

# TAKRORLANUVCHI OPERATORLAR

# Reja

- Takrorlanuvchi operator haqida.
- C++ dasturlash tilida *while* loop.
- C++ dasturlash tilida *do while* loop.
- C++ dasturlash tilida *for* loop.
- C++ dasturlash tilida *infinite* loop.
- Amaliy mashqlar.

## Shartli belgilar



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Bilib oling



Misol uchun



Mumkin emas



Uyga topshiriqlar



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# Takrorlanuvchi operator haqida



## Eslab qoling

Takrorlash operatorida takrorlash sharti *true* qiymatga teng bo'lganida dasturning ma'lum bir qismidagi buyruqlar takror ravishda bajariladi.

Bu jarayon takrorlash sharti *false* qiymatga teng bo'lgunicha davom etadi. Bunda takror bajariluvchi dastur qismi *takrorlanish tanasi* deb ataladi.

# C++ dasturlash tilida *while* loop



## Eslab qoling

*while* - operatori shartni oldindan tekshiruvchi takrorlash operatori hisoblanadi. Agar takrorlash boshida `<condition>` *false* bo'lsa, *while* operatori tarkibidagi `<statement>` qismi bajarilmaydi va dastur keyingi bosqichda yozilgan kodlarni o'qib ketadi.



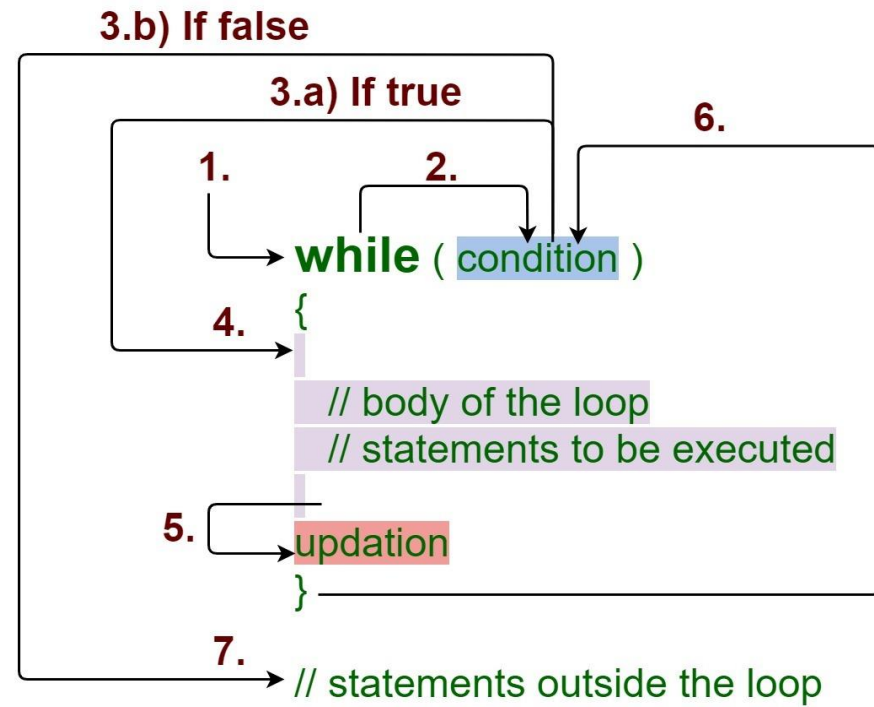
## Bilib oling

```
while (condition) {  
    // statement  
}
```

- `while` - C++ dasturlash tilida takrorlanuvchi jarayonlarni ifodalashda ishlatiladigan kalit soʻz.
- `condition` - takrorlanuvchi jarayon uchun shart beriladigan boʻlim.



## While Loop



```
#include<iostream>

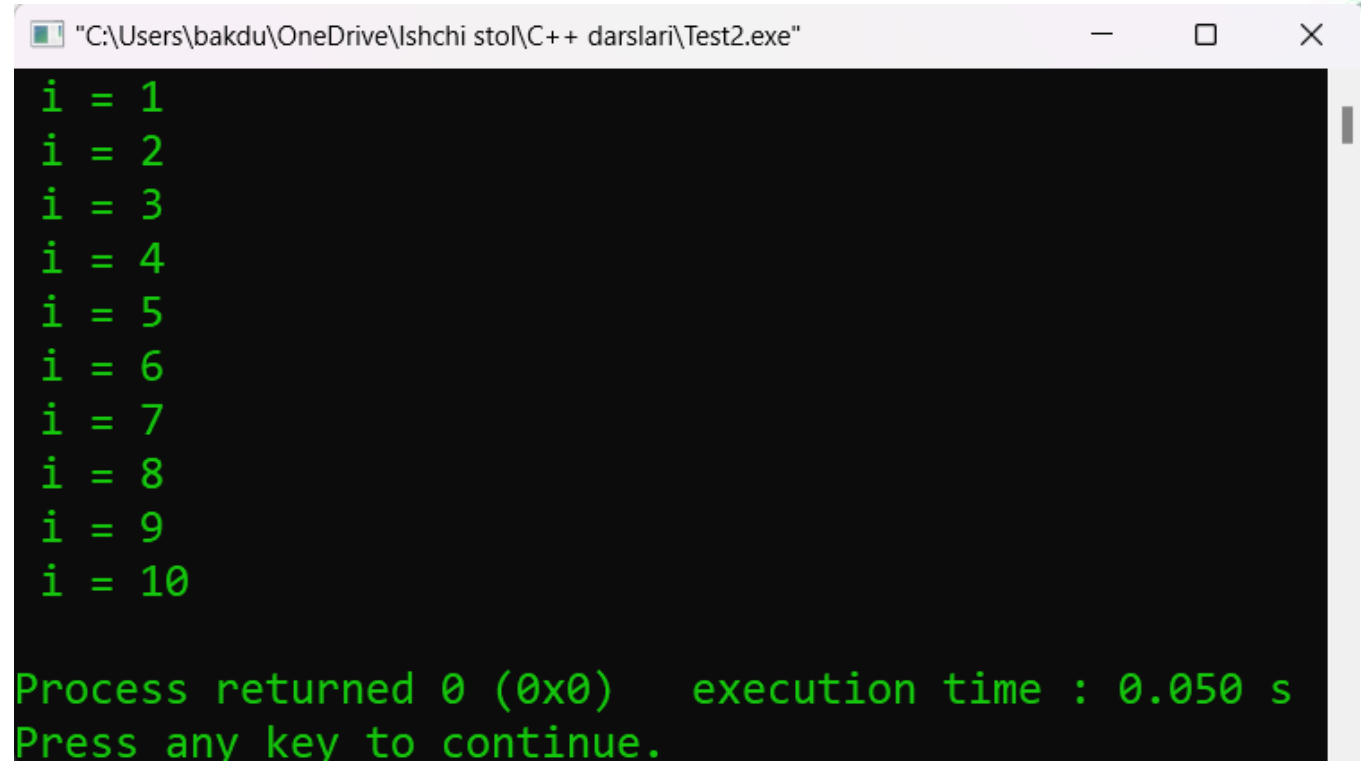
using namespace std;

int main(){

    int i = 1;

    while(i <= 10){
        cout << " i = " << i << endl;
        i++;
    }

    return 0;
}
```



```
"C:\Users\bakdu\OneDrive\Ishchi stol\C++ darslari\Test2.exe"

i = 1
i = 2
i = 3
i = 4
i = 5
i = 6
i = 7
i = 8
i = 9
i = 10

Process returned 0 (0x0)   execution time : 0.050 s
Press any key to continue.
```

# C++ dasturlash tilida *do while* loop



## Eslab qoling

*do while* - operatori oldin amallarni bajarib, undan so'ng esa takrorlanish shartini tekshiruvchi operator hisoblanadi.

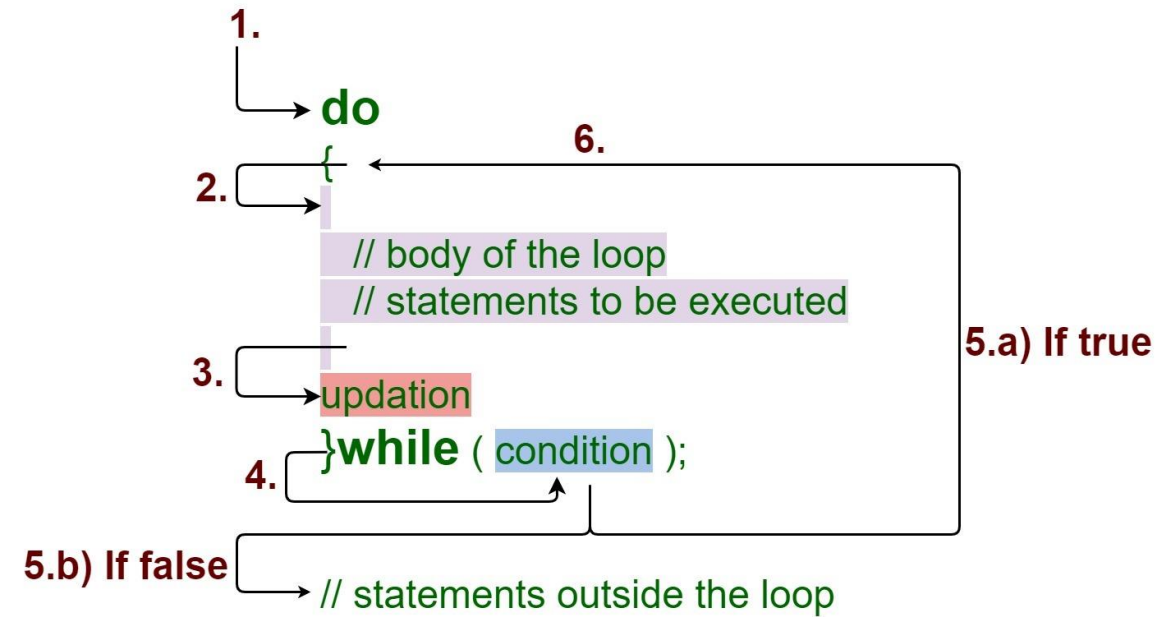


## Bilib oling

```
do {  
    // statement  
} while (condition);
```

- `do, while` - C++ dasturlash tilida takrorlanuvchi jarayonlarni ifodalashda ishlatiladigan kalit soʻz.
- `condition` - takrorlanuvchi jarayon uchun shart beriladigan boʻlim.

## Do - While Loop



```
#include<iostream>

using namespace std;

int main(){

    int i = 1;

    do{
        cout << " i = " << i << endl;
        i++;
    }while(i <= 10);

    return 0;
}
```

"C:\Users\bakdu\OneDrive\Ishchi stol\C++ darslari\Test2.exe"

```
i = 1
i = 2
i = 3
i = 4
i = 5
i = 6
i = 7
i = 8
i = 9
i = 10
```

Process returned 0 (0x0) execution time : 0.050 s  
Press any key to continue.





## Eslab qoling

*do while* - operatorida shart *<condition>* bajarilmagan holda ham takrorlanish tanasi *<statement>* kamida 1 marotaba bajariladi.



```
#include<iostream>

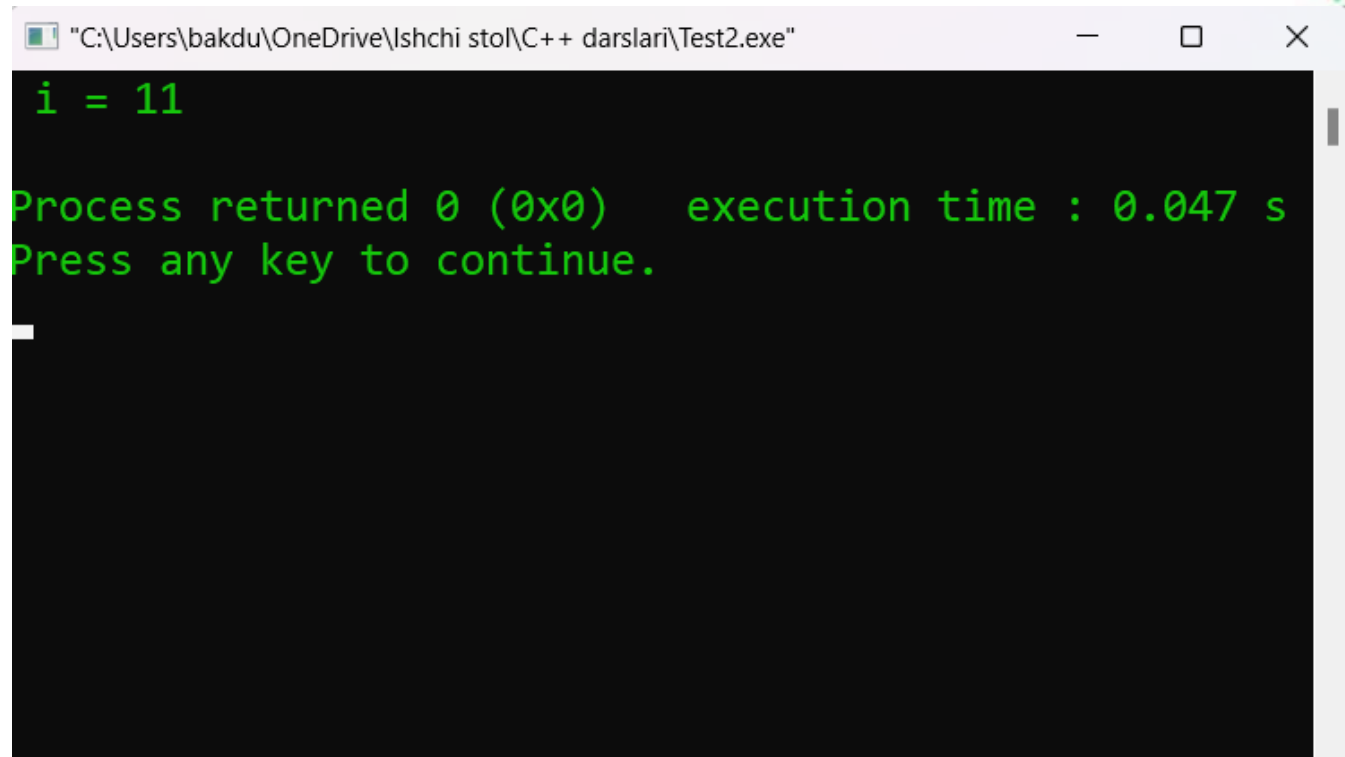
using namespace std;

int main(){

    int i = 11;

    do{
        cout << " i = " << i << endl;
        i++;
    }while(i <= 10);

    return 0;
}
```



```
"C:\Users\bakdu\OneDrive\Ishchi stol\C++ darslari\Test2.exe"

i = 11

Process returned 0 (0x0)   execution time : 0.047 s
Press any key to continue.
```



# C++ dasturlash tilida *for* loop



## Eslab qoling

Agarda sizda takrorlanishlar soni oldindan ma'lum bo'lsa va chekli ko'rinishda aynan biror amallar ketma ketligini takrorlamoqchi bo'lsangiz u holda siz *for* operatoridan foydalanganingiz ma'qul.



Bilib oling

```
for(statement 1; statement 2; statement 3) {  
    // code block to be executed  
}
```

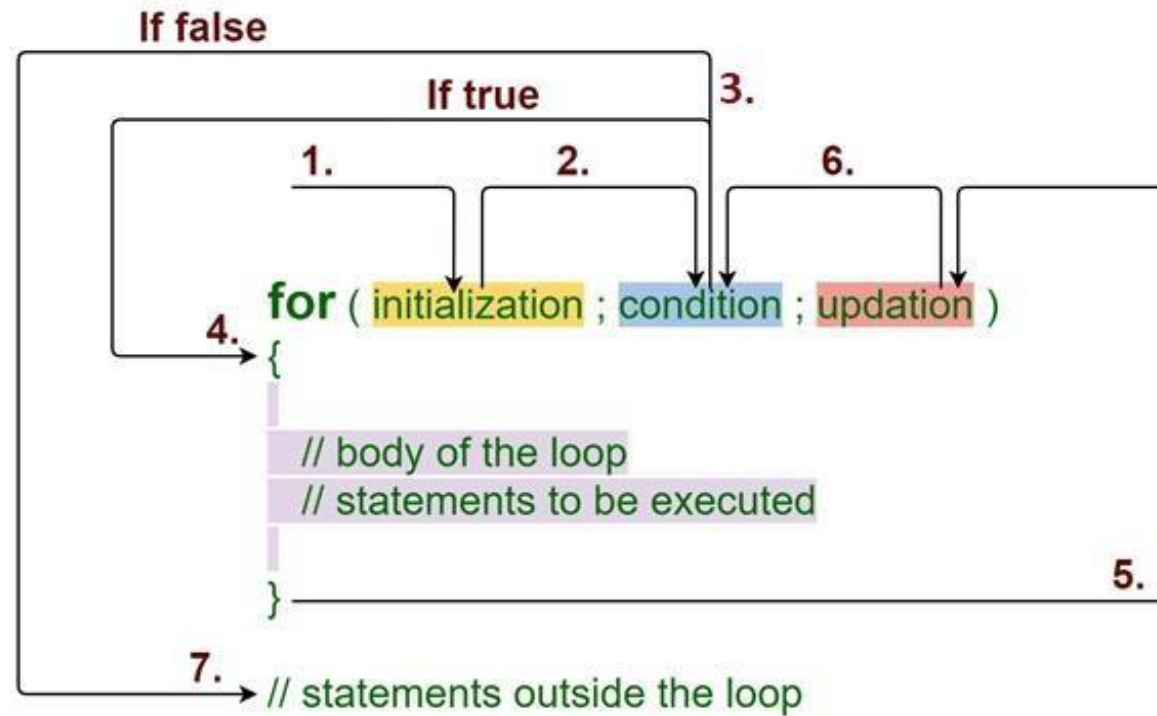


## Bilib oling

- **statement 1 (initialization)** - faqat takrorlash boshida bir marotaba ishlovchi qism.
- **statement 2 (condition)** - takrorlash sharti.
- **statement 3 (updatation)** - takrorlash tanasi bajarilgandan so'ng bajariluvchi qism.



## For Loop



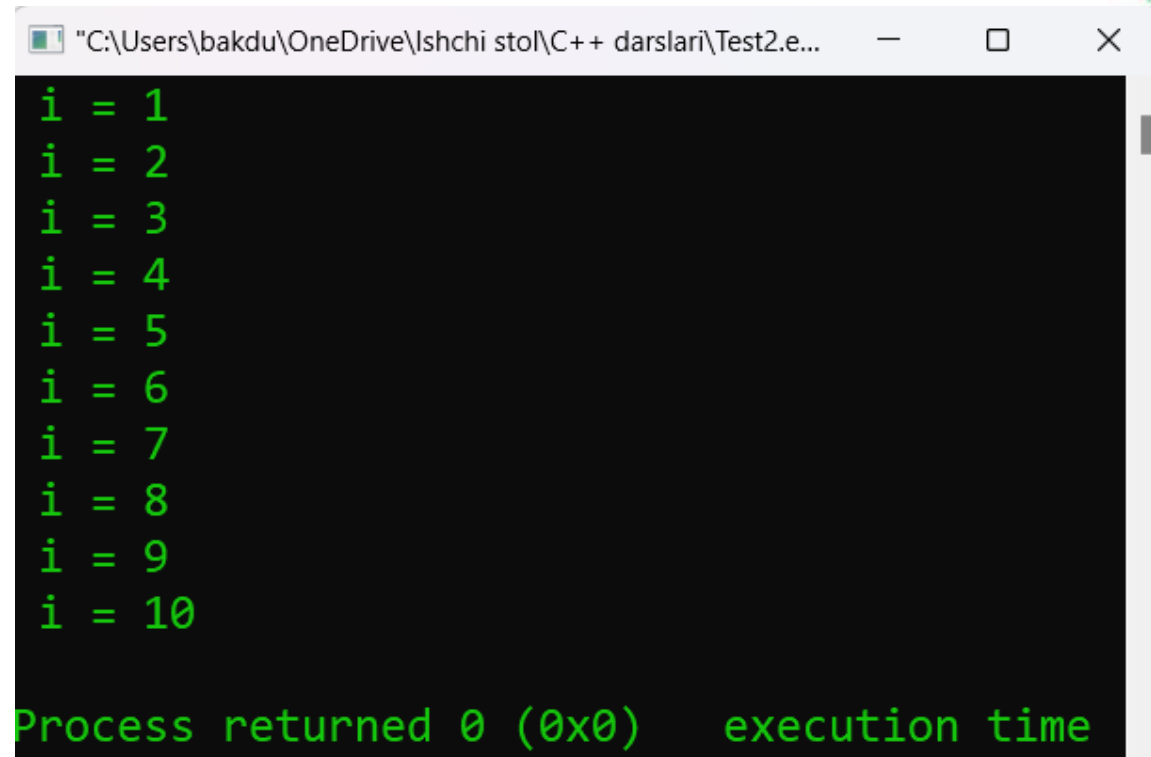
```
#include<iostream>

using namespace std;

int main(){

    for(int i = 1; i <= 10; i++){
        cout << " i = " << i << endl;
    }

    return 0;
}
```



The screenshot shows a Windows command prompt window titled "C:\Users\bakdu\OneDrive\Ishchi stol\C++ darslari\Test2.e...". The window contains the output of the C++ program, which is a list of numbers from 1 to 10, each on a new line. At the bottom of the window, it says "Process returned 0 (0x0) execution time".

```
i = 1
i = 2
i = 3
i = 4
i = 5
i = 6
i = 7
i = 8
i = 9
i = 10

Process returned 0 (0x0) execution time
```



# C++ dasturlash tilida *infinite* loop



## Eslab qoling

Dasturlashda ayrim shunday holatlar ham bo'ladiki ushbu jarayonlarni cheksiz bajarishga to'g'ri keladi yoki aksincha biz shartni takrorlanuvchi operatorlarga xato ko'rinishda berib qo'ysak ham jarayon cheksiz siklga tushib qoladi. Aynan shunday holatlarda biz bunday sikllarni *infinite* loop deb ataymiz.

```
#include<iostream>

using namespace std;

int main(){

    while(true){
        cout << " Foundation " << endl;
    }

    return 0;
}
```

[illegible]

```
#include<iostream>

using namespace std;

int main(){

    do{
        cout << " Foundation " << endl;
    }while(true);

    return 0;

}
```

[illegible]

```
#include<iostream>

using namespace std;

int main(){

    for(;; true ;){
        cout << " Foundation " << endl;
    }

    return 0;
}
```

A screenshot of a Windows command prompt window. The title bar at the top reads "C:\Users\bakdu\OneDrive\Ishchi stol\C++ darslari\Test2.exe". The main area of the window has a black background with the word "Foundation" printed in green text, repeated ten times vertically. On the right side of the window, there are standard Windows window controls: a minus sign for minimize, a square icon for maximize, and an X for close. A vertical scrollbar is visible on the far right edge of the terminal window.



```
#include<iostream>

using namespace std;

int main(){

    for(; ;){
        cout << " Foundation " << endl;
    }

    return 0;
}
```

[illegible]





# Amaliy mashqlar



## Uyga topshiriq

1

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda 1 dan 10 gacha bo'lgan sonlarni ekranga chiqaruvchi dastur tuzilsin.



Amaliy yordam





## Uyga topshiriq

2

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda foydalanuvchi tomonidan kiritilgan songa mos karra jadvalini ekranga chiqaruvchi dastur tuzilsin.



## Uyga topshiriq

3

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda 1 dan 20 gacha bo'lgan juft sonlarni ekranga chiqaruvchi dastur tuzilsin.



## Uyga topshiriq

4

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda 1 dan 20 gacha bo'lgan toq sonlarni ekranga chiqaruvchi dastur tuzilsin.



## Uyga topshiriq

5

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda a va b butun sonlari berilgan ( $a < b$ ). Ular orasidagi butun sonlar yig'indisini chiqaruvchi dastur tuzilsin.



Amaliy yordam



## Uyga topshiriq

6

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda a va b butun sonlari berilgan ( $a < b$ ). Ular orasidagi butun sonlar ko'paytmasini chiqaruvchi dastur tuzilsin.



## Uyga topshiriq

7

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda a va b butun sonlari berilgan ( $a < b$ ). Ular orasidagi butun juft sonlarni chiqaruvchi dastur tuzilsin.



## Uyga topshiriq

8

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda a va b butun sonlari berilgan ( $a < b$ ). Ular orasidagi butun toq sonlarni chiqaruvchi dastur tuzilsin.





## Uyga topshiriq

9

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda a va b butun sonlari berilgan ( $a < b$ ). Ular orasidagi butun juft sonlar yig'indisini va toq sonlarning ko'paytmasini hisoblovchi dastur tuzilsin.





## Uyga topshiriq

10

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda  $N$  natural soni berilgan. Shu sonning natural bo'luvchilarini aniqlovchi dastur tuzilsin.

**Masalan:**  $N = 30$  ning bo'luvchilari: 1, 2, 3, 5, 6, 10, 15, 30



Amaliy yordam



## Uyga topshiriq

11

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda  $N$  natural soni berilgan. Shu sonning natural bo'luvchilari bo'lmagan sonlarning yig'indisini aniqlovchi dastur tuzilsin.

**Masalan:**  $N = 10$  ga bo'linmaydigan sonlar: 3, 4, 6, 7, 8, 9

**Natija:** Summa = 37



## Uyga topshiriq

12

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda N natural soni berilgan. Uning mukammal yoki mukammal son emasligini aniqlovchi dastur tuzilsin.

Mukammal sonlar o'zidan farqli bo'luvchilarning yig'indisiga teng natural sonlar.

**Masalan:**  $6 = 1 + 2 + 3$ ,       $28 = 1 + 2 + 4 + 7 + 14$ .



## Uyga topshiriq

13

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda N natural soni berilgan. Uning raqamlarining yig'indisini hisoblovchi dastur tuzilsin.

**Misol uchun:**  $N = 1234$      $S = 1 + 2 + 3 + 4 = 10$



## Uyga topshiriq

14

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda foydalanuvchi tomonidan sonlar kiritilaveradi. Bu jarayon 0 raqami kiritilguncha davom ettirilsin. 0 raqami kiritilgandan so'ng esa kiritilgan sonlarning yig'indisini hisoblovchi dastur tuzilsin.

**Misol uchun:**  $n = 12, n = 27, n = 19, n = 97, n = 0$     **Natija:**  $S = 155$



## Uyga topshiriq

15

C++ dasturlash tilida while, do while takrorlanuvchi operatorlaridan foydalangan holda foydalanuvchi tomonidan sonlar kiritilaveradi. Bu jarayon 0 raqami kiritilguncha davom ettirilsin. 0 raqami kiritilgandan so'ng esa kiritilgan sonlarning ichidan eng kattasini aniqlovchi dastur tuzilsin.

**Misol uchun:**  $n = 12, n = 27, n = 19, n = 97, n = 0$  **Natija:** Max = 97



Amaliy yordam





## Uyga topshiriq

16

Foydalanuvchi tomonidan ikkita  $a$  va  $b$  sonlari kiritiladi. Kiritilgan sonlarning  $EKUB(a, b)$  ni hisoblovchi dastur tuzilsin.

**Misol uchun:**  $a = 12, b = 15$

**Natija:**  $EKUB(a, b) = 3$



## Uyga topshiriq

17

Foydalanuvchi tomonidan ikkita  $a$  va  $b$  sonlari kiritiladi. Kiritilgan sonlarning  $EKUK(a, b)$  ni hisoblovchi dastur tuzilsin.

**Misol uchun:**  $a = 36, b = 48$

**Natija:**  $EKUK(a, b) = 144$



## Uyga topshiriq

18

Foydalanuvchi tomonidan kiritilgan  $N$  natural sonining  $k$ -darajasini hisoblovchi dastur tuzilsin. Foydalanuvchi tomonidan  $N$  va  $k$  sonlari kiritilsin.

**Misol uchun:**  $N = 12, k = 5$

**Natija:**  $P = 12^5 = 248832$



## Uyga topshiriq

19

Foydalanuvchi tomonidan kiritilgan  $N$  natural sonigacha bo'lgan barcha sonlarning ko'paytmasini hisoblaydigan dastur tuzilsin.

**Misol uchun:**  $N = 7$

**Natija:**  $S = 1 * 2 * 3 * 4 * 5 * 6 * 7 = 5040$



## Uyga topshiriq

20

C++ dasturlash tilida for, while, do while takrorlanuvchi operatorlaridan foydalangan holda foydalanuvchi tomonidan kiritilgan N sonidan boshlab orqaga qarab sanab boshlaydigan sekundomer dasturi tuzilsin. N soni sekunda kirtilsin.



E'tiboringiz uchun  
raxmat