	226. $2 * 3 * (4 * 1)$
182. $(1 * 3) * 2 * 4$	205. $3 * 2 * (4 / 1)$	227. $2 * 3 * (4 / 1)$
183. $1 * (3 * 2) * 4$	206. $(3 * (2 * 4)) * 1$	228. $(2 * (3 * 4)) * 1$
184. $1 * 3 * (2 * 4)$	207. $(3 * (2 * 4)) / 1$	229. $(2 * (3 * 4)) / 1$
185. $(1 * (3 * 2)) * 4$	208. $(2 + (3 + 1)) * 4$	230. $4 * 1 * 3 * 2$
186. $(3 + (2 + 1)) * 4$	209. $((2 + 3) + 1) * 4$	231. $(4 * 1) * 3 * 2$
187. $((3 + 2) + 1) * 4$	210. $2 * 3 * 1 * 4$	232. $4 * (1 * 3) * 2$
188. $3 * 2 * 1 * 4$	211. $(2 * 3) * 1 * 4$	233. $4 * 1 * (3 * 2)$
189. $(3 * 2) * 1 * 4$	212. $2 * (3 * 1) * 4$	234. $(4 * (1 * 3)) * 2$
190. $3 * (2 * 1) * 4$	213. $2 * 3 * (1 * 4)$	235. $4 / 1 * 3 * 2$
191. $3 * 2 * (1 * 4)$	214. $(2 * (3 * 1)) * 4$	236. $(4 / 1) * 3 * 2$
192. $(3 * (2 * 1)) * 4$	215. $((2 * 3) / 1) * 4$	237. $4 / 1 * (3 * 2)$
193. $((3 * 2) / 1) * 4$	216. $2 * 3 / 1 * 4$	238. $((4 / 1) * 3) * 2$
194. $3 * 2 / 1 * 4$	217. $(2 * 3) / 1 * 4$	239. $4 / (1 / 3) * 2$
195. $(3 * 2) / 1 * 4$	218. $2 * (3 / 1) * 4$	240. $(4 / (1 / 3)) * 2$
196. $3 * (2 / 1) * 4$	219. $2 * 3 / (1 / 4)$	
197. $3 * 2 / (1 / 4)$	220. $(2 * (3 / 1)) * 4$	
198. $(3 * (2 / 1)) * 4$		

```

Apakah ingin menyimpan solusi ? (y/n)
n
Hasil tidak disimpan dalam file.
Waktu Eksekusi Program = 0.00100 detik
PS D:\Tucil1_13521161\src> █

```

Gambar 1 Testcase input manual dari pengguna dan output tidak disimpan dalam file

- Testcase input manual dari pengguna dan output tidak disimpan dalam file

```

PS D:\Tucil1_13521161> cd "d:\Tucil1_13521161\src\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { .\main }
Pilih masukan:
Ketik 1 untuk Input Manual
Ketik 2 untuk Random
1

Masukkan 4 angka/huruf : A J Q K

24 solutions found
 1. 12 * (13 - 11) * 1
 2. 12 * (13 - 11) / 1
 3. (12 * (13 - 11)) * 1
 4. (12 * (13 - 11)) / 1
 5. 1 * (13 - 11) * 12
 6. (1 * (13 - 11)) * 12
 7. ((1 * 13) - 11) * 12
 8. 12 * 1 * (13 - 11)
 9. 12 / 1 * (13 - 11)
10. (13 - 11) * 1 * 12
11. (13 - (11 * 1)) * 12
12. ((13 - 11) * 1) * 12
13. (13 - 11) * (1 * 12)
14. (13 - 11) / 1 * 12
15. (13 - (11 / 1)) * 12
16. ((13 - 11) / 1) * 12
17. (13 - 11) / (1 / 12)
18. (13 - 11) * 12 * 1

```

```

19. (13 - 11) * 12 / 1
20. ((13 - 11) * 12) * 1
21. ((13 - 11) * 12) / 1
22. (13 - 11) * (12 * 1)
23. (13 - 11) * (12 / 1)
24. 1 * 12 * (13 - 11)

Apakah ingin menyimpan solusi ? (y/n)
y
Masukkan nama file (dengan format.txt):
tes8.txt
Hasil berhasil disimpan dalam file.
Waktu Eksekusi Program = 0.00000 detik
PS D:\Tucil1_13521161\src> █

```

```

tes8.txt  U X
3.txt
1. 12 * (13 - 11) * 1
2. 12 * (13 - 11) / 1
3. (12 * (13 - 11)) * 1
4. (12 * (13 - 11)) / 1
5. 1 * (13 - 11) * 12
6. (1 * (13 - 11)) * 12
7. ((1 * 13) - 11) * 12
8. 12 * 1 * (13 - 11)
9. 12 / 1 * (13 - 11)
10. (13 - 11) * 1 * 12
11. (13 - (11 * 1)) * 12
12. ((13 - 11) * 1) * 12
13. (13 - 11) * (1 * 12)
14. (13 - 11) / 1 * 12
15. (13 - (11 / 1)) * 12
16. ((13 - 11) / 1) * 12
17. (13 - 11) / (1 / 12)
18. (13 - 11) * 12 * 1
19. (13 - 11) * 12 / 1

20. ((13 - 11) * 12) * 1
21. ((13 - 11) * 12) / 1
22. (13 - 11) * (12 * 1)
23. (13 - 11) * (12 / 1)
24. 1 * 12 * (13 - 11)

```

Gambar 2 Testcase input manual dari pengguna dan output disimpan dalam file

- Testcase input random dan output tidak disimpan di file

```

PS D:\Tucill1_13521161> cd "d:\Tucill1_13521161\src\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { ./main }

Pilih masukan:
Ketik 1 untuk Input Manual
Ketik 2 untuk Random
2

22 solutions found
1. 2 * (13 - 10) * 4
2. (2 * (13 - 10)) * 4
3. 2 * (13 + 4) - 10
4. (2 * (13 + 4)) - 10
5. 4 * (13 - 10) * 2
6. (4 * (13 - 10)) * 2
7. ((4 + 13) * 2) - 10
8. (4 + 13) * 2 - 10
9. ((4 + 13) * 2) - 10
10. 2 * (4 + 13) - 10
11. (2 * (4 + 13)) - 10
12. 2 * 4 * (13 - 10)
13. (13 - 10) * 4 * 2
14. ((13 - 10) * 4) * 2
15. (13 - 10) * (4 * 2)
16. (13 - 10) * 2 * 4
17. ((13 - 10) * 2) * 4
18. (13 - 10) * (2 * 4)
19. 4 * 2 * (13 - 10)

```

```

20. ((13 + 4) * 2) - 10
21. (13 + 4) * 2 - 10
22. ((13 + 4) * 2) - 10

Apakah ingin menyimpan solusi ? (y/n)
n
Hasil tidak disimpan dalam file.
Waktu Eksekusi Program = 0.00000 detik

```

Gambar 3 Testcase input random dan output tidak disimpan dalam file

- Testcase input random dan output tidak disimpan di file

```

PS D:\Lucille_13521161> cd "d:\Lucille_13521161\src\" ; if ($?) { g++ main.cpp -o main } ; if ($?) { .\main }

Pilih masukan:
Ketik 1 untuk Input Manual
Ketik 2 untuk Random
2

39 solutions found
 1. (4 * 6) * 9 / 6
 2. 6 - (4 - 6) * 9
 3. (6 - 4) * 9 + 6
 4. ((6 - 4) * 9) + 6
 5. 6 + 9 * (6 - 4)
 6. 9 * (6 - 4) + 6
 7. (9 * (6 - 4)) + 6
 8. 6 - 9 * (4 - 6)
 9. 6 * (9 - 4) - 6
10. (6 * (9 - 4)) - 6
11. 4 * 9 - 6 - 6
12. (4 * 9) - 6 - 6
13. 4 * 9 - (6 + 6)
14. ((4 * 9) - 6) - 6
15. 4 * 9 - 6 - 6
16. (4 * 9) - 6 - 6
17. 4 * 9 - (6 + 6)
18. ((4 * 9) - 6) - 6
19. (6 - 4) * 9 + 6

```

```

20. ((6 - 4) * 9) + 6
21. 6 - (4 - 6) * 9
22. 6 + 9 * (6 - 4)
23. 6 - 9 * (4 - 6)
24. 6 * (9 - 4) - 6
25. (6 * (9 - 4)) - 6
26. 9 * (6 - 4) + 6
27. (9 * (6 - 4)) + 6
28. (4 * 6) * 9 / 6
29. 6 + (6 - 4) * 9
30. (6 * 6) * 4 / 9
31. 6 + (6 - 4) * 9
32. (6 * 6) * 4 / 9
33. (9 - 4) * 6 - 6
34. ((9 - 4) * 6) - 6
35. 9 * 4 - 6 - 6
36. (9 * 4) - 6 - 6
37. 9 * 4 - (6 + 6)
38. ((9 * 4) - 6) - 6
39. (9 * 4) * 6 / 6

Apakah ingin menyimpan solusi ? (y/n)
y
Masukkan nama file (dengan format.txt):
tes9.txt

```

Open `tes9.txt`

```

tes9.txt
1. (4 * 6) * 9 / 6
2. 6 - (4 - 6) * 9
3. (6 - 4) * 9 + 6
4. ((6 - 4) * 9) + 6
5. 6 + 9 * (6 - 4)
6. 9 * (6 - 4) + 6
7. (9 * (6 - 4)) + 6
8. 6 - 9 * (4 - 6)
9. 6 * (9 - 4) - 6
10. (6 * (9 - 4)) - 6
11. 4 * 9 - 6 - 6
12. (4 * 9) - 6 - 6
13. 4 * 9 - (6 + 6)
14. ((4 * 9) - 6) - 6
15. 4 * 9 - 6 - 6
16. (4 * 9) - 6 - 6
17. 4 * 9 - (6 + 6)
18. ((4 * 9) - 6) - 6
19. (6 - 4) * 9 + 6

```

Open `s9.txt`

```

s9.txt
20. ((6 - 4) * 9) + 6
21. 6 - (4 - 6) * 9
22. 6 + 9 * (6 - 4)
23. 6 - 9 * (4 - 6)
24. 6 * (9 - 4) - 6
25. (6 * (9 - 4)) - 6
26. 9 * (6 - 4) + 6
27. (9 * (6 - 4)) + 6
28. (4 * 6) * 9 / 6
29. 6 + (6 - 4) * 9
30. (6 * 6) * 4 / 9
31. 6 + (6 - 4) * 9
32. (6 * 6) * 4 / 9
33. (9 - 4) * 6 - 6
34. ((9 - 4) * 6) - 6
35. 9 * 4 - 6 - 6
36. (9 * 4) - 6 - 6
37. 9 * 4 - (6 + 6)

```

```

38. ((9 * 4) - 6) - 6
39. (9 * 4) * 6 / 6

```

Gambar 4 Testcase input random dan output disimpan dalam file

- Testcase input manual dari pengguna tidak valid

```
Masukkan 4 angka/huruf : 13 3 4 5
Masukan tidak sesuai
press enter to continue
```

```
Pilih masukan:
Ketik 1 untuk Input Manual
Ketik 2 untuk Random
```

Gambar 5 Testcase input manual dari pengguna tidak valid

D. Alamat Drive

https://github.com/ferindya/Tucil1_13521161.git

E. Tabel Checklist

Poin	Ya	Tidak
1. Program berhasil dikompilasi tanpa kesalahan	✓	
2. Program berhasil running	✓	
3. Program dapat membaca input / generate sendiri dan memberikan luaran	✓	
4. Solusi yang diberikan program memenuhi (berhasil mencapai 24)	✓	
5. Program dapat menyimpan solusi dalam file teks	✓	