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C++ DASTURLASH TILIDA BIR O'LCHOVLI MASSIVLAR

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Annotatsiya: Ushbu maqolada C++ dasturlash tilida bir o'lchovli massivlar mavzusi chuqur yoritilgan. Maqolada massiv tushunchasi, massivlar bilan ishlashning nazariy asoslari va amaliy masalalari ko'rib chiqilgan. Shuningdek, massivlar yordamida turli algoritmik masalalarni yechish usullari va dasturlashdagi amaliyotda qo'llanilishi ham yoritilgan. Ushbu maqola talabalar, dasturlashni yangi o'rganuvchilar va o'qituvchilar uchun foydali bo'ladi.

Kalit so'zlar: C++, massiv, bir o'lchovli massiv, indeks, tsikl, algoritim, dasturlash, ma'lumotlar tuzilmasi.

Kirish

Dasturlashda ma'lumotlarni to'plam sifatida saqlash muhim masalalardan biridir. C++ dasturlash tilida ma'lumotlarni saqlash va ularga ishlov berishda massivlar keng qo'llaniladi. Massiv — bu bir xil turdagi ma'lumotlarni ketma-ket saqlashga mo'ljallangan tuzilma. Bir o'lchovli massivlar esa bu ma'lumotlarning faqat bir qatorli shaklda tartiblangan ko'rinishidir.

Bir o'lchovli massivlar dasturchiga bir nechta o'zgaruvchini nomlab ishlatmasdan, ularga indeks orqali murojaat qilish imkonini beradi. Bu esa kodning soddalashuviga, xatoliklarni kamaytirishga va murakkab masalalarni soddashaklda yechishga xizmat qiladi.

Ushbu maqolada biz bir o'lchovli massivlar mavzusini batafsil tahlil qilamiz. Massivlarning turlari, ular bilan ishlash usullari, dasturiy namunalar va algoritmik masalalar yechimi orqali bu mavzuni chuqur o'zlashtirish imkoniyatini yaratamiz.

Nazariy qism

Massiv nima?

Massiv bu bir xil turdagi elementlarning ketma-ket joylashgan to'plamidir. Massivlar yordamida ko'p sonli o'zgaruvchilarni yagona nom ostida saqlash mumkin.

C++ tilida massiv quyidagicha e'lon qilinadi:

```
int sonlar[5];
```

Bu kodda `sonlar` nomli massiv e'lon qilinmoqda, u 5 ta butun sonlardan iborat.

Massiv elementlariga murojaat qilish

Massiv elementlariga indeks orqali murojaat qilinadi. C++ tilida indekslash 0 dan boshlanadi. Ya'ni:

```
sonlar[0] = 10;
```

```
sonlar[1] = 20;
```



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Massivlar bilan ishlashda tsikllardan foydalanish

Massiv elementlarini kiritish va ularni chiqarish uchun for yoki while tsikllaridan foydalanish qulay:

```
for (int i = 0; i < 5; i++) {  
    cin >> sonlar[i];  
}  
for (int i = 0; i < 5; i++) {  
    cout << sonlar[i] << " ";  
}
```

Massivlar uchun dastlabki qiymat berish

Massivlar e'lon qilinayotganda ularga dastlabki qiymat berilishi ham mumkin:

```
int sonlar[5] = {1, 2, 3, 4, 5};
```

Agar boshlang'ich qiymatlar kamroq bo'lsa, qolganlari 0 bilan to'ldiriladi.

Maxsus amallar: yig'indi, maksimum, minimum

Massivda mavjud elementlarning yig'indisini hisoblash:

```
int yigindi = 0;  
for (int i = 0; i < 5; i++) {  
    yigindi += sonlar[i];  
}
```

Massivdagi eng katta elementni aniqlash:

```
int max = sonlar[0];  
for (int i = 1; i < 5; i++) {  
    if (sonlar[i] > max)  
        max = sonlar[i];  
}
```

Massivdagi eng kichik elementni aniqlash:

```
int min = sonlar[0];  
for (int i = 1; i < 5; i++) {  
    if (sonlar[i] < min)  
        min = sonlar[i];  
}
```

Amaliy masalalar va ularning yechimi

Masala 1: 10 ta butun son berilgan. Ularning o'rtacha qiymatini toping.

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

```
int main() {  
    int a[10], sum = 0;  
    for (int i = 0; i < 10; i++) {  
        cin >> a[i];  
        sum += a[i];  
    }
```



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```
}  
cout << "O'rtacha qiymat: " << (float)sum / 10 << endl;  
return 0;  
}
```

Masala 2: Massivda faqat musbat sonlarni ekranga chiqaring

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

```
int main() {  
    int a[10];  
    for (int i = 0; i < 10; i++) cin >> a[i];  
    for (int i = 0; i < 10; i++) {  
        if (a[i] > 0)  
            cout << a[i] << " ";  
    }  
    return 0;  
}
```

Masala 3: Massivdagi sonlarni teskari tartibda chiqaring

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

```
int main() {  
    int a[5];  
    for (int i = 0; i < 5; i++) cin >> a[i];  
    for (int i = 4; i >= 0; i--) cout << a[i] << " ";  
    return 0;  
}
```

Masala 4: Massivdagi juft sonlar sonini toping

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

```
int main() {  
    int a[8], count = 0;  
    for (int i = 0; i < 8; i++) cin >> a[i];  
    for (int i = 0; i < 8; i++) {  
        if (a[i] % 2 == 0) count++;  
    }  
    cout << "Juft sonlar soni: " << count;  
    return 0;  
}
```



Xulosa

Bir o'lovli massivlar C++ dasturlash tilida muhim mavzulardan biridir. Ular ma'lumotlar ustida turli xil amallarni bajarishda soddalik va samaradorlikni ta'minlaydi. Massivlardan foydalanish orqali dasturchi katta hajmdagi ma'lumotlar bilan oson ishlay oladi. Maqolada keltirilgan nazariy asoslar va amaliy masalalar orqali o'quvchilar massivlar bilan ishlash bo'yicha chuqur tushunchaga ega bo'ladi.

Massivlar bilan ishlashda tsikllar, shart operatorlari va indekslash kabi asosiy dasturlash tushunchalari mustahkamlanadi. Shuningdek, massivlar orqali algoritmik tafakkurni rivojlantirish imkoniyati mavjud.

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