NAVOIY DAVLAT KONCHILIK VA TEXNOLOGIYALAR UNIVERSITETI KIMYO- METALLURGIYA FAKUL'TETI

"OLIY MATEMATIKA VA AXBOROT TEXNOLOGIYALARI" KAFEDRASI

OCHIQ DARS

Ma'ruzachi :	**Dostent. M.R. Ishmamatov**
Guruh :	$27^{a,b}$-25 MAT
O'tish vaqti:	27.11.2025 y. 11^{00}-12^{20}
Xona :	124- auditoriya (EMF)

NAVOIY-2025 y.

Blits o'yin texnologiyasi. Jadvalni to'ldiring va ballaringizni oling.

ma'lumotlar turlari	Yakka javob	Guruh javobi	To'g'ri javob	Ballar
1)bitta simvol				
2)butun son				
3)ikkilangan haqiqiy son				
4)Mantiqiy				
5)haqiqiy son				

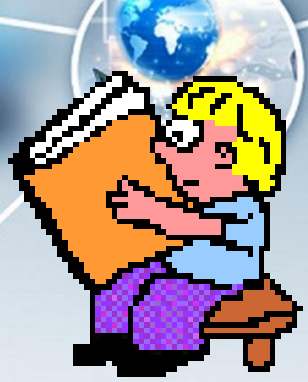
Blits o'yin texnologiyasi. Jadvalni to'ldiring va ballaringizni oling.

ma'lumotlar turlari	Yakka javob	Guruh javobi	To'g'ri javob	Ballar
1)bitta simvol			char	
2)butun son			int	
3)ikkilangan haqiqiy son			double	
4)Mantiqiy			bool	
5)haqiqiy son			float	

Dars mavzusi:

MANTIQIY DASTURLASH TEXNOLOGIYASI



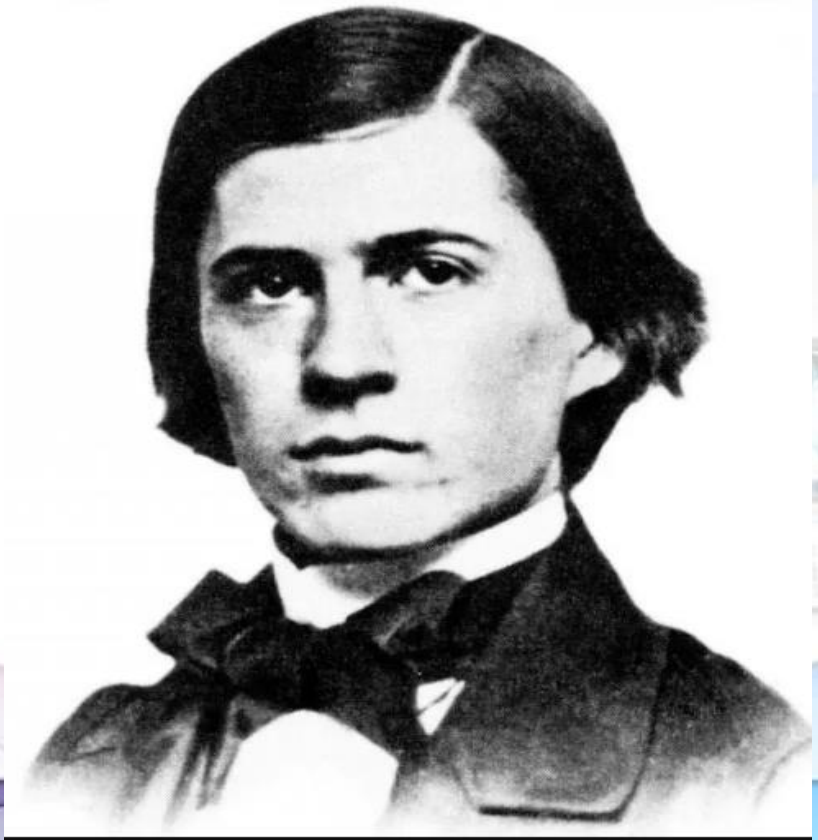

REJA:

1. Mantiqiy dastur tuzilmasi.
2. Tarmoqlanuvchi jarayonlarni dasturlash. Shartli, shart amali va tanlash operatorlari.
3. Takrorlanuvchi jarayonlarni dasturlash. Operatorlarning turli formalari (parametrli, sharti oldin va keyin tekshiruvchi operatorlar).
4. Takrorlanivchu strukturali dasturlar. Murakkab algoritmlarni ifodalaydigan soha masalalari.

Mantiqiy tur – mantiqiy ifodalarning qiymatlarini qabul qiluvchi o’zgaruvchilarni e’lon qilishda ishlatiladi. Bu turga tegishli o’zgaruvchilar **0** (yolg’on) yoki **1** (rost) qiymatlardan birini qabul qiladi.

Dasturlash tillarida tuzilgan mantiqiy ifodalar to’liq matematik mantiq qonuniyatlariga asoslanadi.

C++ tilida mantiqiy tur **«Bool algebrasi»** asoschisi, Angliyalik matematik **Jorj Bool** sharafiga **bool** kalit so’zi bilan ifodalangan.



“Bul algebrasi” da mantiqiy mulohazalar ustida uchta amal aniqlangan:

! **(inkor qilish-inversiya)** - mantiqiy operatori mantiqiy ifodalar yoki o`zgaruvchilar oldidan qo`yiladi.

&& **(Mantiqiy ko`paytirish-konyuksiya)** - mantiqiy operatori ikkita mantiqiy o`zgaruvchini birlashtiradi.

|| **(mantiqiy qo`shish-dizyunksiya)** - mantiqiy operatori ikkita mantiqiy o`zgaruvchini birlashtiradi.

Mantiqiy toifa **bool** ikki xil qiymat qabul qilishi mumkin:

1. **true (rost, 1) va**
2. **false (yolg`on, 0).**

Mantiqiy ma`lumotlarni e`lon qilish uchun bool xizmatchi so'zidan foydalaniladi.

bool a, b;

Mantiqning asosini mulohazalar nisobi tashkil qiladi. Mulohaza – bu ixtiyoriy jumla bo‘lib, unga nisbatan rost yoki yolg‘on fikrni bildirish mumkin.

Masalan «-5>-25», «11–juft son», «Toshkent-Hindistonning poytaxti», «Samarqand–tarixiy shahar» va hokazolar.

C ++ oilasidagi dasturlash tillarida mantiqiy ifodalar qurish uchun quyidagi taqqoslash amallari kiritilgan

“>” (katta),

“<” (kichik),

“>=” (katta yoki teng),

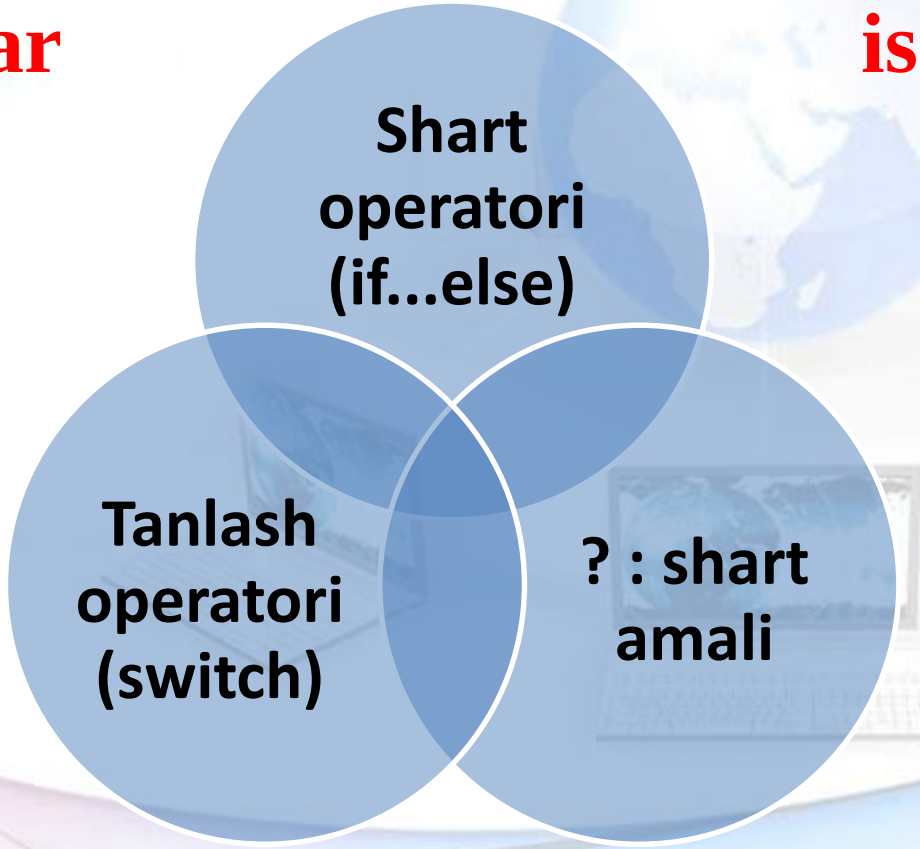
“<=” (kichik yoki teng),

“==” (teng),

“!=” (teng emas).



C++ dasturlash tilida tarmoqlanuvchi jarayonlarni dasturlash uchun quyidagi operatorlar ishlatiladi:



Shart operatori

Shartli operatori ikki ko’rinishda ishlatilishi mumkin:

1)Shart operatorining qisqa ko’rinishi:

if (ifoda) 1-operator;

2)Shart operatorining to’liq ko’rinishi:

if (ifoda) 1- operator;

else 2- operator;

Shartli operator bajarilganda avval ifoda hisoblanadi; agar qiymat rost ya'ni noldan farqli bo’lsa 1-operator bajariladi. Agar qiymat yolg’on ya'ni nol bo’lsa va else ishlatilsa 2-operator bajariladi. Else qism har doim eng yaqin if ga mos qo’yiladi.



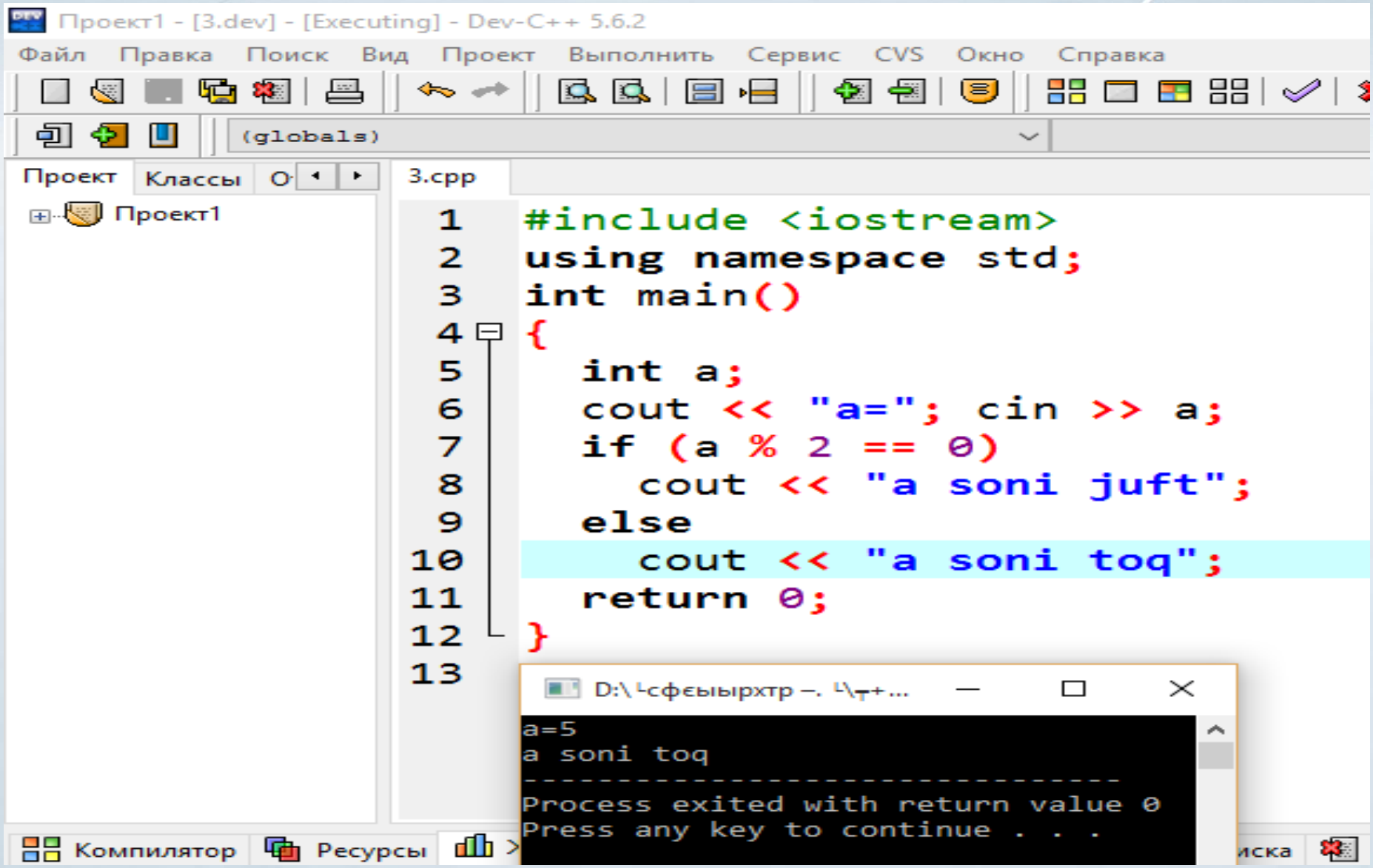
Misol:

Berilgan a sonini juft yoki toqligini aniqlovchi dastur tuzilsin. Agar a sonini 2 ga bo'lganda qoldiq 0 ga teng bo'lsa, bu son juft, aks holda toq.




```
#include <iostream>
using namespace std;
int main()
{
  int a;
  cin >> a;
  if (a % 2 == 0)
{
      cout << "juft";
  }
  else
  {
    cout << "toq";
  }
  return 0;
}
```

Dasturni kiritib natijani olamiz:



$ax^2+bx+c=0$
teglamani yechimini topuvchi dastur

Project1 - [KV.dev] - [Executing] - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

TDM-GCC 4.9.2 64-bit Release

(globals)

Project Classes Debug

Project1

KVTY.cpp

```
1  #include <iostream>
2  #include <math.h>
3  using namespace std;
4  int main()
5  {
6      system ("color f0");
7      float a,b,c,x1,x2,D;
8      cout     << "ax^2+bx+c=0 teglamani yechimini topuvchi dastur" << endl;
9      cout << "a="; cin >> a;
10     cout << "b="; cin >> b;
11     cout << "c="; cin >> c;
12     D=pow(b,2)-4*a*c;
13     if (D>0) {
14         x1=(-b+D)/2*a;
15         x2=(-b-D)/2*a;
16     cout << "x1=" << x1 << endl;
17     cout << "x2=" << x2 << endl;
18     }
19     if (D==0) {
20         x1=-b/2*a;
21     cout << "x1=x2=" << x1 <<endl;}
22     if (D<0) {
23         cout << "yechimga ega emas" << endl;
24         }
25         return 0;
26 }
```

C:\Users\└сфєыырхтр –шыфюЁр\Desktop\KV.exe

```
ax^2+bx+c=0 teglamani yechimini topuvchi dastur
a=2
b=3
c=1
x1=-2
x2=-4

--------------------------------
Process exited after 17.63 seconds with return value 0
Для продолжения нажмите любую клавишу . . .
```

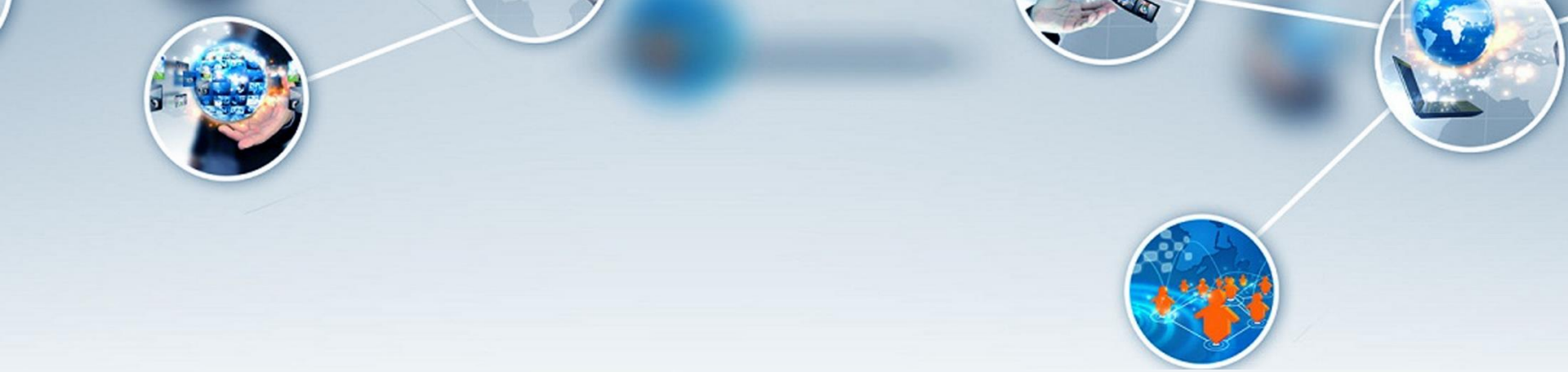
Line: 8 Col: 14 Sel: 0 Lines: 26 Length: 546 Insert Done parsing in 0 seconds

ENG 18:19 11.11.2022

? : shart amali

Agar tekshirilayotgan shart nisbatan sodda bo’lsa, shart amalini «?: » ko’rinishini ishlatish mumkin. Bu operator quyidagi ko’rinishga ega:

<shart ifoda> ? <ifoda1> : <ifoda2>;

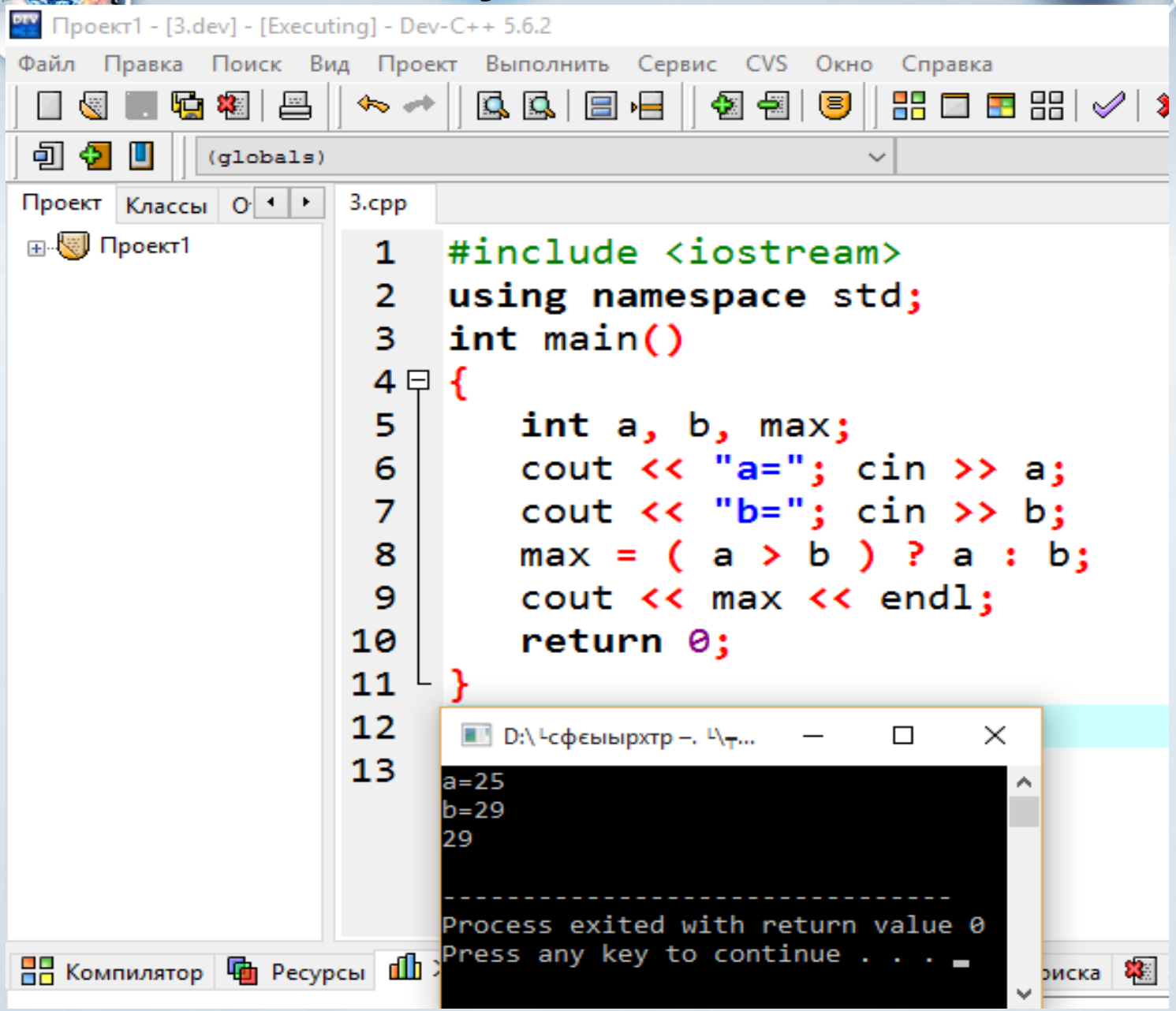


if shart operatoriga o’xshash holda bu shart amali quyidagicha ishlaydi: agar <shart ifoda> rost (true) bo’lsa <ifoda1> bajariladi, aks holda <ifoda2>. Odatda ifodalar qiymatlari birorta o’zgaruvchiga o’zlashtiriladi.

Misol:2 ta sondan kattasini topuvchi dastur tuzilsin.

```
#include <iostream>
using namespace std;
int main()
{
   int a, b, max;
   cout << "a="; cin >> a;
   cout << "b="; cin >> b;
   max = ( a > b ) ? a : b;
   cout << max << endl;
   return 0;
}
```

Dastur natijasi :



Tanlash operatori

Tanlash operatorida boshqarilish o`zgaruvchiga mos ravishda qiymatlarga uzatiladi va mos operator ishga tushadi. default operatori birorta ham qiymat o`zgaruvchiga to`g`ri kelmasa ishlatiladi. default operatorini ishlatmasdan tashlab ketish ham mumkin.

•




SWITCH OPERATORI UMUMIY KO'RINISHI QO'YIDAGICHA

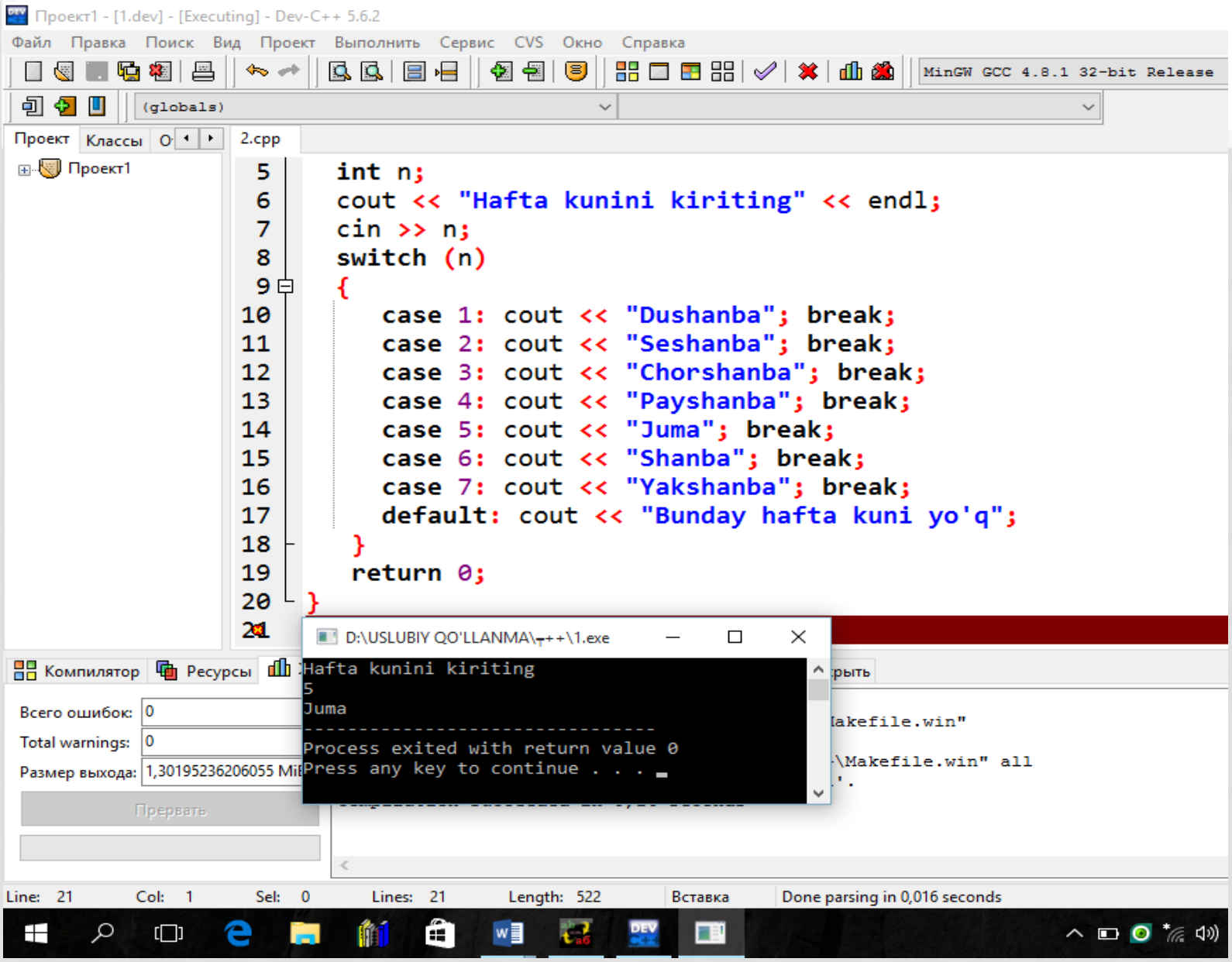
```
switch(<ifoda>)  {
        case <1-qiymat>:<1-operator>  break;
                              …
         case: <n-operator>;

        default: <operator>
                              …
 }
```

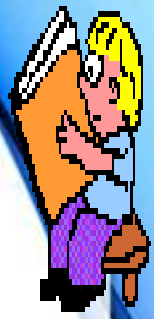
Misol: Kiritilgan songa mos ravishda hafta kunini chiqaruvchi dastur tuzilsin.

```
#include <iostream>
using namespace std;
int main()
{   int n;
  cout << "Hafta kunini kiriting" << endl;   cin >> n;
  switch (n)
  {
     case 1: cout << "Dushanba"; break;
     case 2: cout << "Seshanba"; break;
     case 3: cout << "Chorshanba"; break;
     case 4: cout << "Payshanba"; break;
     case 5: cout << "Juma"; break;
     case 6: cout << "Shanba"; break;
     case 7: cout << "Yakshanba"; break;
     default: cout << "Bunday hafta kuni yo'q";
   }
   return 0;   }
```

DASTUR NATIJASI :







C++ programmalashtirish tilida sikl operatorining bir necha xil turi mavjud:

- **for sikl operatori**
- **do .. while sikl operatori**
- **while sikl operatori**

for takrorlash operatorining sintaksisi quyidagicha:

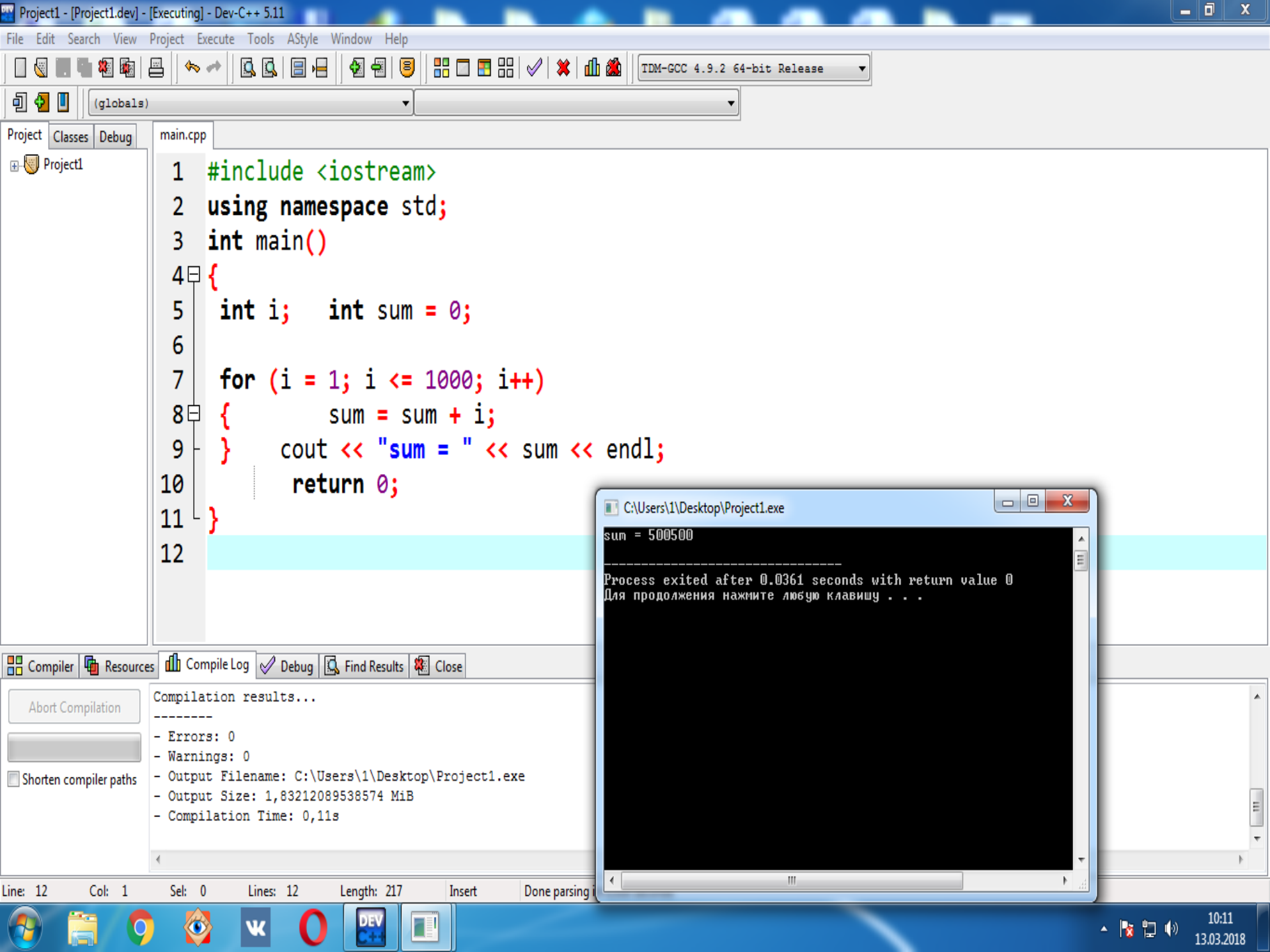
for (<ifoda1>; <ifoda2>; <ifoda3>)

<operator yoki blok>;

Bu operator amal qilishni <ifoda1> bajarishdan boshlaydi. Keyin takrorlash qadamlari boshlanadi. Har bir qadamda <ifoda2> bajariladi, agar natija 0 dan farqli yoki rost (true) bo’lsa, sikl tanasi - <operator yoki blok> bajariladi va oxirida <ifoda3> bajariladi, aks holda boshqaruv takrorlash operatoridan keyingi operatorga o’tiladi.

Misol. Birdan 1000 gacha bo`lgan sonlar yig`indisini hisoblovchi dastur tuzilsin

```
#include <iostream>
using namespace std;
int main()
{
 int i;
int sum = 0;
for (i = 1; i <= 1000; i++)
 {        sum = sum + i;
 }    cout << «" sum = " << sum << endl;
      return 0;
}
```


Project1 - [Project1.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Project1
main.cpp
#include <iostream>
using namespace std;
int main()
{
int i; int sum = 0;
for (i = 1; i <= 1000; i++)
{ sum = sum + i;
} cout << "sum = " << sum << endl;
return 0;
}
C:\Users\1\Desktop\Project1.exe
sum = 500500
Process exited after 0.0361 seconds with return value 0
Для продолжения нажмите любую клавишу . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\1\Desktop\Project1.exe
- Output Size: 1,83212089538574 MiB
- Compilation Time: 0,11s
Line: 12 Col: 1 Sel: 0 Lines: 12 Length: 217 Insert Done parsing
10:11
13.03.2018

do - while operatori

do - while operatorining umumiy ko'rinishi :

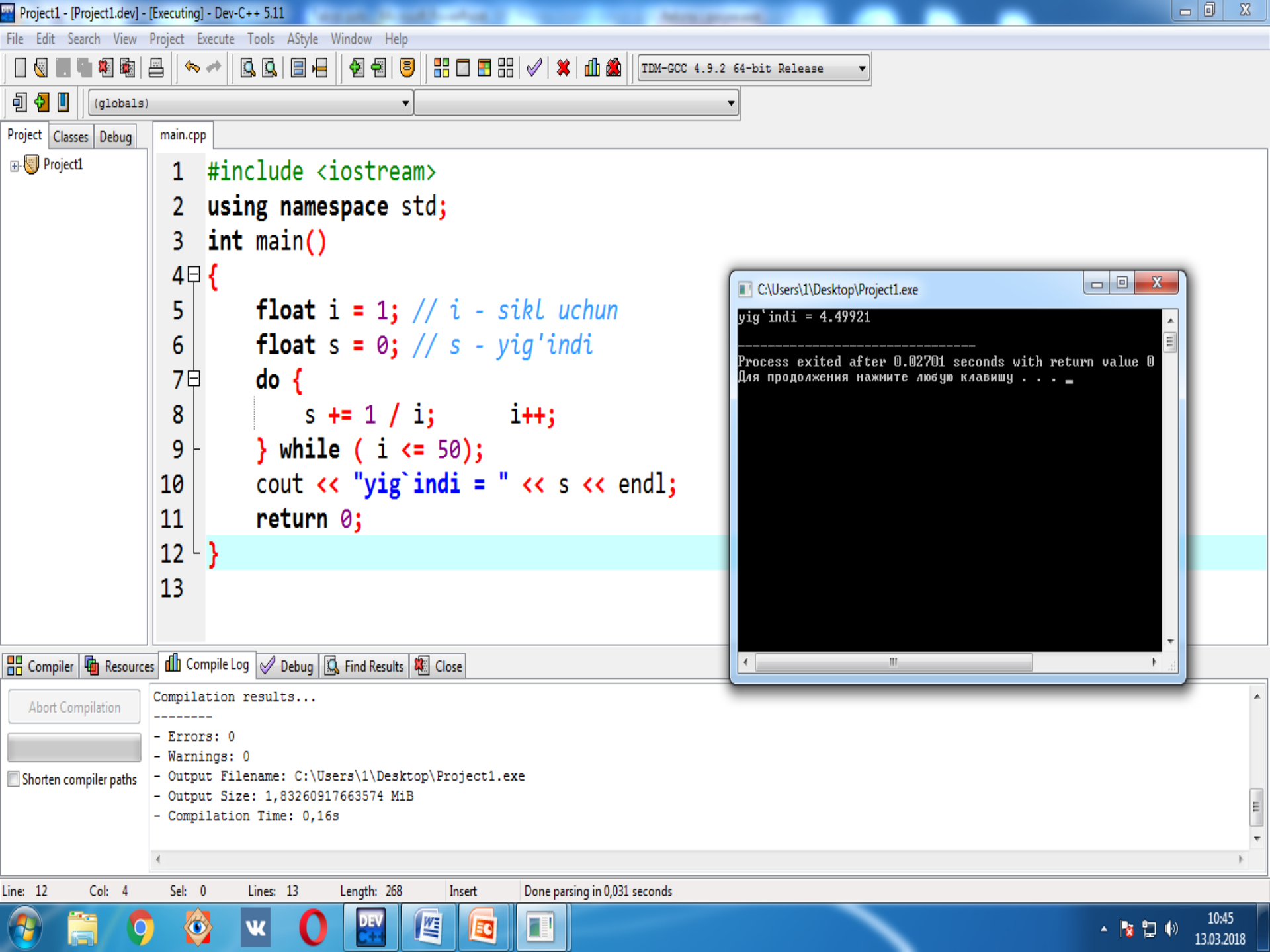
```
do {
  operator;
} while ( shart );
```

Bu yerda do va while xizmatchi so`zlar. (shart) sikl tanasi bajarilgandan so`ng, sikldan chiqish uchun tekshiriladigan shart.

Misol. Quyidagi yig`indini hisoblovchi programma tuzilsin.

$$s = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} \dots + \frac{1}{50}$$

```
#include <iostream>
using namespace std;
int main()
{
    float i = 1; // i - sikl uchun
    float s = 0; // s - yig'indi
    do {
        s += 1 / i;      i++;
    } while ( i <= 50);
    cout << "yig`indi = " << s << endl;
    return 0;
}
```


Project1 - [Project1.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Project1
main.cpp
#include <iostream>
using namespace std;
int main()
{
float i = 1; // i - sikl uchun
float s = 0; // s - yig'indi
do {
s += 1 / i; i++;
} while (i <= 50);
cout << "yig`indi = " << s << endl;
return 0;
}
C:\Users\1\Desktop\Project1.exe
yig`indi = 4.49921
Process exited after 0.02701 seconds with return value 0
Для продолжения нажмите любую клавишу . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\1\Desktop\Project1.exe
- Output Size: 1,83260917663574 MiB
- Compilation Time: 0,16s
Line: 12 Col: 4 Sel: 0 Lines: 13 Length: 268 Insert Done parsing in 0,031 seconds
10:45
13.03.2018

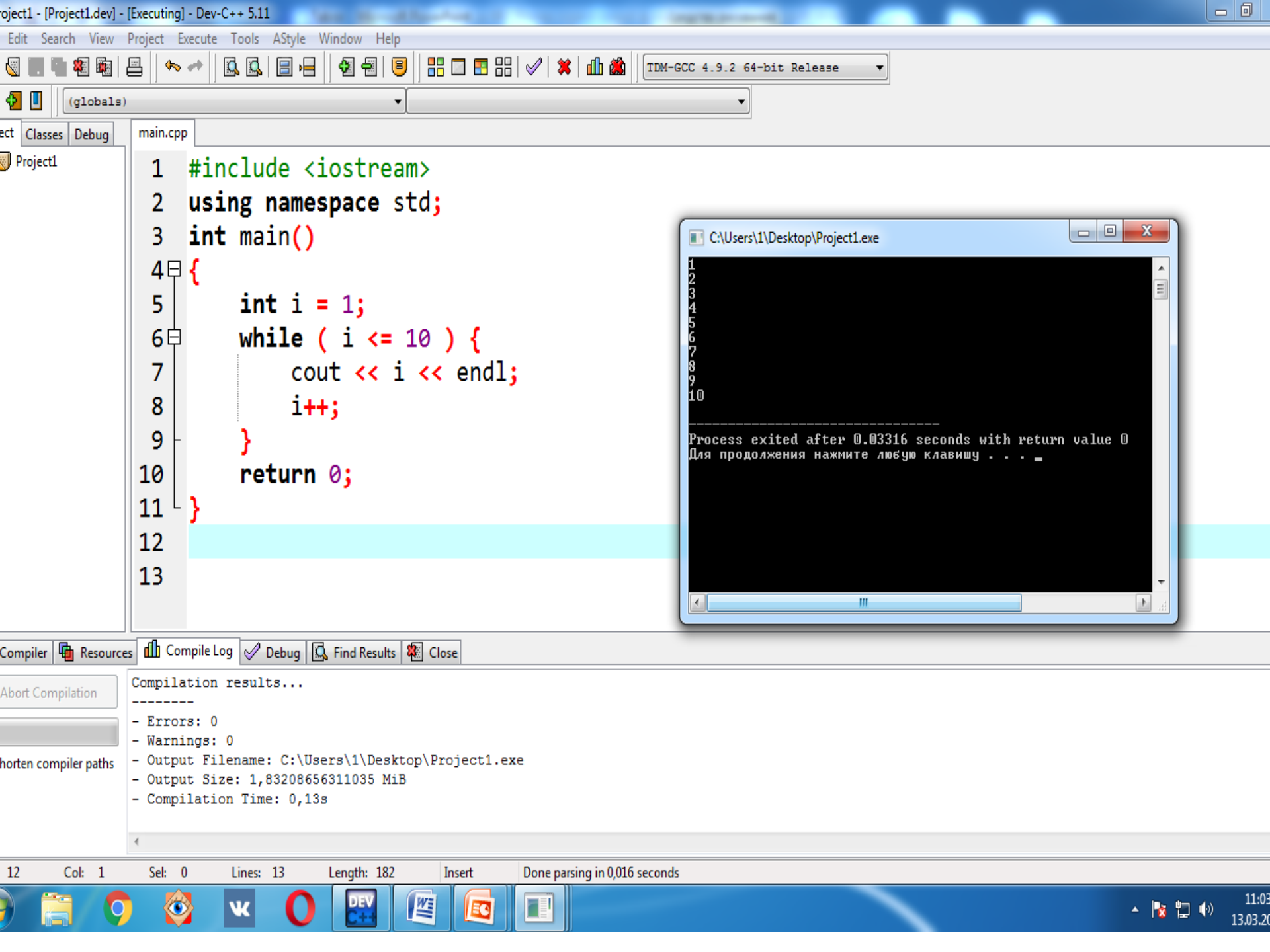
while operatori

while operatorining umumiy ko'rinishi:

```
while ( shart )
 {
 sikl_tanasi;
}
```

1 dan 10 gacha bo'lgan sonlarni chiqaruvchi dastur tuzilsin

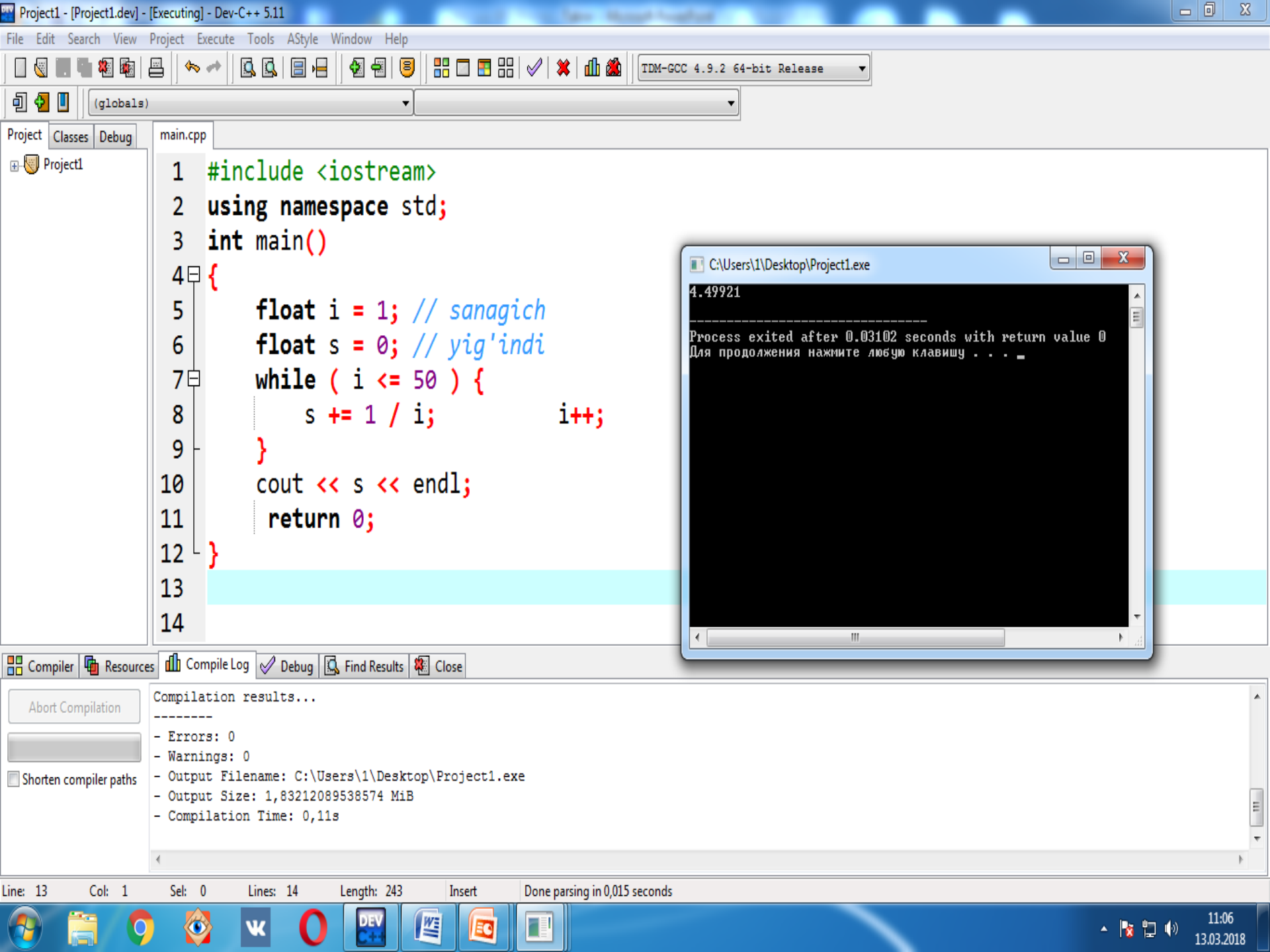
```
#include <iostream>
using namespace std;
int main()
{
    int i = 1;
    while ( i <= 10 ) {
        cout << i << endl;
        i++;
    }
    return 0;
}
```


roject1 - [Project1.dev] - [Executing] - Dev-C++ 5.11
Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
ect Classes Debug
Project1
main.cpp
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5 int i = 1;
6 while (i <= 10) {
7 cout << i << endl;
8 i++;
9 }
10 return 0;
11 }
12
13
C:\Users\1\Desktop\Project1.exe
1
2
3
4
5
6
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8
9
10
Process exited after 0.03316 seconds with return value 0
Для продолжения нажмите любую клавишу . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
horten compiler paths
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\1\Desktop\Project1.exe
- Output Size: 1,83208656311035 MiB
- Compilation Time: 0,13s
12 Col: 1 Sel: 0 Lines: 13 Length: 182 Insert Done parsing in 0,016 seconds

Misol. Quyidagi yig`indini hisoblovchi dastur tuzilsin.

$$s = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} \ldots + \frac{1}{50}$$

```
#include <iostream>
using namespace std;
int main()
{
    float i = 1; // sanagich
    float s = 0; // yig'indi
    while ( i <= 50 ) {
        s += 1 / i;          i++;
    }
    cout << s << endl;
     return 0;
}
```


Project1 - [Project1.dev] - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals)
Project Classes Debug
Project1
main.cpp
#include <iostream>
using namespace std;
int main()
{
float i = 1; // sanagich
float s = 0; // yig'indi
while (i <= 50) {
s += 1 / i; i++;
}
cout << s << endl;
return 0;
}
C:\Users\1\Desktop\Project1.exe
4.49921
Process exited after 0.03102 seconds with return value 0
Для продолжения нажмите любую клавишу . . .
Compiler Resources Compile Log Debug Find Results Close
Abort Compilation
Shorten compiler paths
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\1\Desktop\Project1.exe
- Output Size: 1,83212089538574 MiB
- Compilation Time: 0,11s
Line: 13 Col: 1 Sel: 0 Lines: 14 Length: 243 Insert Done parsing in 0,015 seconds
11:06
13.03.2018





Nazorat savollari:

1. Shart operatorining qanday ko`rinishlarini bilasiz?
2. Tanlash operatori nima uchun ishlatiladi?
3. for sikl operatorining sintaksisi qanday?
4. for sikl operatorida sikl tanasi deb nimaga aytiladi?
5. do - while operatorining umumiy ko'rinishi qanday?
6. while operatori sikl tanasida qanday operatorlar bo`lishi mumkin?





ADABIYOTLAR:

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E’tiboringiz uchun rahmat!!!

