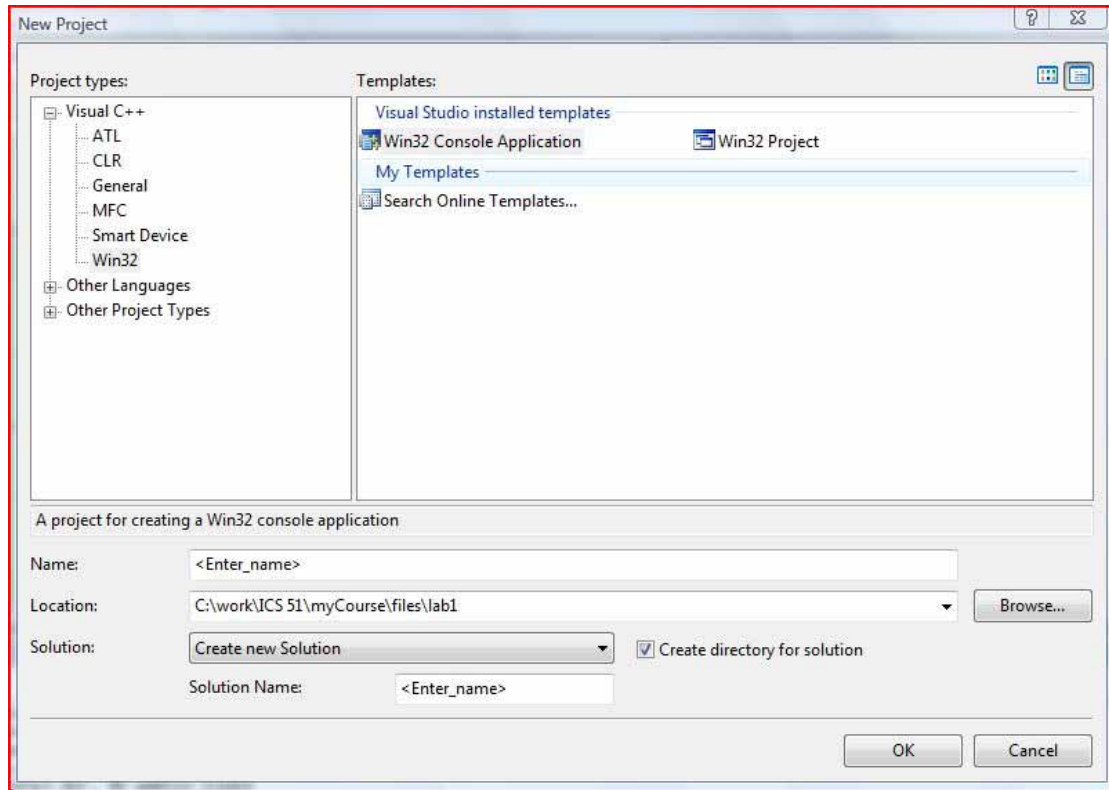


1. Start Visual Studio .Net and Make a New Project

(1) Run Microsoft Visual Studio .Net

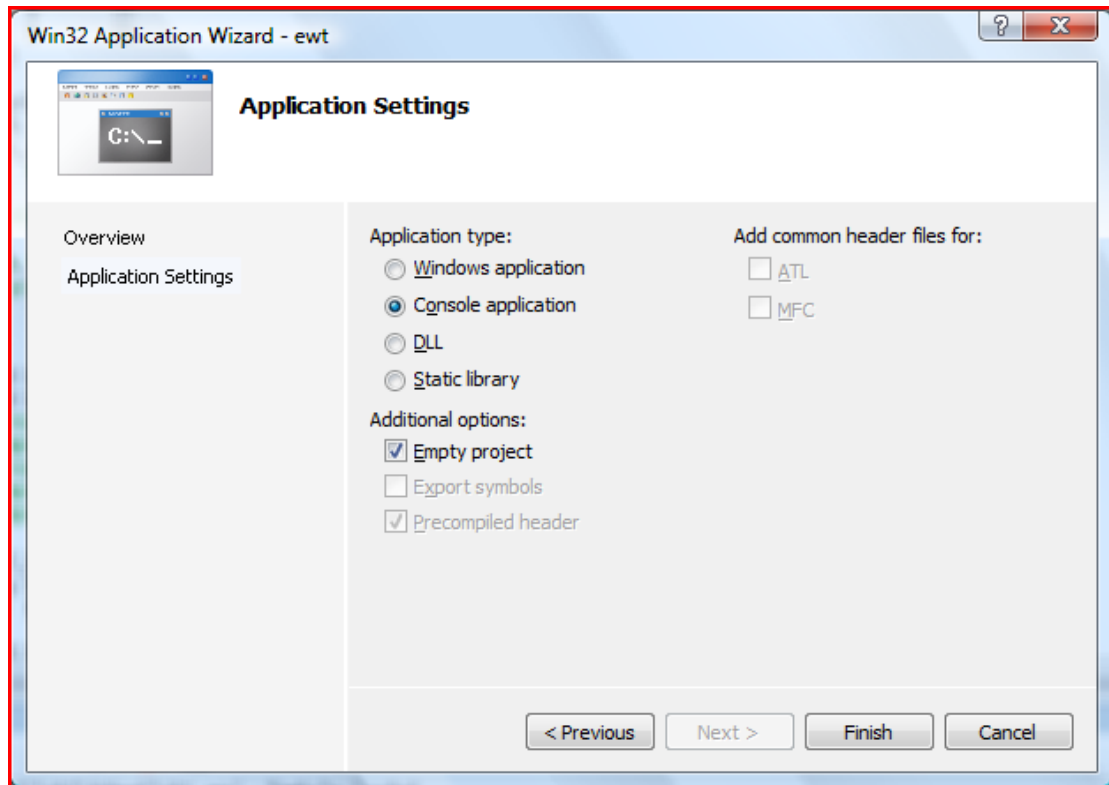
(2) Click [New Project] at Start Page

(3) Select “Visual C++” -> “Win32” as a Project Type, “Win32 Console Application” as a Template, and “lab1” as a project name for lab1. And then click [OK] button.



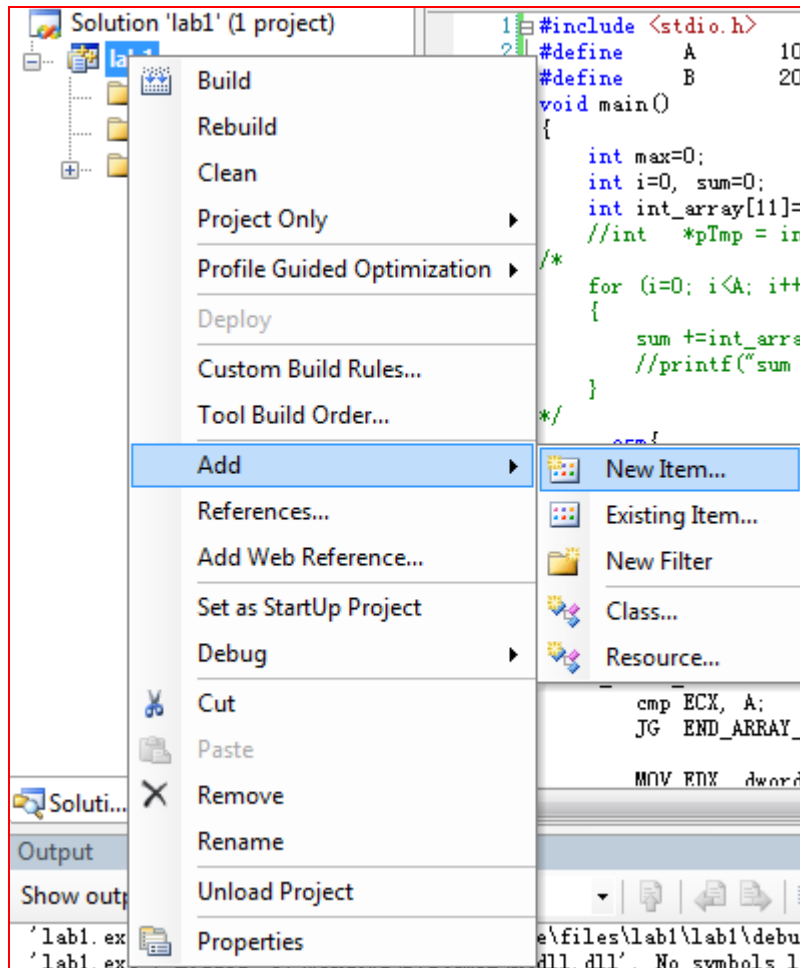
(4) Click [Next] button on the window “Welcome to the Win32 Application Wizard”

(5) Select [Application Settings] at Win32 Application Wizard and check at [Empty project]. And then click [Finish] button.

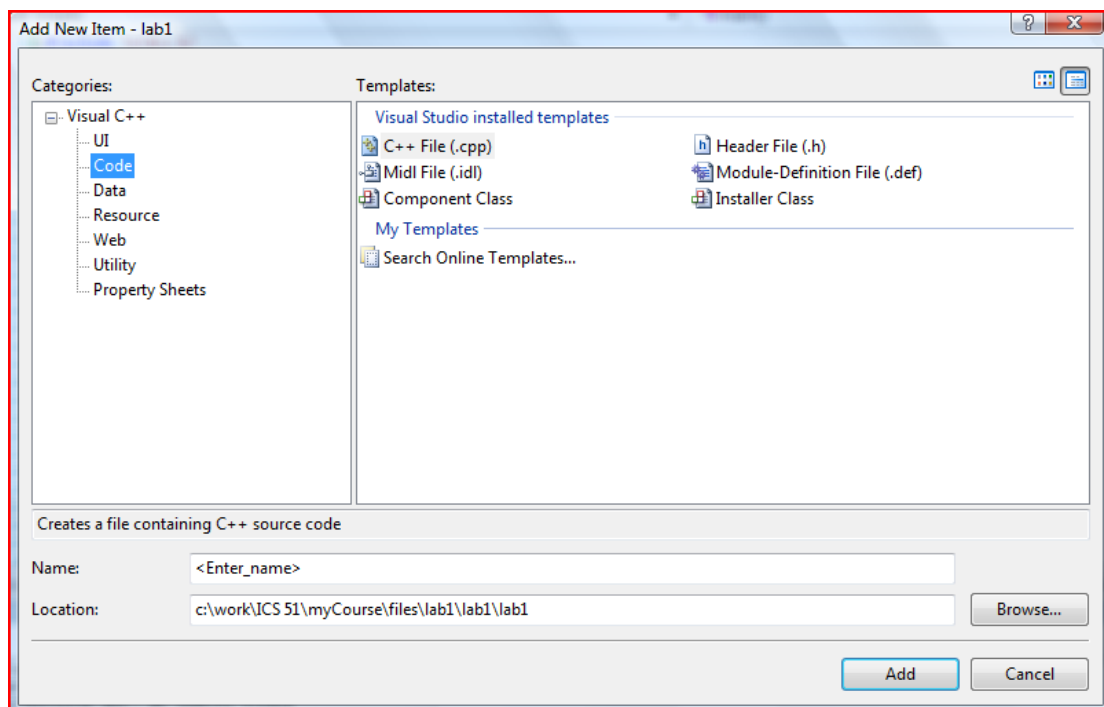


2. Add .cpp file and .h file to an Existing Project

(1) Right click the project you just created, i.e. "lab1" in the solution explorer. Click [Add] -> [New Item].



(2) Choose “Code” -> ‘C++ file’ and Name it, then Click [Add] button.



(3) Write a code for “main.c” and other files for your project.

<<<Example Code>>>

```
#include <stdio.h>
#define A 10
#define B 20
void main()
{
int max=0;
int i=0, sum=0;
int int_array[11]={ 1,2,3,4,5,6,7,8,9,10,11 };
//int *pTmp = int_array;
/*
for (i=0; i<A; i++)
{
sum +=int_array[i];
//printf("sum = %d  n", sum);
}
*/
__asm{
MOV EAX, 0;
MOV ECX, 0;
//PUSH int_array;
//MOV EBX, ESP;
//POP EBX;
//MOV EAX, int_array;
//MOV EBX, pTmp;
START_ARRAY_FOR:
cmp ECX, A;
JG END_ARRAY_FOR;
MOV EDX, dword ptr int_array[ECX*4];
ADD EAX, EDX;
INC ECX;
JMP START_ARRAY_FOR;
END_ARRAY_FOR:
MOV sum, EAX;
}
/*
__asm{
MOV EAX, a;
MOV EBX, b;
CMP EAX, EBX;
JLE ELSE_BLOCK;
MOV EAX, a;

```

```
MOV max, EAX;
JMP END_IF;
ELSE_BLOCK:
MOV EAX, b;
MOV max, EAX;
END_IF:
}
__asm{
MOV EAX, 0;
MOV ECX, 0;
START_WHILE:
CMP ECX, A;
JE END_WHILE;
ADD EAX, ECX;
INC ECX;
JMP START_WHILE;
END_WHILE:
//MOV sum, EAX;
}
__asm{
MOV EAX, sum;
MOV ECX, i;
START_FOR:
CMP ECX, A;
JG END_FOR;
ADD EAX, ECX;
INC ECX;
JMP START_FOR;
END_FOR:
//MOV sum, EAX;
}
*/
/*
for (i=0; i<A; i++)
sum +=i;
*/
/*
while (i<A)
{
sum += i;
i++;
}
*/
/*
```

```

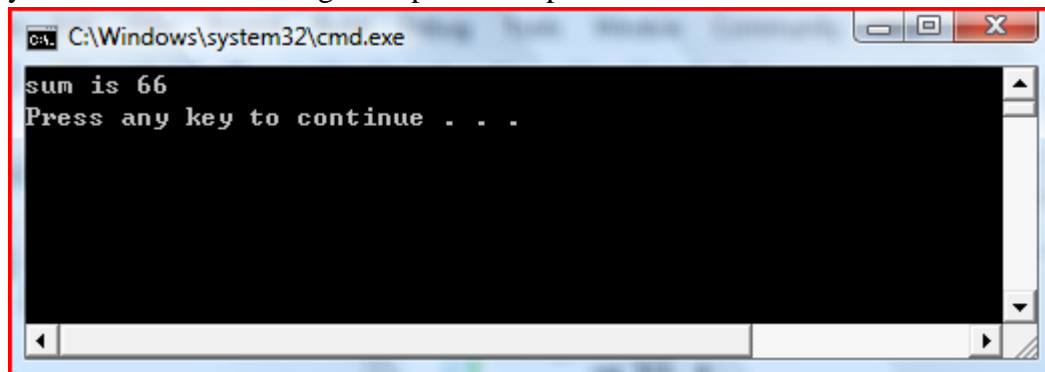
if ( a > b )
max = a;
else
max = b;
*/
// printf("max is %d\n", max);
printf("sum is %d\n", sum);
}

```

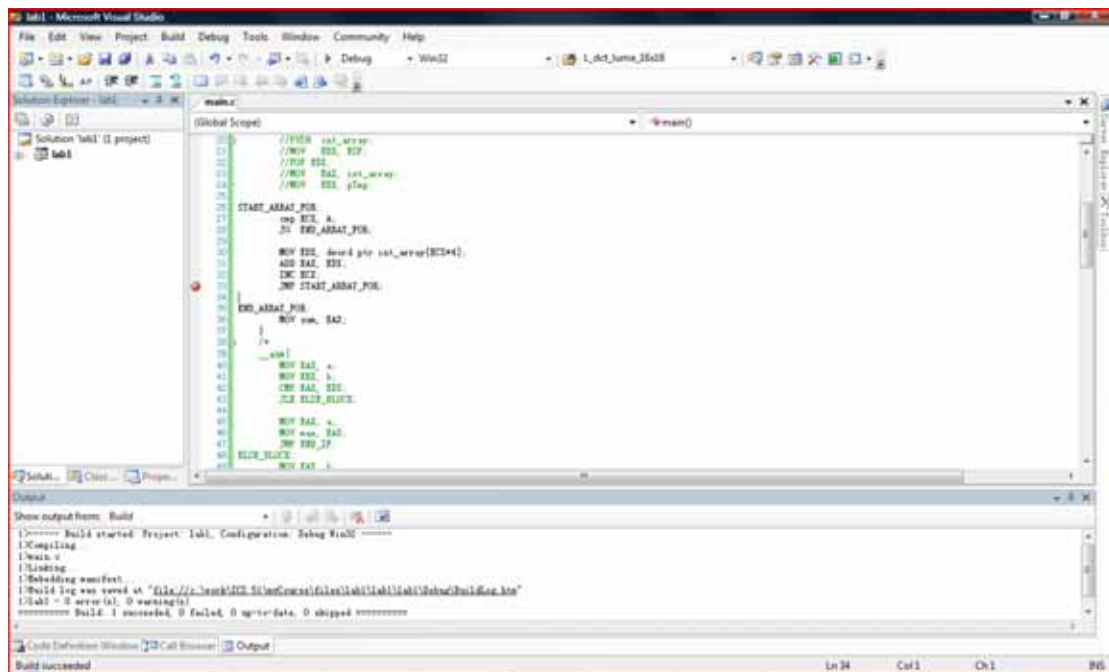
3. Build and Debug your project

(1) Select {Build} -> {Build Solution} or {Build LAB1}.

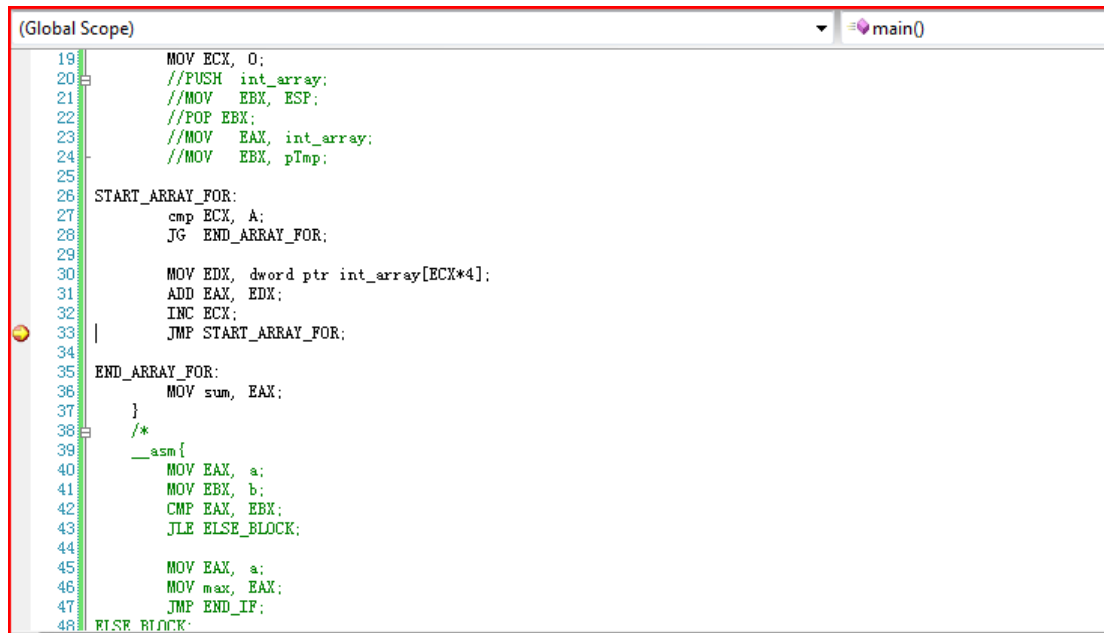
(2-1) For Execution, Select {Debug} -> {Start without Debugging} then you can see your result like following example to compute the sum.



(2-2) For Debugging, Select {Debug} -> {Start}. This is a step by step debugger so before starting, you should MARK some places(lines) you want to debug as follows:

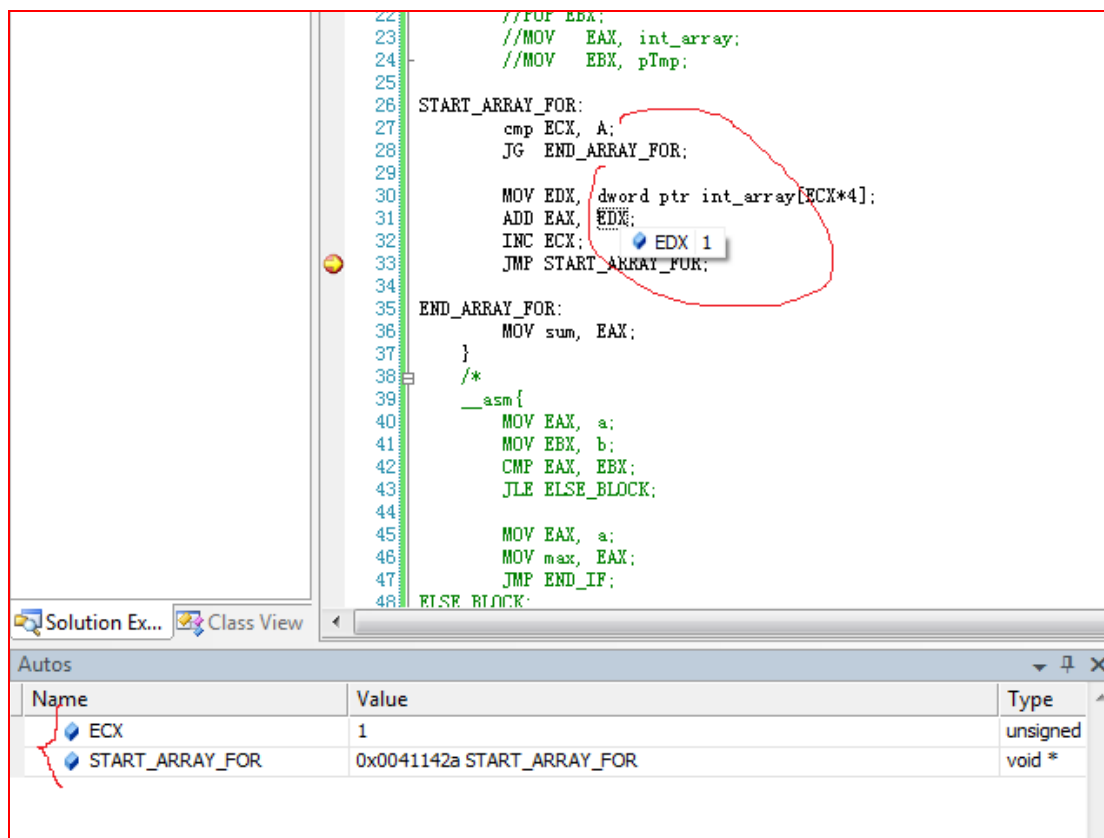


I mark at 33 lines (cmp ECX, A;) by clicking left-most gray colored area. And then if you select {Start Debugging} then you can see the program indicator (yellow colored arrow) stops at 33 line I marked.



```
(Global Scope) main()
19     MOV ECX, 0;
20     //PUSH int_array;
21     //MOV EBX, ESP;
22     //POP EBX;
23     //MOV EAX, int_array;
24     //MOV EBX, pTmp;
25
26 START_ARRAY_FOR:
27     cmp ECX, A;
28     JG END_ARRAY_FOR;
29
30     MOV EDX, dword ptr int_array[ECX*4];
31     ADD EAX, EDX;
32     INC ECX;
33     JMP START_ARRAY_FOR;
34
35 END_ARRAY_FOR:
36     MOV sum, EAX;
37 }
38 /*
39 __asm{
40     MOV EAX, a;
41     MOV EBX, b;
42     CMP EAX, EBX;
43     JLE ELSE_BLOCK;
44
45     MOV EAX, a;
46     MOV max, EAX;
47     JMP END_IF;
48 ELSE_BLOCK:
```

Then you can browse local values, register values, variables and something like that to debug and confirm your application.

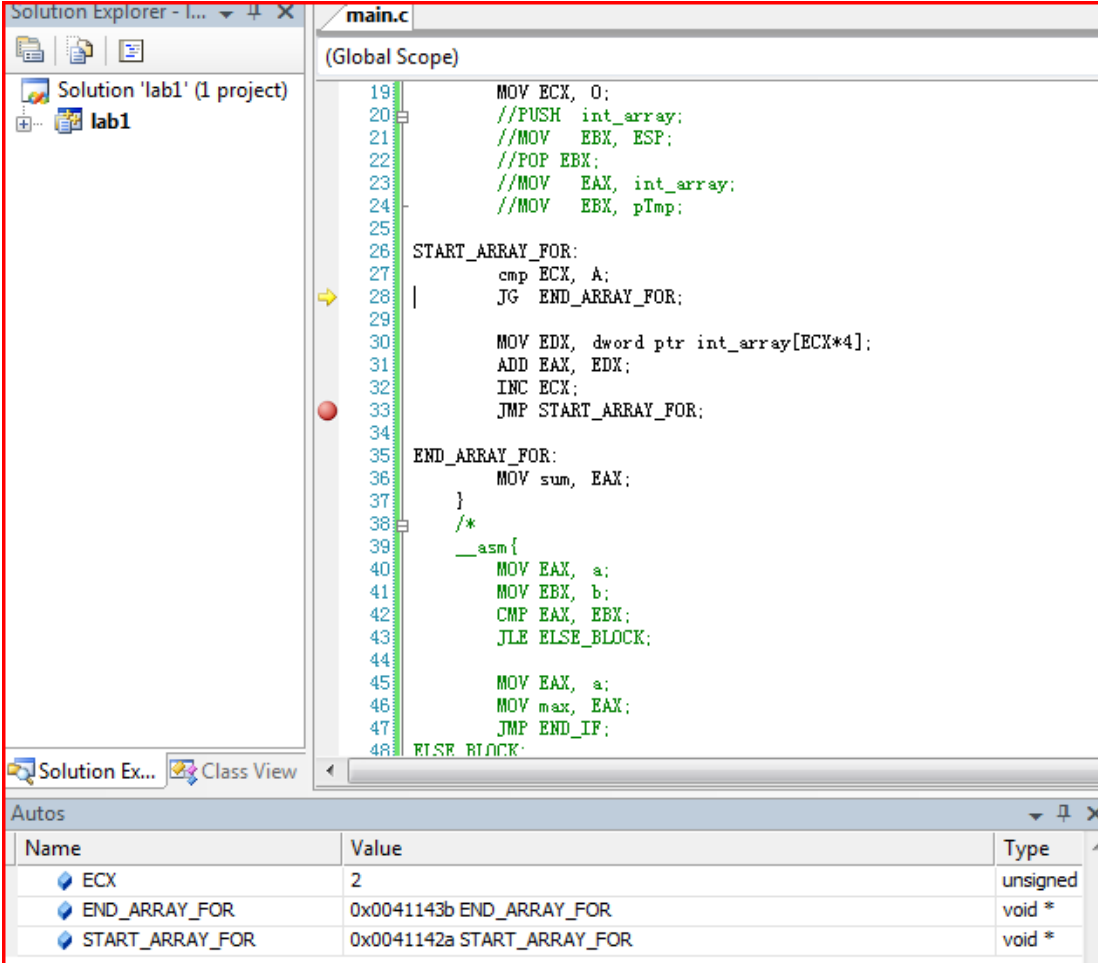


```
22     //POP EBX;
23     //MOV EAX, int_array;
24     //MOV EBX, pTmp;
25
26 START_ARRAY_FOR:
27     cmp ECX, A;
28     JG END_ARRAY_FOR;
29
30     MOV EDX, dword ptr int_array[ECX*4];
31     ADD EAX, EDX;
32     INC ECX;
33     JMP START_ARRAY_FOR;
34
35 END_ARRAY_FOR:
36     MOV sum, EAX;
37 }
38 /*
39 __asm{
40     MOV EAX, a;
41     MOV EBX, b;
42     CMP EAX, EBX;
43     JLE ELSE_BLOCK;
44
45     MOV EAX, a;
46     MOV max, EAX;
47     JMP END_IF;
48 ELSE_BLOCK:
```

Name	Value	Type
ECX	1	unsigned
START_ARRAY_FOR	0x0041142a START_ARRAY_FOR	void *

Use {Debug} -> {Step Into} (or Hot Key with F11), {Debug}-> {Step Over} (or Hot Key with F10), and {Debug} -> {Start} (or Hot Key with F5) for a complete debugging. When you finish debugging, Click {Debug} -> {Stop Debugging} (or Hot

Key with shift+F5)



The screenshot displays the Visual Studio 2005 IDE. The Solution Explorer on the left shows a project named 'lab1'. The main window shows the source code for 'main.c' in assembly mode. The code is as follows:

```
19      MOV ECX, 0;
20      //PUSH int_array;
21      //MOV EBX, ESP;
22      //POP EBX;
23      //MOV EAX, int_array;
24      //MOV EBX, pImp;
25
26  START_ARRAY_FOR:
27      cmp ECX, A;
28      JG  END_ARRAY_FOR;
29
30      MOV EDX, dword ptr int_array[ECX*4];
31      ADD EAX, EDX;
32      INC ECX;
33      JMP START_ARRAY_FOR;
34
35  END_ARRAY_FOR:
36      MOV sum, EAX;
37      }
38      /*
39      __asm{
40      MOV EAX, a;
41      MOV EBX, b;
42      CMP EAX, EBX;
43      JLE ELSE_BLOCK;
44
45      MOV EAX, a;
46      MOV max, EAX;
47      JMP END_IF;
48  ELSE_BLOCK;
```

The Autos window at the bottom shows the following data:

Name	Value	Type
ECX	2	unsigned
END_ARRAY_FOR	0x0041143b END_ARRAY_FOR	void *
START_ARRAY_FOR	0x0041142a START_ARRAY_FOR	void *

Have fun!