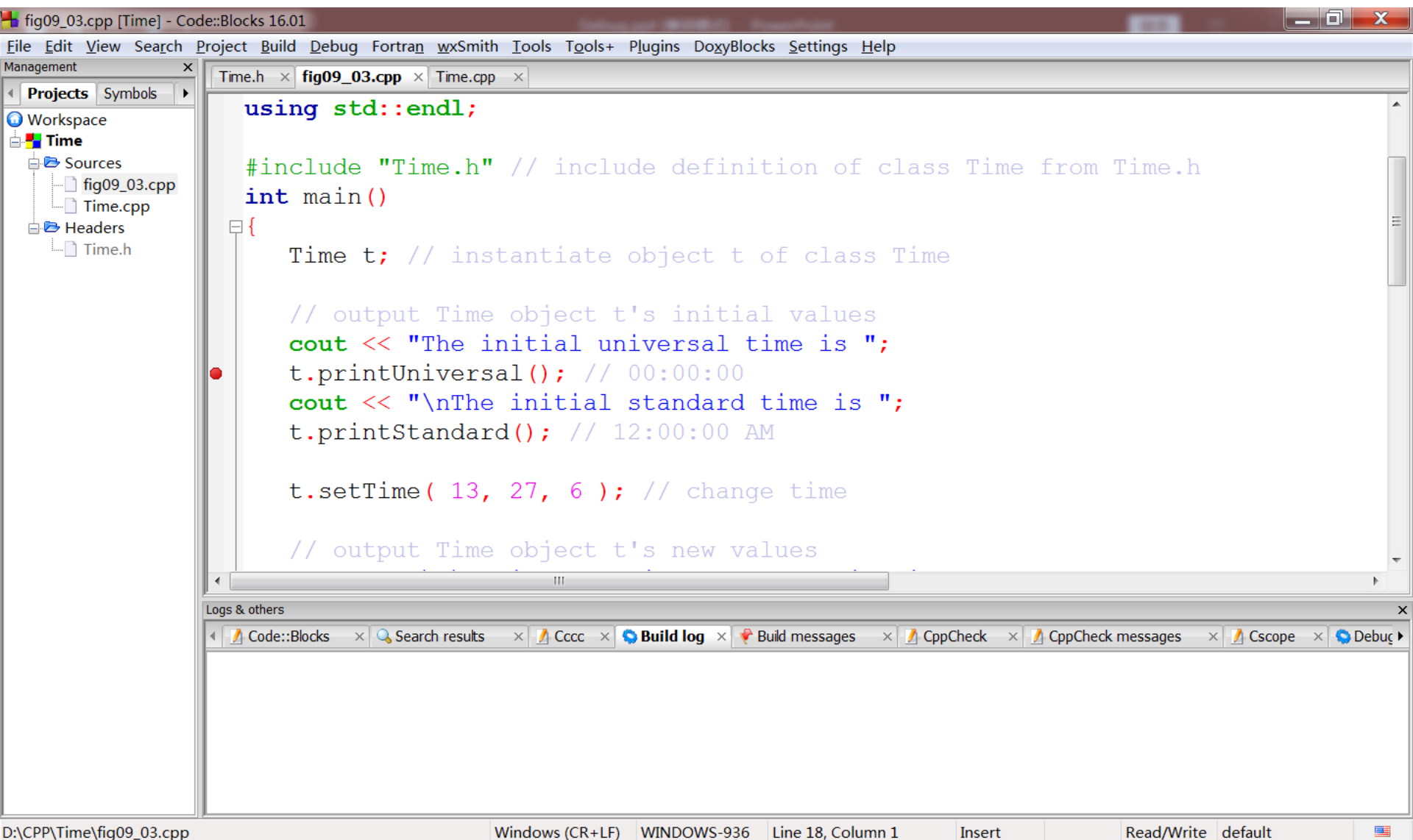


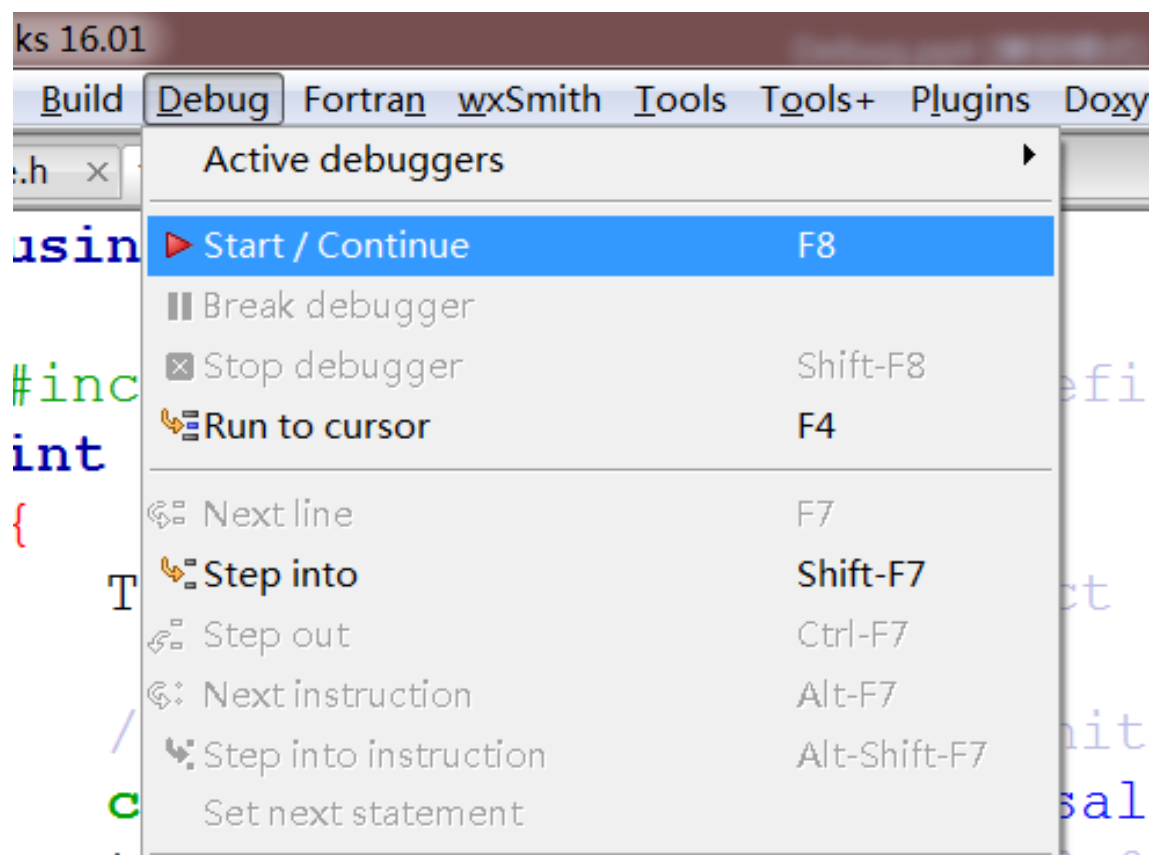
Code::Blocks的调试

1. 设置断点（推测Bug可能出现的位置）
2. 查看变量（Watch）
3. 单步运行（Step Into 和 Next Line）

1. 设置断点（推测Bug可能出现的位置）



1. 设置断点（推测Bug可能出现的位置）



2. 查看变量 (Watch)

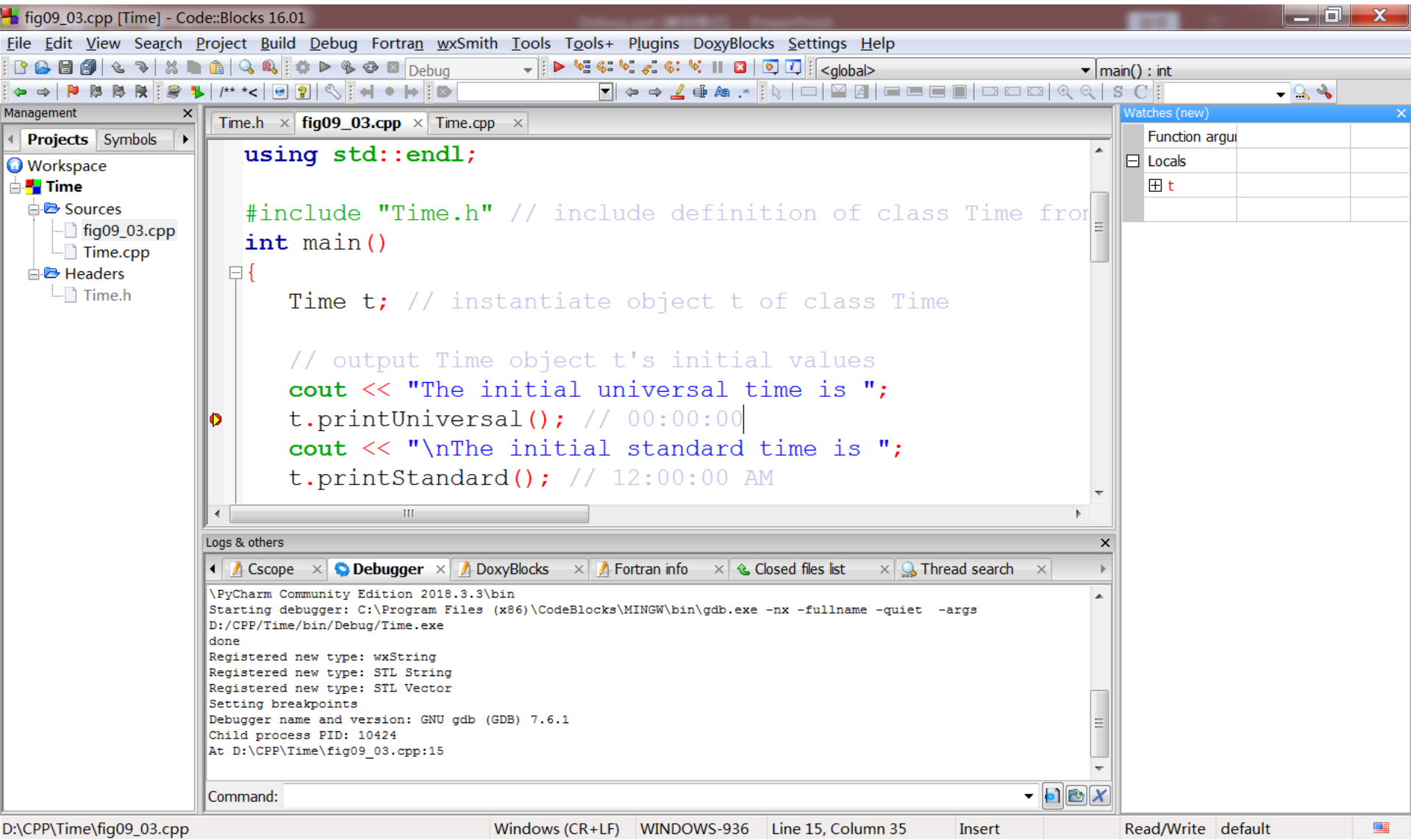


fig09_03.cpp [Time] - Code::Blocks 16.01

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

Debug <global> main() : int

Management Projects Symbols

Workspace Time

- Sources
 - fig09_03.cpp
 - Time.cpp
- Headers
 - Time.h

```
using std::endl;

#include "Time.h" // include definition of class Time from
int main()
{
    Time t; // instantiate object t of class Time

    // output Time object t's initial values
    cout << "The initial universal time is ";
    t.printUniversal(); // 00:00:00
    cout << "\nThe initial standard time is ";
    t.printStandard(); // 12:00:00 AM
}
```

Logs & others

Cscope Debugger DoxyBlocks Fortran info Closed files list Thread search

\PyCharm Community Edition 2018.3.3\bin
Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args
D:/CPP/Time/bin/Debug/Time.exe
done
Registered new type: wxString
Registered new type: STL String
Registered new type: STL Vector
Setting breakpoints
Debugger name and version: GNU gdb (GDB) 7.6.1
Child process PID: 10424
At D:\CPP\Time\fig09_03.cpp:15

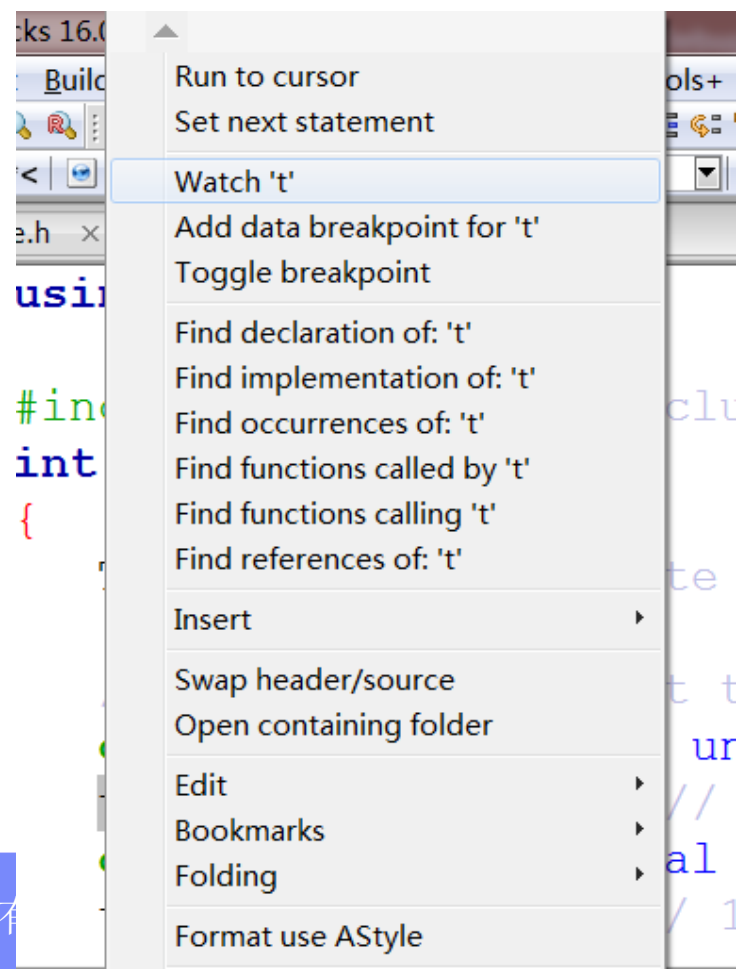
Command:

Watches (new)	
Function argu	
Locals	
t	

D:\CPP\Time\fig09_03.cpp Windows (CR+LF) WINDOWS-936 Line 15, Column 35 Insert Read/Write default

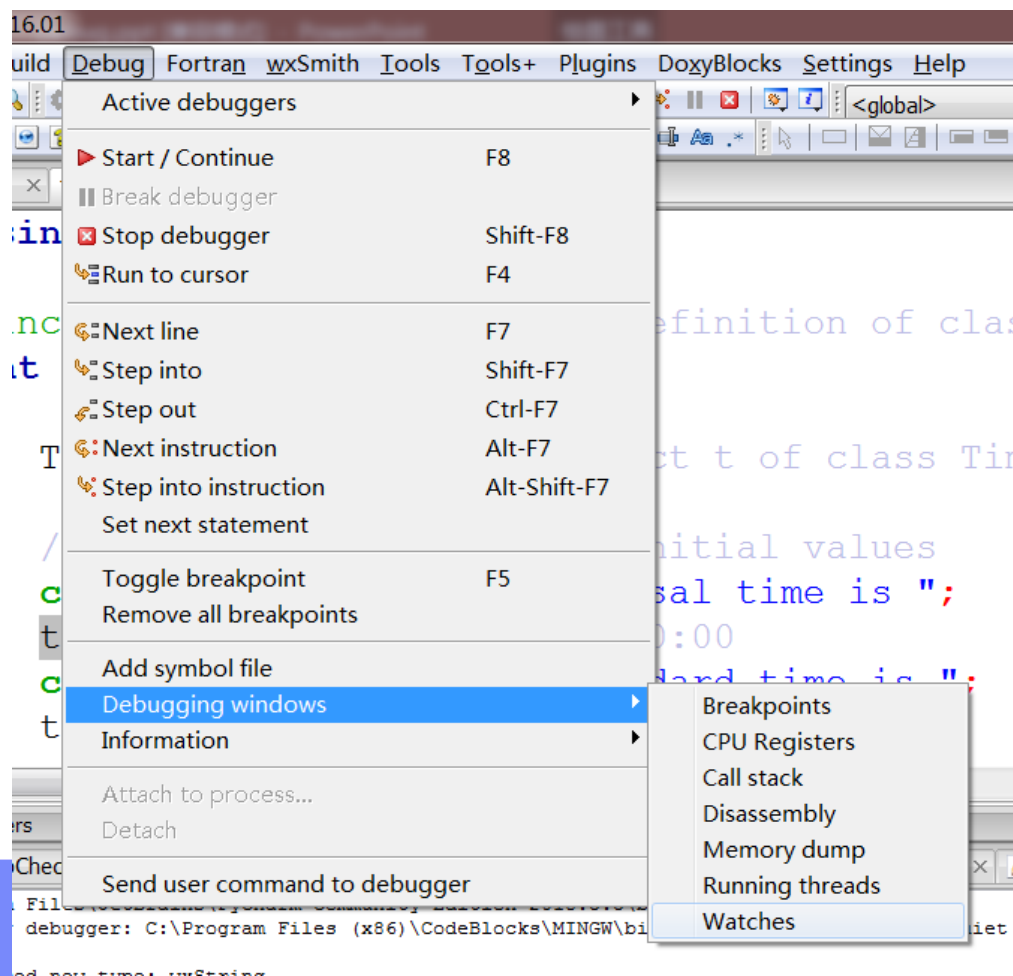
2. 查看变量 (Watch)

- 如果未出现Watch窗口，可以双击变量，右键选择“Watch变量”



2. 查看变量（Watch）

- 如果未出现Watch窗口，也可以通过“Debug”菜单找到“Watch”窗口



2. 查看变量 (Watch)

The screenshot displays the Code::Blocks 16.01 IDE interface. The main editor window shows the source code for `fig09_03.cpp`. The code includes comments and C++ statements for outputting and setting a `Time` object's values. The `Watches (new)` window on the right shows the variable `t` and its components: `hour`, `minute`, and `second`, all with values of 0. The `Debugger` window at the bottom shows the command line and the execution path.

```
// output Time object t's initial values
cout << "The initial universal time : ";
t.printUniversal(); // 00:00:00
cout << "\nThe initial standard time ";
t.printStandard(); // 12:00:00 AM

t.setTime( 13, 27, 6 ); // change time

// output Time object t's new values
cout << "\n\nUniversal time after setTime";
t.printUniversal(); // 13:27:06
cout << "\n\nStandard time after setTime";
t.printStandard(); // 1:27:06 PM
```

Watches (new)

Function arguments		
Locals		
t		
hour	0	Time
minute	0	
second	0	

Debugger

```
\Program Files\TortoiseSVN\bin;C:\Program Files\Git\cmd;C:\Program Files\PuTTY;C:\Program Files\dotnet;C:\Program Files (x86)\dotnet;C:\Program Files\Microsoft SQL Server\130\Tools\Binn;C:\Users\ding\Anaconda3;C:\Users\ding\Anaconda3\Scripts;C:\Users\ding\Anaconda3\Library\bin;C:\Program Files\JetBrains\PyCharm Community Edition 2018.3.3\bin
Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args D:/CPP/Time/bin/Debug/Time.exe
done
Registered new type: wxString
Registered new type: STL String
Registered new type: STL Vector
Setting breakpoints
```

Command:

2. 查看变量 (Watch)

The screenshot shows the Code::Blocks 16.01 IDE with a C++ project named 'Time'. The main editor displays the source code for 'fig09_03.cpp'. The code defines a 'Time' struct and a 'Time' object 't'. It prints the initial universal and standard times, then sets a new time (13:27:06) and prints the updated values.

```
// output Time object t's initial values
cout << "The initial universal time : ";
t.printUniversal(); // 00:00:00
cout << "\nThe initial standard time ";
t.printStandard(); // 12:00:00 AM

t.setTime( 13, 27, 6 ); // change time to 13:27:06 PM

// output Time object t's new values
cout << "\n\nUniversal time after setTime\n";
t.printUniversal(); // 13:27:06
cout << "\n\nStandard time after setTime\n";
t.printStandard(); // 1:27:06 PM
```

The 'Watches (new)' window on the right shows the following data:

Function arguments		
Locals		
t		
hour	0	Time
minute	0	
second	0	
t.hour	0	int

The 'Logs & others' window at the bottom shows the debugger's output, including the command to start the debugger and the registered new types (wxString, STL String, STL Vector).

Command: `D:\CPP\Time\bin\Debug\Time.exe`

Registered new type: wxString
Registered new type: STL String
Registered new type: STL Vector
Setting breakpoints

2. 查看变量 (Watch)

The screenshot displays the Code::Blocks 16.01 IDE with a C++ project named 'fig09_03.cpp'. The main window shows the source code, which includes comments and C++ code for a 'Time' object. The code outputs the initial universal and standard times, sets a new time (13:27:06), and outputs the new values. The 'Watches (new)' window on the right shows the 't' object and its 'hour' attribute, which is currently set to 10. The 'Logs & others' window at the bottom shows the debugger's output, including the command to start the debugger and the registered new types (wxString, STL String, STL Vector).

```
// output Time object t's initial values
cout << "The initial universal time : ";
t.printUniversal(); // 00:00:00
cout << "\nThe initial standard time ";
t.printStandard(); // 12:00:00 AM

t.setTime( 13, 27, 6 ); // change time

// output Time object t's new values
cout << "\n\nUniversal time after set";
t.printUniversal(); // 13:27:06
cout << "\n\nStandard time after set";
t.printStandard(); // 1:27:06 PM
```

Watches (new)

Function arguments		
Locals		
t		
hour	10	Time
minute	0	
second	0	
t.hour	10	int

Logs & others

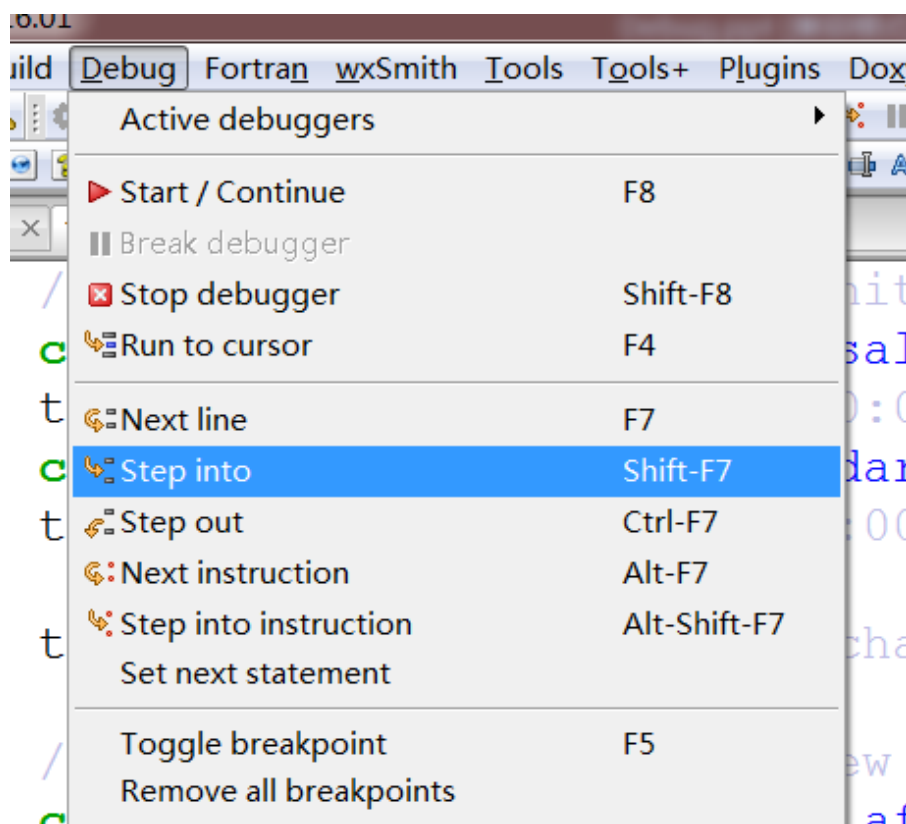
Debugger

```
\Program Files\TortoiseSVN\bin;C:\Program Files\Git\cmd;C:\Program Files\PuTTY;C:\Program Files\dotnet;C:\Program Files (x86)\dotnet;C:\Program Files\Microsoft SQL Server\130\Tools\Binn;C:\Users\ding\Anaconda3;C:\Users\ding\Anaconda3\Scripts;C:\Users\ding\Anaconda3\Library\bin;C:\Program Files\JetBrains\PyCharm Community Edition 2018.3.3\bin
Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args D:/CPP/Time/bin/Debug/Time.exe
done
Registered new type: wxString
Registered new type: STL String
Registered new type: STL Vector
Setting breakpoints
```

Command:

3. 单步运行（Step Into 和 Next Line）

- Step Into遇到函数调用时，进入函数内部



3. 单步运行 (Step Into 和 Next Line)

Time.cpp [Time] - Code::Blocks 16.01

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

Time.h x fig09_03.cpp x Time.cpp x

Management

Projects Symbols

Workspace

Time

Sources

fig09_03.cpp

Time.cpp

Headers

Time.h

```
// the data remains consistent by setting invalid values to
void Time::setTime( int h, int m, int s )
{
    hour = ( h >= 0 && h < 24 ) ? h : 0; // validate hour
    minute = ( m >= 0 && m < 60 ) ? m : 0; // validate minute
    second = ( s >= 0 && s < 60 ) ? s : 0; // validate second
} // end function setTime

// print Time in universal-time format (HH:MM:SS)
void Time::printUniversal()
{
    cout << setfill( '0' ) << setw( 2 ) << hour << ":"
        << setw( 2 ) << minute << ":" << setw( 2 ) << second;
} // end function printUniversal

// print Time in standard-time format (HH:MM:SS AM or PM)
void Time::printStandard()
{
    cout << ( ( hour == 0 || hour == 12 ) ? 12 : hour % 12 )
```

Watches (new)

Function arguments		
this	0x28ff04	
Locals		
t	Not available in current context	
t.hour	No symbol "t" in current context	
hour	10	int
minute	0	int
second	0	int

Logs & others

Debugger x DoxyBlocks x Fortran info x Closed files list x T...

Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args D:/CPP/Time/bin/Debug/Time.exe done

Registered new type: wxString

Registered new type: STL String

Registered new type: STL Vector

Setting breakpoints

Debugger name and version: GNU gdb (GDB) 7.6.1

Child process PID: 10424

At D:\CPP\Time\fig09_03.cpp:15

At D:\CPP\Time\Time.cpp:32

Command:

D:\CPP\Time\Time.cpp Windows (CR+LF) WINDOWS-936 Line 32, Column 1 Insert Read/Write default

3. 单步运行 (Step Into 和 Next Line)

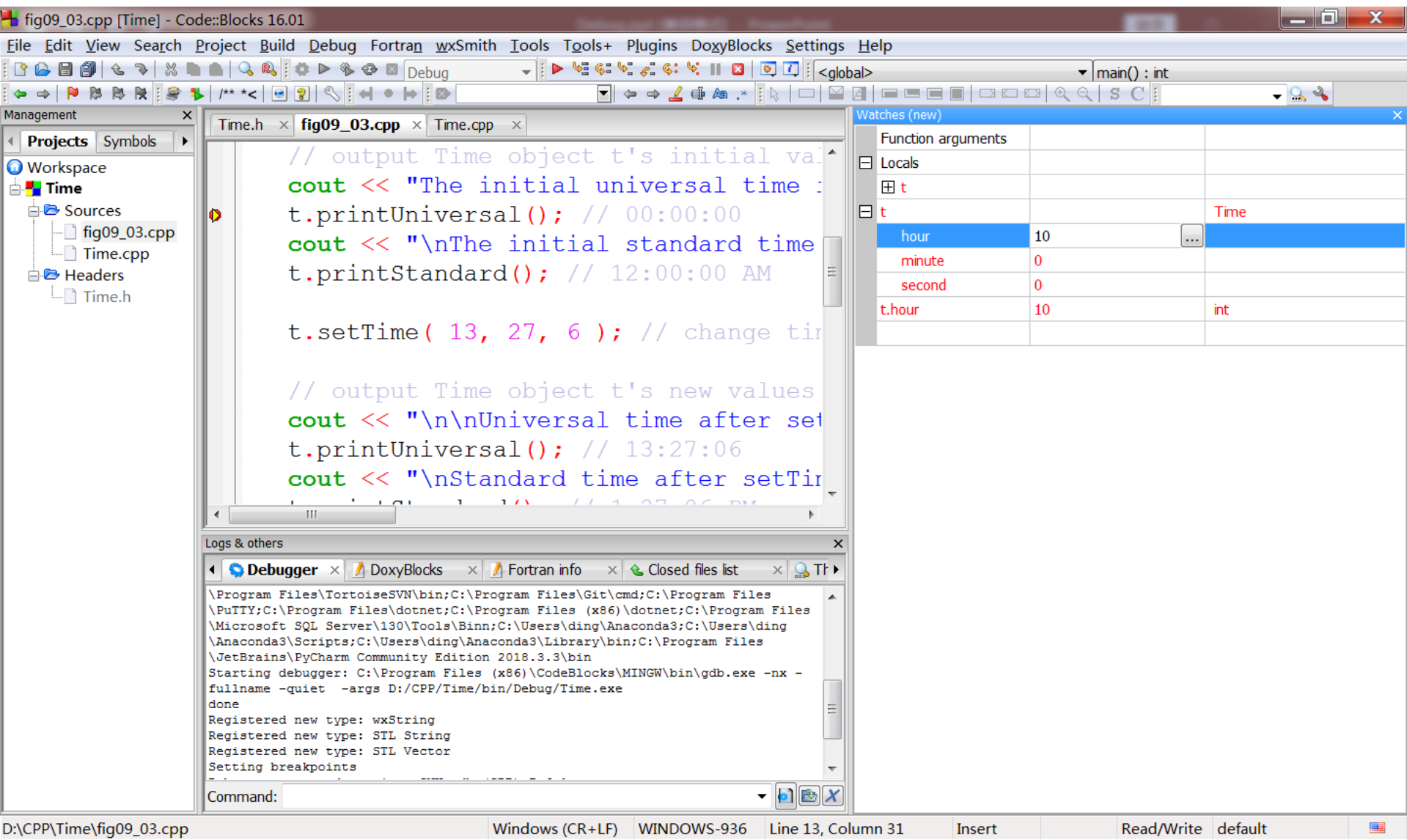


fig09_03.cpp [Time] - Code::Blocks 16.01

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help

Debug <global> main() : int

Management

Projects Symbols

Workspace

Time

Sources

fig09_03.cpp

Time.cpp

Headers

Time.h

```
// output Time object t's initial values
cout << "The initial universal time : ";
t.printUniversal(); // 00:00:00
cout << "\nThe initial standard time : ";
t.printStandard(); // 12:00:00 AM

t.setTime( 13, 27, 6 ); // change time to 13:27:06

// output Time object t's new values
cout << "\n\nUniversal time after setTime : ";
t.printUniversal(); // 13:27:06
cout << "\n\nStandard time after setTime : ";
t.printStandard(); // 1:27:06 PM
```

Watches (new)

Function arguments		
Locals		
t		
t		
hour	10	Time
minute	0	
second	0	
t.hour	10	int

Logs & others

Debugger

DoxyBlocks

Fortran info

Closed files list

Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args D:/CPP/Time/bin/Debug/Time.exe

done

Registered new type: wxString

Registered new type: STL String

Registered new type: STL Vector

Setting breakpoints

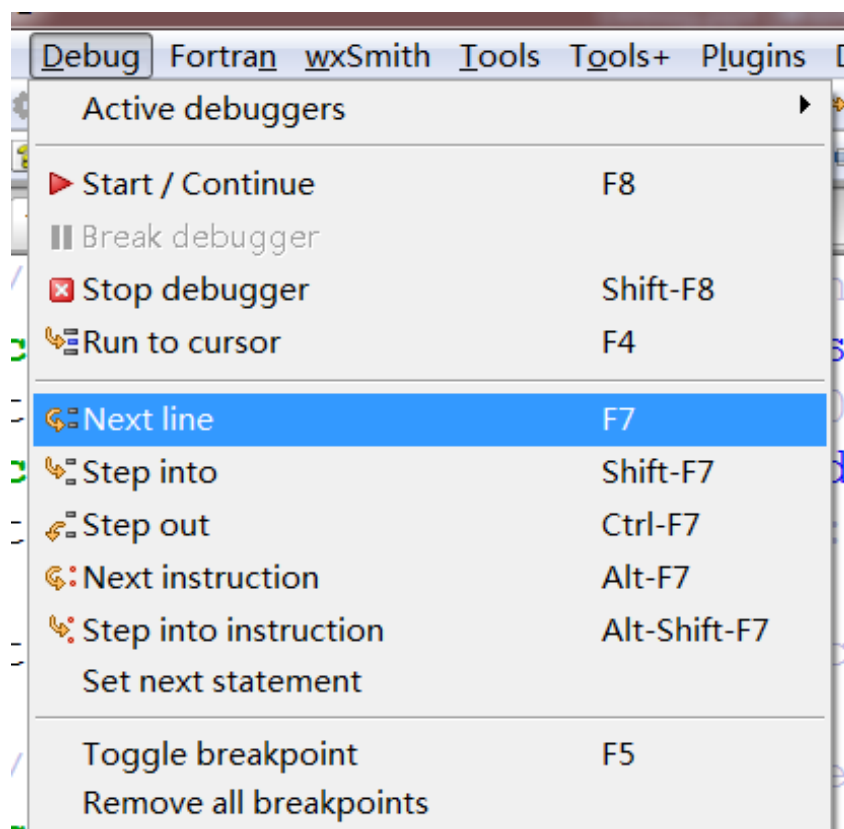
Command:

D:\CPP\Time\fig09_03.cpp

Windows (CR+LF) WINDOWS-936 Line 13, Column 31 Insert Read/Write default

3. 单步运行（Step Into 和 Next Line）

- Next Line遇到函数调用时，完成函数调用，到达下一条语句



3. 单步运行 (Step Into 和 Next Line)

The screenshot shows the Code::Blocks 16.01 IDE with the following components:

- Management Panel:** Shows the project structure for 'Time' with files: fig09_03.cpp, Time.cpp, and Time.h.
- Source Editor:** Displays the code for fig09_03.cpp. The code includes a `Time` class and its usage. A red dot indicates a breakpoint at line 15.
- Watches (new) Panel:** Shows the following variables and their values:

Function arguments		
Locals		
t		Time
hour	0	
minute	0	
second	0	
t.hour	0	int
- Logs & others Panel:** Shows the debugger output:

```
Starting debugger: C:\Program Files (x86)\CodeBlocks\MINGW\bin\gdb.exe -nx -fullname -quiet -args D:/CPP/Time/bin/Debug/Time.exe
done
Registered new type: wxString
Registered new type: STL String
Registered new type: STL Vector
Setting breakpoints
Debugger name and version: GNU gdb (GDB) 7.6.1
Child process PID: 5116
At D:\CPP\Time\fig09_03.cpp:15
At D:\CPP\Time\fig09_03.cpp:16
```

The status bar at the bottom indicates the current file is `D:\CPP\Time\fig09_03.cpp`, line 16, column 1.