



Jiangxi University of Science and Technology

Chapter 3 Processing and Interactive Input

THE
C
PROGRAMMING
LANGUAGE

Lecture 0301 Assignment



TASK

```
#include<stdio.h>
int main()
{
    printf("displaying cat\n");
    printf("Extra task \n");
    printf("      '  '  \n");
    printf("      _____ \n");
    printf("      ( 00 ) \n");
    printf("      +=====\/ \n");
    printf("      / || $$$ || \n");
    printf("      * || --- || \n");
    printf("      **      ** \n");
    return 0;
}
```

```
1  #include<stdio.h>
2  int main()
3  {
4      printf("displaying cat\n");
5      printf("Extra task \n");
6      printf("      '  '  \n");
7      printf("      _____ \n");
8      printf("      ( 00 ) \n");
9      printf("      +=====\/ \n");
10     printf("      / || $$$ || \n");
11     printf("      * || --- || \n");
12     printf("      **      ** \n");
13     return 0;
14 }
15
```

G:\salam1\bin\Debug\salam1.exe

displaying cat
Extra task

' ' ,

 (00)
 +=====\/
 / || \$\$\$ ||
 * || --- ||
 ** **

Process returned 0 (0x0) execution time : 0.103 s
Press any key to continue.

3.1 Assignment (赋值)

- The general syntax for an **assignment statement** is
 - ***variable = operand;***
 - The ***operand*** to the right of the ***assignment operator*** (赋值运算符) =
can be a ***constant***, a ***variable***, or an ***expression***
 - The equal sign in C ***does not have the same meaning*** as an equal sign in algebra
 - `length=25;` *//is read length is assigned the value 25*
 - `sum = 3 + 7;`
 - `product = .05 * 14.6;`

3.1 Assignment

➤ Program 3.1

```
1. #include <stdio.h>
2. int main(){
3. float length, width, area;
4. length=27.2; // assignment statement
5. width=13.8; // assignment statement
6. area=length*width;
7. printf("the length of the rectangle is %f\n", length);
8. printf("the width of the rectangle is %f\n", width);
9. printf("the area of the rectangle is %f\n", area);
10. return 0;
11. }
```

3.1 Assignment

➤ Precedence and associativity

- `=` has the **lowest precedence** of all the binary and unary arithmetic operators.
- All `=` operators have the same precedence, Operator has **right-to-left** associativity
- `a = b = c = 25;`

3.1 Assignment

➤ Implicit Type Conversions (隐式类型转换)

- The automatic conversion across an assignment operator is called an implicit type conversion.
- **double** result=4; //integer 4 is converted to 4.0
- int answer=2.764; //2.764 is converted to 2
- Here the implicit conversion is from a *higher precision* to a *lower precision* data type; the compiler will issue *a warning*

3.1 Assignment

➤ Explicit Type Conversions (显式类型转换)

- The operator used to **force** the conversion of a value to another type is the *cast operator*
- *(dataType)* expression

➤ Example:

- **int** n=2;
- **double** m=1/(**double**)n;

3.1 Assignment

➤ Compound Assignment(复合赋值)

- `+=` `-=` `*=` `/=` `%=`
- `sum += 10` **//sum = sum + 10**
- `price *= rate` **//price = price * rate**
- `price*=rate+1` **//price=price*(rate+1)**

3.1 Assignment

➤ Compound Assignment

1. `#include <stdio.h>`
2. `int main(){`
3. `int sum=25;`
4. `printf("the number stored in sum is %d\n",sum);`
5. **`sum+=10; //sum=sum+10;`**
6. `printf("the number now stored in sum is %d\n",sum);`
7. `return 0;`
8. `}`

Watch 1		
Name	Value	Type
♦ sum	25	int

Watch 1		
Name	Value	Type
♦ sum	35	int

3.1 Assignment

➤ Program 3.3 Accumulating (累加)

```
1. #include <stdio.h>
2. int main(){
3.     int sum=0;
4.     printf("the sum is initialy set to %d\n",sum);
5.     sum+=96;
6.     printf("sum is now  %d\n", sum);
7.     sum+=70;
8.     printf("sum is now  %d\n", sum);
9.     sum+=85;
10.    printf("sum is now  %d\n", sum);
11.    sum+=60;
12.    printf("sum is now  %d\n", sum);
13.    return 0;
14. }
```

3.1 Assignment

➤ Accumulating

- The first statement initializes sum to 0
- This removes any previously stored value in sum that would **invalidate** the final total
- A previously stored number, if it has not been initialized to a specific and known value, is frequently called a **garbage value**

3.1 Assignment

➤ Counting (计数)

— A counting statement is very similar to the accumulating statement

— **variable = variable + fixedNumber;**

— Examples: $i = i + 1$; and $m = m + 2$;

➤ Increment operator (++) (递增运算符):

— **variable=variable+1** can be replaced by **variable++** or **++variable**

— $i=i+1$; $i++$; or $++i$;

— $n=n+1$; $n++$; or $++n$;

— $count=count+1$; $count++$; or $++count$;

3.1 Assignment

➤ Program 3.4 Counting

```
1.  #include <stdio.h>
2.  int main(){
3.  int count=0;
4.      printf("the count is initially set to %d\n",count);
5.      count++;
6.      printf("count is now  %d\n", count);
7.      count++;
8.      printf("count is now  %d\n", count);
9.      count++;
10.     printf("count is now  %d\n", count);
11.     count++;
12.     printf("count is now  %d\n", count);
13.     return 0;
14. }
```

3.1 Assignment

➤ Prefix increment operator (前置递增)

— **k = ++n;**

— is equivalent to

— **n = n + 1;** // increment n first

— **k = n;** // assign n's value to k

— 在一个表达式中，先递增，后使用

— **i=3, j=++i, j=?, i=?**

3.1 Assignment

➤ Postfix increment operator (后置递增)

— **k = n++;**

— is equivalent to

— **k = n;** // assign n's value to k

— **n = n + 1;** // and then increment n

— 在一个表达式中，先使用， 后递增

— **i=3, j=i++ , j=?, i=?**

3.1 Assignment

- Prefix decrement operator: **k = --n**
 - decrements the value of n by 1
 - assigns the value of n to k
 - **i=3 , j= -- i, j=?, i=?**
- Postfix decrement operator: **k = n--**
 - assigns the current value of n to k
 - reduces the value of n by 1
 - **i=3, j=i -- , j=?, i=?**

Reference



- BOOK
- Some part of this PPT given by Prof 欧 (Chengtian Ouyang)
- with special thank
- <https://www.codingunit.com/c-tutorial-hello-world>

