Most **common bugs** where the compiler won't complain, but the **program doesn't do what it is supposed to**.

semicolon after if

```
if (a < b );
{
   //do something
}
```

WRONG!
The computer will always execute this block of code

```
if (a < b)
{
   //do something
}
```

CORRECT!
The computer will only execute the block of code if a < b

= instead of = =

```
if ( a = b )
{
  //do something
}
// = is assignment
// == is comparing
```

WRONG!
Assignment of variable a:
The computer will always execute the following block of code (except if b is zero), and variable a will have the same value as b afterwards.

```
if ( a == b )
{
  //do something
}
```

CORRECT!
Comparison of a and b:
The computer will only execute the following block of code if a equals to b

same variable in double-loop

```
for (a=0; a< 10; a++)
{
      for (a=0; a<20; a++)
      {
            //do something
      }
}
```

WRONG!
The result of a double loop using the same iteration variable can lead to infinite loops and is mostly not intended.

```
for (a=0; a< 10; a++)
{
      for (b=0; b<20; b++)
      {
            //do something
      }
}
```

CORRECT!
Use two independent iteration variables.

Compiler errors and tips

missing semicolon

```
//compiler errors

printf("hello")
for (.....
```

WRONG!
The error here is the missing semicolon. But the compiler will complain about the next line!

always use brackets for code blocks

```
if (a==0)
{
        //do something
}
else
{
        if (b == 5)
        {
                //do another something
        }
        else
        {
                //do another else
        }
}
printf("%d\n",b);
```

Recommendation
Always use curly brackets to group blocks of code. You will avoid many problems. Also use indentation to make your code concise.

Some words

to execute	-	ausführen
to assign	-	zuordnen
loop	-	Schleife
iteration	-	Schritt/Wiederholung
indentation	-	einrücken
concise	-	(hier) übersichtlich

Some signs often used in programming languages

ampersand	-	&	(kaufmännisches "Und")
underscore	-	_	(Unterstrich)
hash	-	#	("Gartehaag")
curly brackets	-	{ }	geschwungene Klammern
square brackets	-	[ ]	eckige Klammern