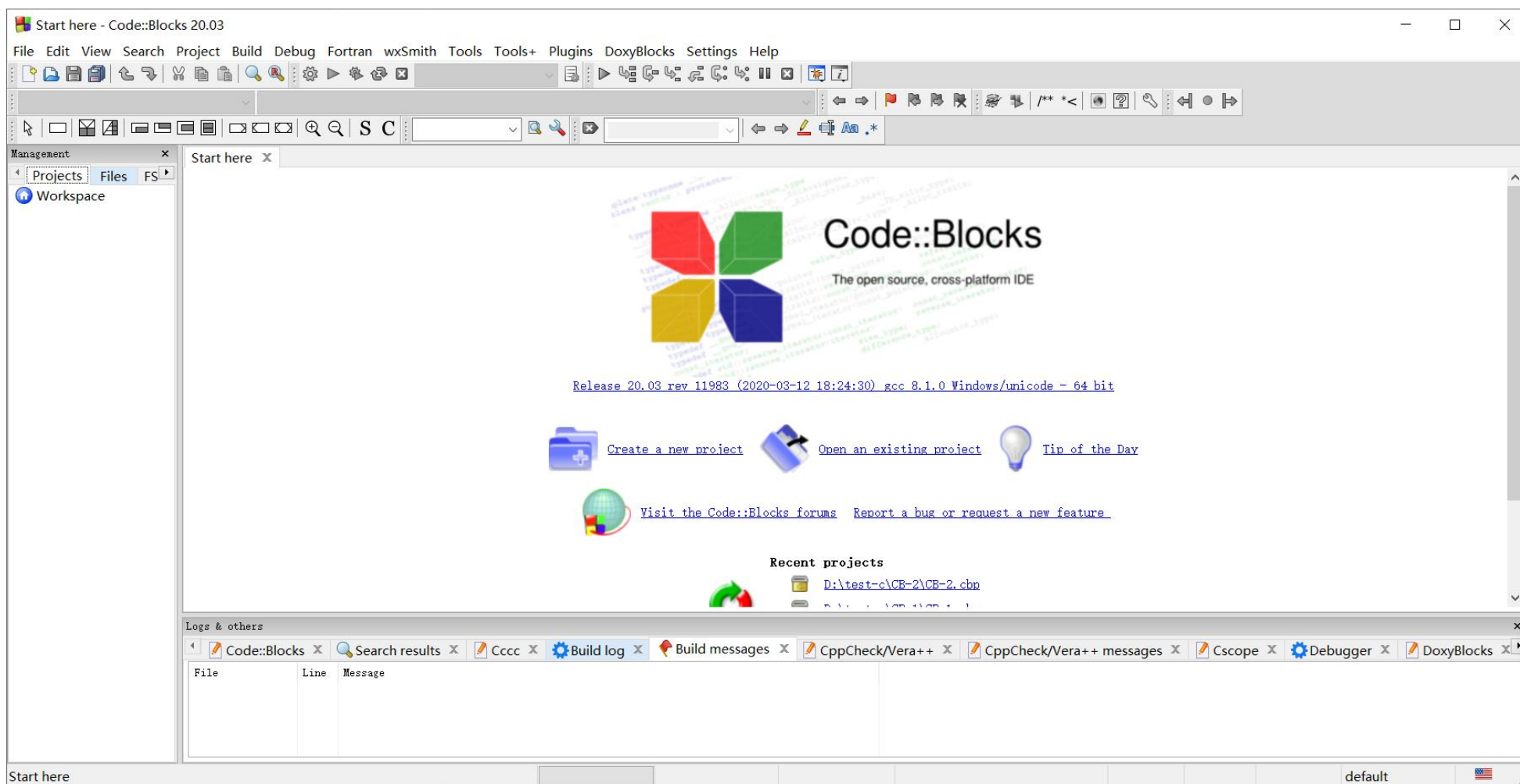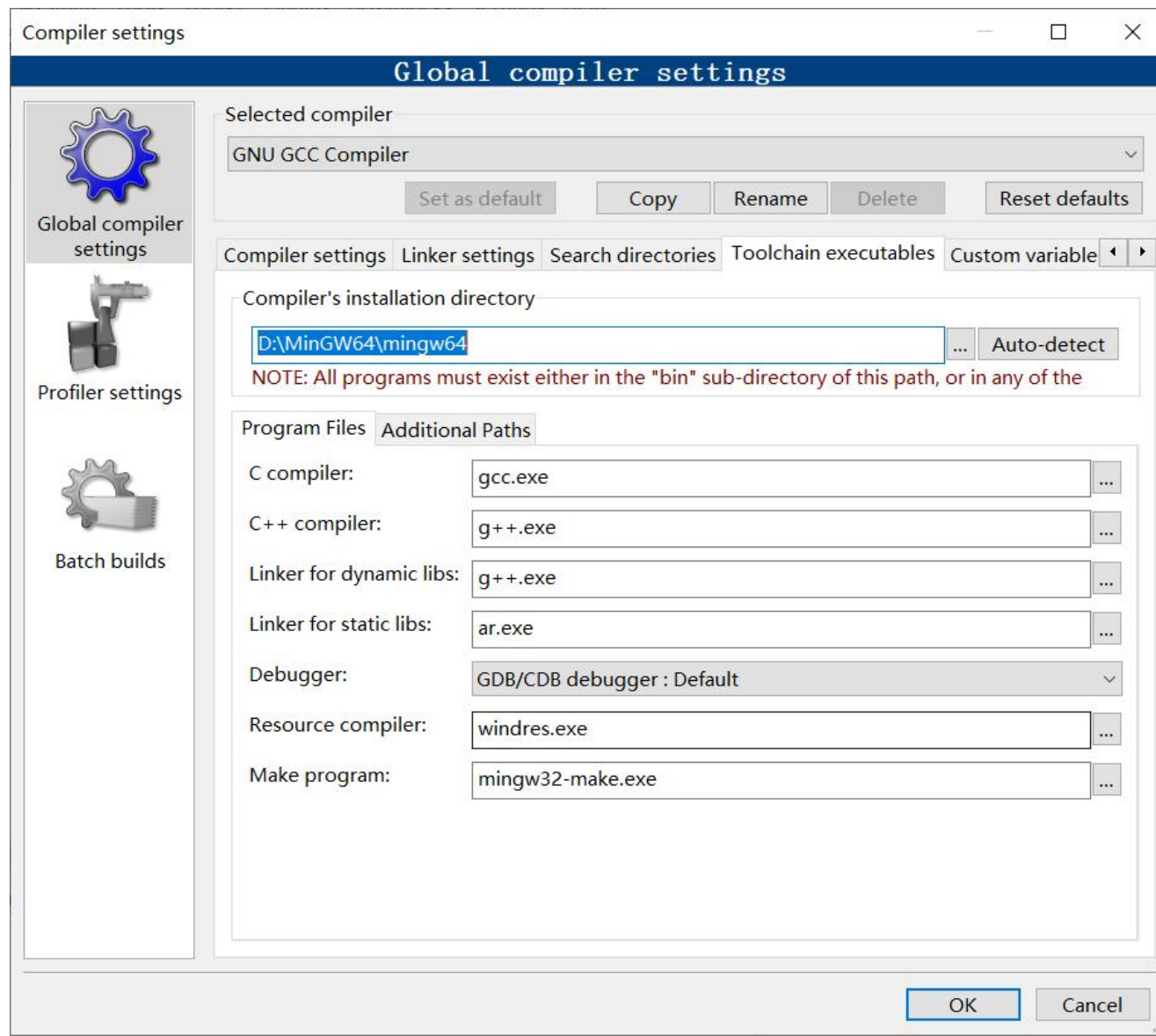# 计算机与程序设计基础（C）实验课堂

第一讲 运行环境与运行方法

简介

- 实验内容
  - Code::Blocks的安装与使用
  - 初学者常见错误总结
  - 实验任务
- 实验目的
  - 了解C语言集成开发环境Code::Blocks的使用方法
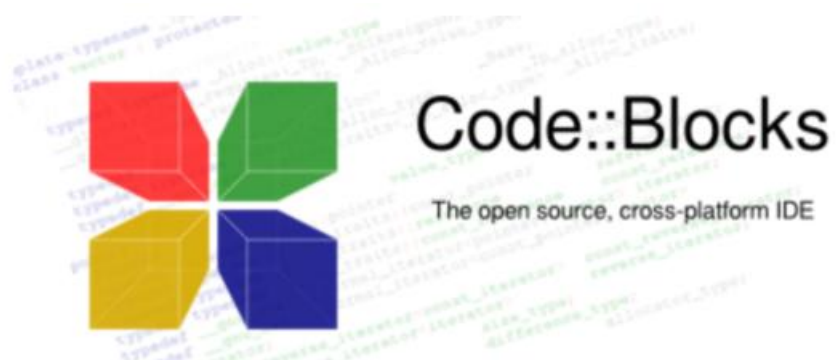 - 了解如何编辑、编译、链接和运行一个C语言程序
  - 掌握基本的C语言程序调试技能

CodeBlocks的下载、安装及配置

CodeBlocks的下载、安装及配置

CodeBlocks的使用

- 创建工程
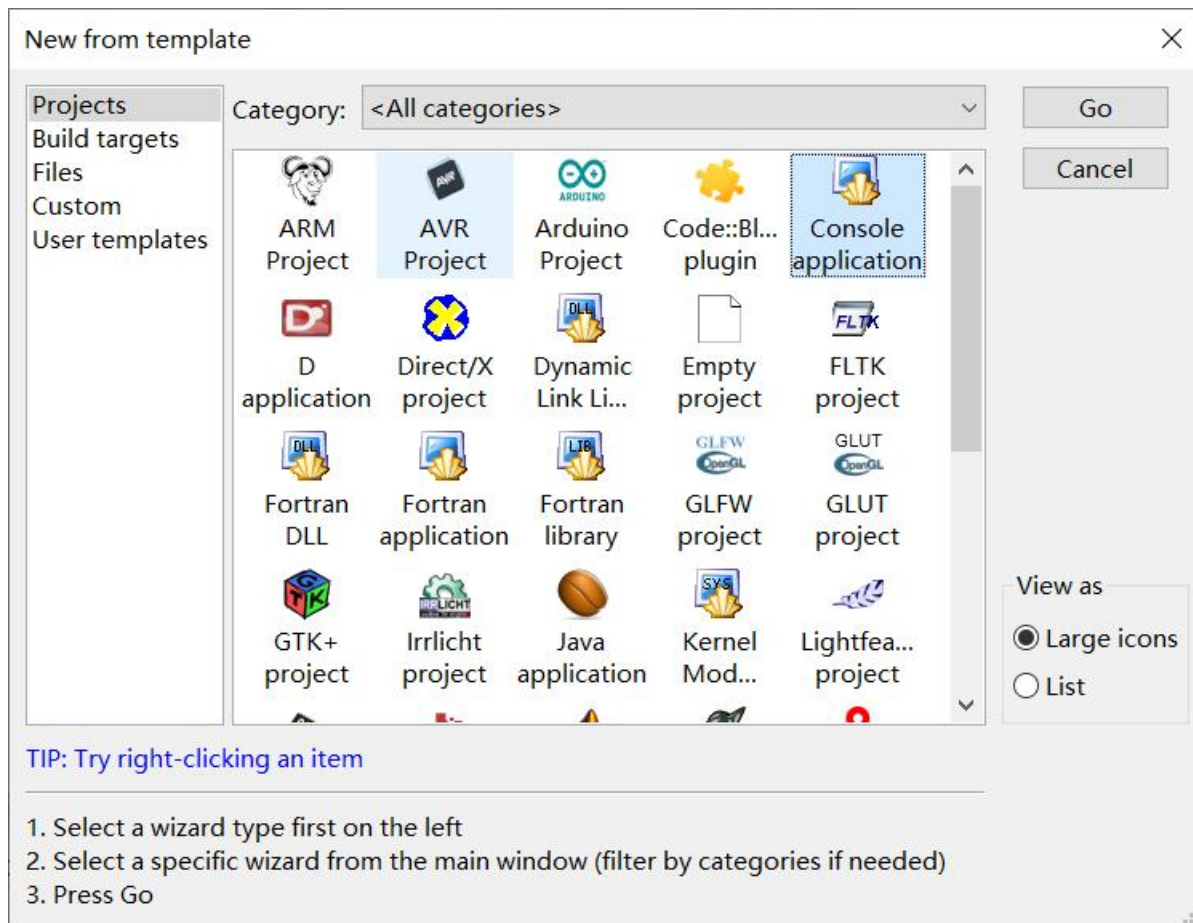
CodeBlocks的使用

- 创建工程
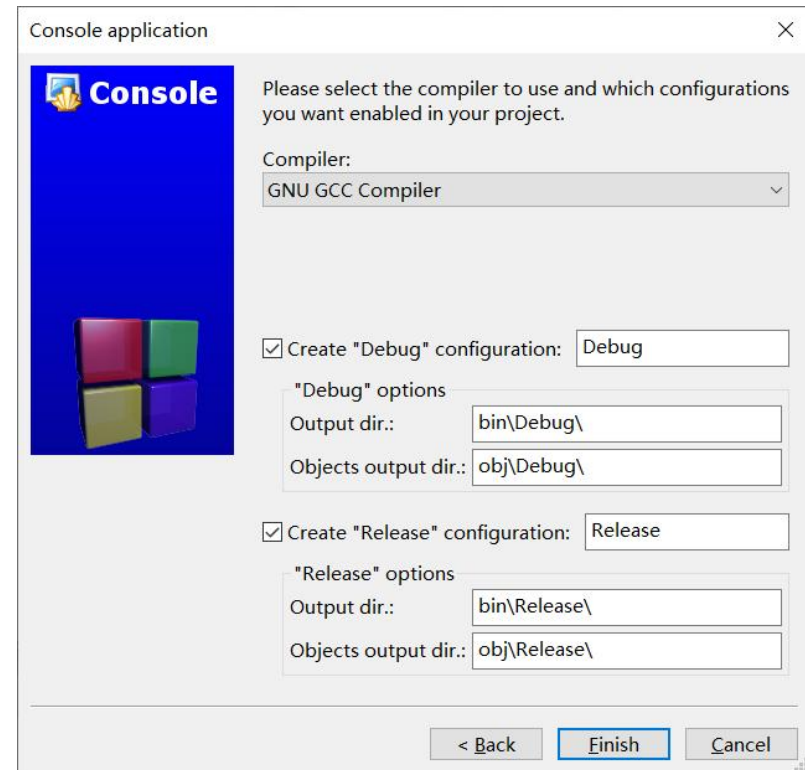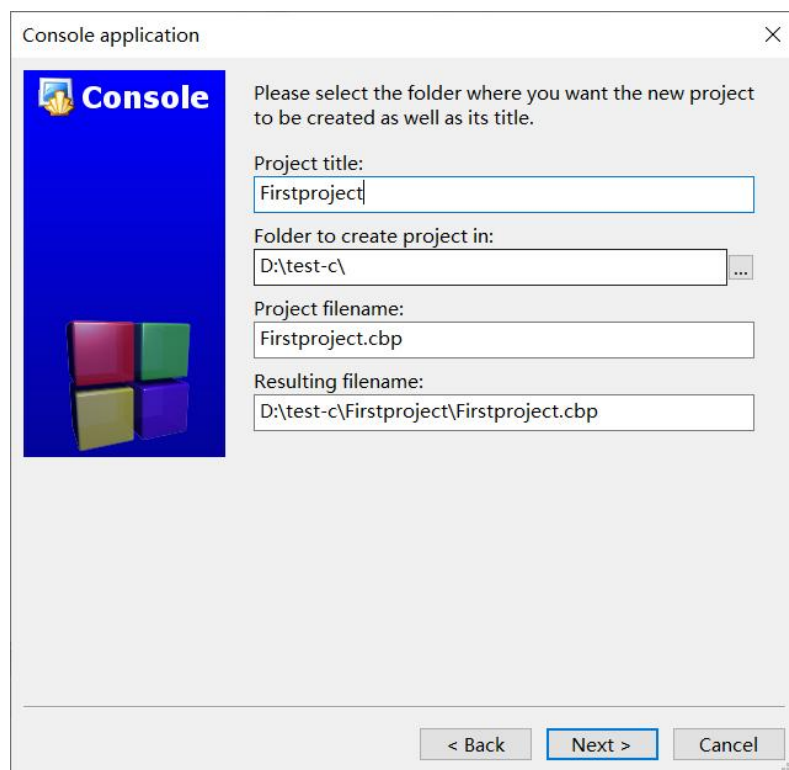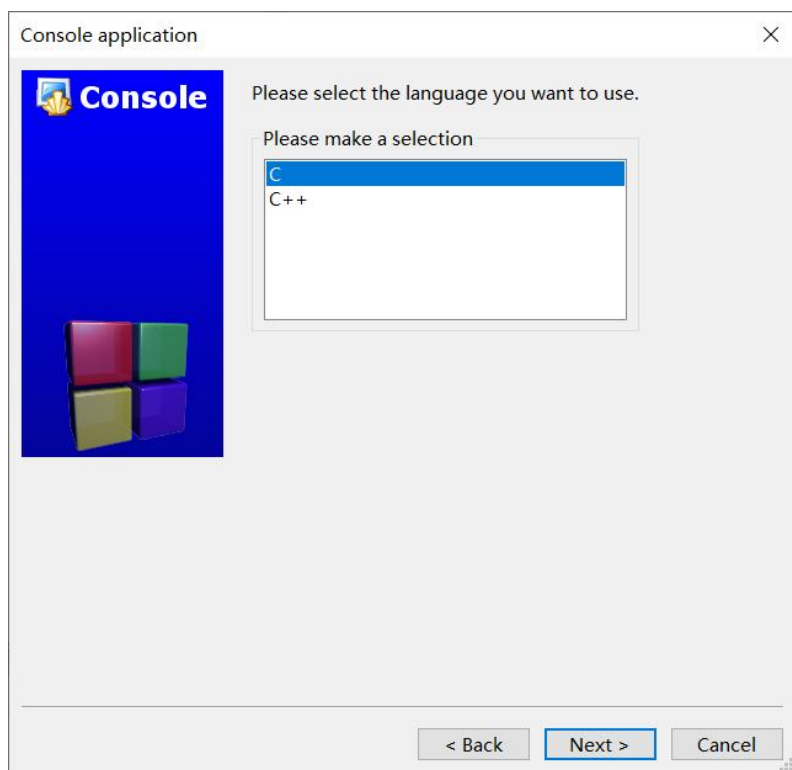
CodeBlocks的使用

- 编写源文件

CodeBlocks的使用

- 编译、链接和运行

常见错误1：忘了定义变量

```
1   #include <stdio.h>
2
3   int main()
4   {
5       x=3;
6       y=6;
7       printf("%d\n", x+y);
8       return 0;
9   }
10
```

File	Line	Message
		=== Build: Release in thefirstproject (compiler: GNU GCC Compiler) ===
D:\test-c\the...		In function 'main':
D:\test-c\the...	5	error: 'x' undeclared (first use in this function)
D:\test-c\the...	5	note: each undeclared identifier is reported only once for each function it appears in
D:\test-c\the...	6	error: 'y' undeclared (first use in this function)
		=== Build failed: 2 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

常见错误2：类型不一致

```c
#include <stdio.h>
int main()
{
    int x=3;
    float y=6.5f;
    double z=7.0;
    printf("%f, %d, %d\n", x, y, z);
    printf("%d, %f, %f\n", x, y, z);
    return 0;
}
```

```
0.000000, 0, 0
3, 6.500000, 7.000000

Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.
```

常见错误3：未考虑取值范围

```c
#include <stdio.h>
#include <limits.h>
int main()
{
    short num1;
    int num2;
    num1 = num2 = 89101;
    printf("num1=%d, num2=%d\n", num1, num2);
    printf("short's max is %d\n", SHRT_MAX);
    return 0;
}
```
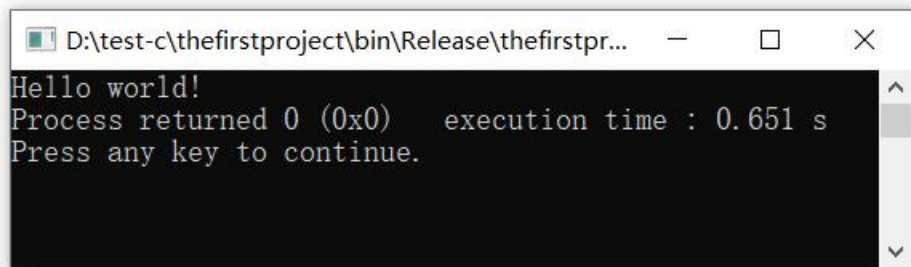
```
D:\test-c\2021c课程\t1\bin\Debug\t1.exe
num1=23565, num2=89101
short's max is 32767

Process returned 0 (0x0)    execution time : 0.453 s
Press any key to continue.
```

常见错误4：乱加分号

```c
1  #include <stdio.h>;
2
3  int main()
4  {
5      if(0);
6          printf("Hello world!");
7      return 0;
8  }
```

D:\test-c\thefirstproject\bin\Release\thefirstpr... — □ ×

```
Hello world!
Process returned 0 (0x0)   execution time : 0.651 s
Press any key to continue.
```

```
D:\test-c\thefirstproject\main.c:1:19: warning: extra tokens at end of #include directive
 #include <stdio.h>;
                   ^

D:\test-c\thefirstproject\main.c: In function 'main':
D:\test-c\thefirstproject\main.c:5:5: warning: this 'if' clause does not guard... [-Wmisleading-indentation]
     if(0);
     ^~

D:\test-c\thefirstproject\main.c:6:9: note: ...this statement, but the latter is misleadingly indented as if it were guarded by the 'if'
         printf("Hello world!");
         ^~~~~~
```

常见错误5：大小写不分

```
1    #include <stdio.h>;
2
3    int main()
4    {
5        int a, b, c;
6        A=B=C=100;
7        printf("%d, %d, %d\n", A, B, C);
8        return 0;
9    }
```

```
D:\test-c\the...   1   warning: extra tokens at end of #include directive
D:\test-c\the...       In function 'main':
D:\test-c\the...   6   error: 'A' undeclared (first use in this function)
D:\test-c\the...   6   note: each undeclared identifier is reported only once for each function it appears in
D:\test-c\the...   6   error: 'B' undeclared (first use in this function)
D:\test-c\the...   6   error: 'C' undeclared (first use in this function)
D:\test-c\the...   5   warning: unused variable 'c' [-Wunused-variable]
D:\test-c\the...   5   warning: unused variable 'b' [-Wunused-variable]
D:\test-c\the...   5   warning: unused variable 'a' [-Wunused-variable]
                       === Build failed: 3 error(s), 4 warning(s) (0 minute(s), 0 second(s)) ===
```

常见错误6：使用中文标点符号

```
1    #include <stdio.h>;
2
3    int main()
4    {
5        int a，  b, c;
6        a=b=c=100；
7        printf("%d, %d, %d\n", a, b, c);
8        return 0;
9    }
```

```
D:\test-c\the...    5    error: stray '\243' in program
D:\test-c\the...    5    error: stray '\254' in program
D:\test-c\the...    5    error: expected '=', ',', ';', 'asm' or '__attribute__' before 'b'
D:\test-c\the...    5    error: 'b' undeclared (first use in this function)
D:\test-c\the...    5    note: each undeclared identifier is reported only once for each function it appears in
D:\test-c\the...    5    error: 'c' undeclared (first use in this function)
D:\test-c\the...    5    warning: left-hand operand of comma expression has no effect [-Wunused-value]
D:\test-c\the...    6    error: 'a' undeclared (first use in this function)
D:\test-c\the...    6    error: stray '\243' in program
D:\test-c\the...    6    error: stray '\273' in program
D:\test-c\the...    6    error: expected ';' before 'printf'
                         === Build failed: 9 error(s), 2 warning(s)  (0 minute(s), 1 second(s)) ===
```

任务一：打印信息

```c
#include <stdio.h>


int main(void)
{
    int num;
    num = 1;
    printf ("My favorite number is %d\n", num);
    return 0;
}
```

任务二*：接受输入参数

```c
#include <stdio.h>
//Project_>set program's arguments...

int main(int argc,char *argv[])
{
    int i;
    printf("%d\n",argc);
    for(i=0;i<argc;i++)
        printf("%d:  %s\n",i, argv[i]);
    return 0;
}
```

任务三：输入输出

```c
#include <stdio.h>

int main()
{
    int a, b;
    double c;
    float d;
    printf("please input a, b, c and d:\n");
    scanf ("%d %d %lf, %f", &a, &b, &c, &d);
    printf ("a=%d, b=%d, c=%f, d=%f\n", a, b, c, d);
}
```

这里有个陷阱!

```
please input a, b, c and d:
1 2 3.0 4
a=1, b=2, c=3.000000, d=0.000000
```

```
please input a, b, c and d:
1 2 3, 4
a=1, b=2, c=3.000000, d=4.000000
```

任务四：体验函数

```c
#include <stdio.h>

int max (int x, int y)
{
    int z;
    if (x>y)
        z = x;
    else
        z = y;
    return z;
}

int main()
{
    int a, b, c;
    printf ("Input a and b\n");
    scanf ("%d, %d", &a, &b);
    printf ("a=%d, b=%d\n", a, b);
    c = max (a, b);
    printf ("max=%d\n", c);
}
```

```
Input a and b
1, 100
a=1, b=0
max=1
```
❌

```
Input a and b
1 100
a=1, b=0
max=1
```
❌

```
Input a and b
1,100
a=1, b=100
max=100
```
✔

任务五*：错误排查

```c
#include <stdio.h>
//many errors. Find them!
int main()
{
    int i=1;
    printf("old i=%d,\n", i);
    i=add(i);
    printf("new i=%f,\n", i);
}

void add10(int x)
{
    x+=10;
    printf("in add10 function\n");
    return x;
}
```

任务六*：调试技巧
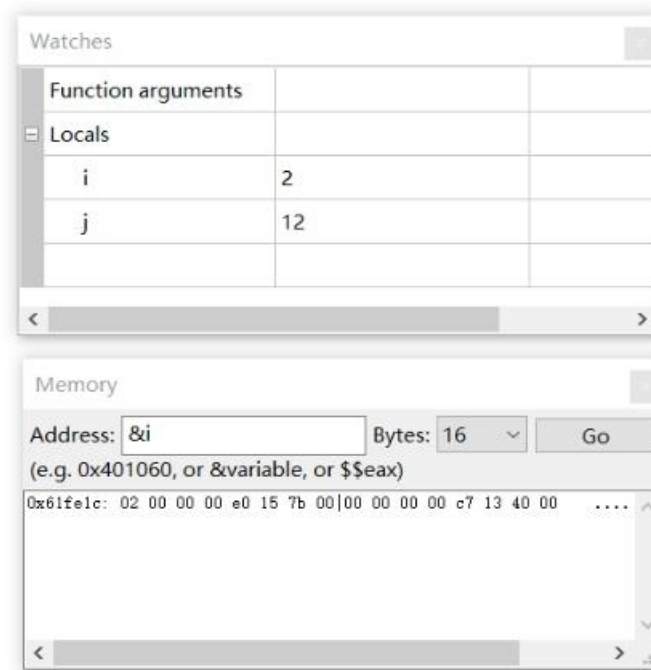


```c
#include <stdio.h>

int main()
{
    int i;
    printf("I am here !\n");
    for (i=0; i<10; i++)
    {
        printf("inner i = %d \n", i);
    }
    printf("Game Over\n");
    return 0;
}
```
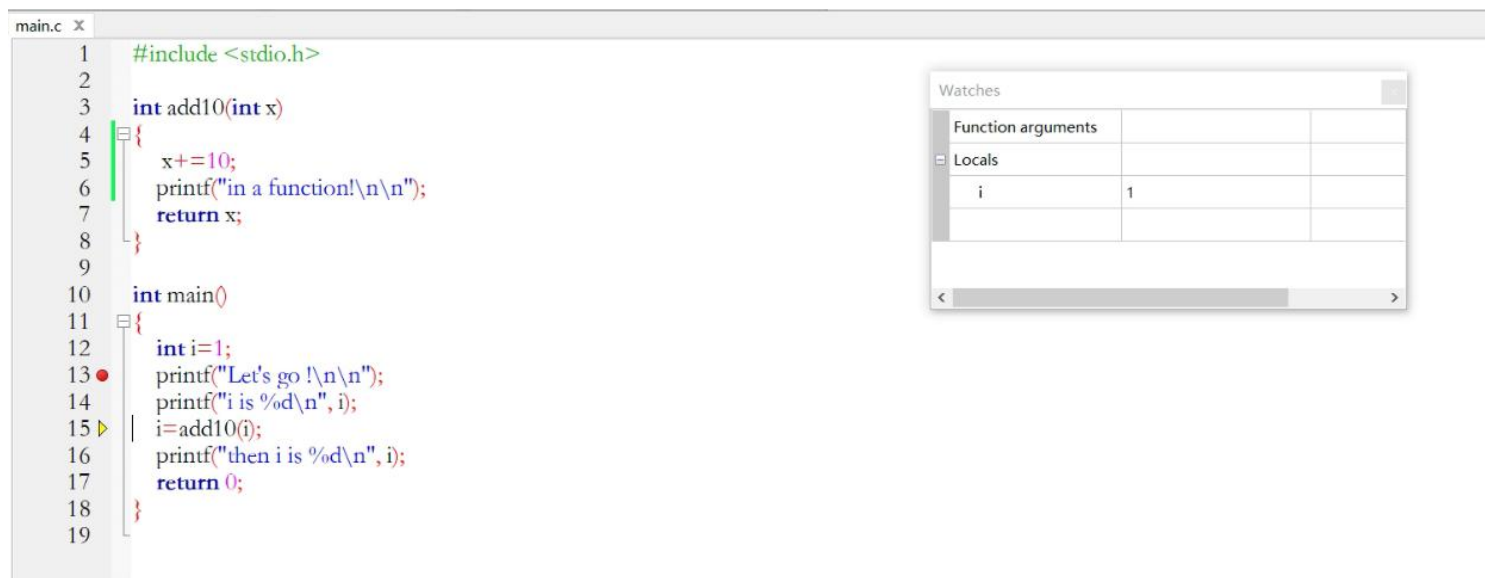
任务六*：调试技巧

```c
#include <stdio.h>
int main()
{
    int i=0;
    double j=10.0;
    printf("Let's go !\n\n");
    printf("Size of double= %d \n", sizeof(j));
    printf("Address of i=%p\n", &i);
    printf("Address of j=%p\n", &j);
    for (i=0; i<10; i++)
    {
        printf("i = %d, j=%f \n", i, j);
        j++;
    }
    printf("\n Game Over\n");
    return 0;
}
```

Watches

Function arguments		
Locals		
i	2	
j	12	

Memory

Address: &i   Bytes: 16   Go
(e.g. 0x401060, or &variable, or $$eax)

0x61fe1c: 02 00 00 00 e0 15 7b 00|00 00 00 00 c7 13 40 00   ....

任务六*：调试技巧

```c
1  #include <stdio.h>
2
3  int add10(int x)
4  {
5      x+=10;
6      printf("in a function!\n\n");
7      return x;
8  }
9
10 int main()
11 {
12     int i=1;
13     printf("Let's go !\n\n");
14     printf("i is %d\n", i);
15     i=add10(i);
16     printf("then i is %d\n", i);
17     return 0;
18 }
```

main.c

```c
1  #include <stdio.h>
2
3  int add10(int x)
4  {
5      x+=10;
6      printf("in a function!\n\n");
7      return x;
8  }
9
10 int main()
11 {
12     int i=1;
13 ● printf("Let's go !\n\n");
14     printf("i is %d\n", i);
15 ▷   i=add10(i);
16     printf("then i is %d\n", i);
17     return 0;
18 }
19
```

Watches

Function arguments	
Locals	
i	1