



Jiangxi University of Science and Technology

# Chapter 4 Selection

Lecture0402 The if-else Statements



# 4.2 The if and if-else Statements

TEST Me!

## ➤ Program 4.1

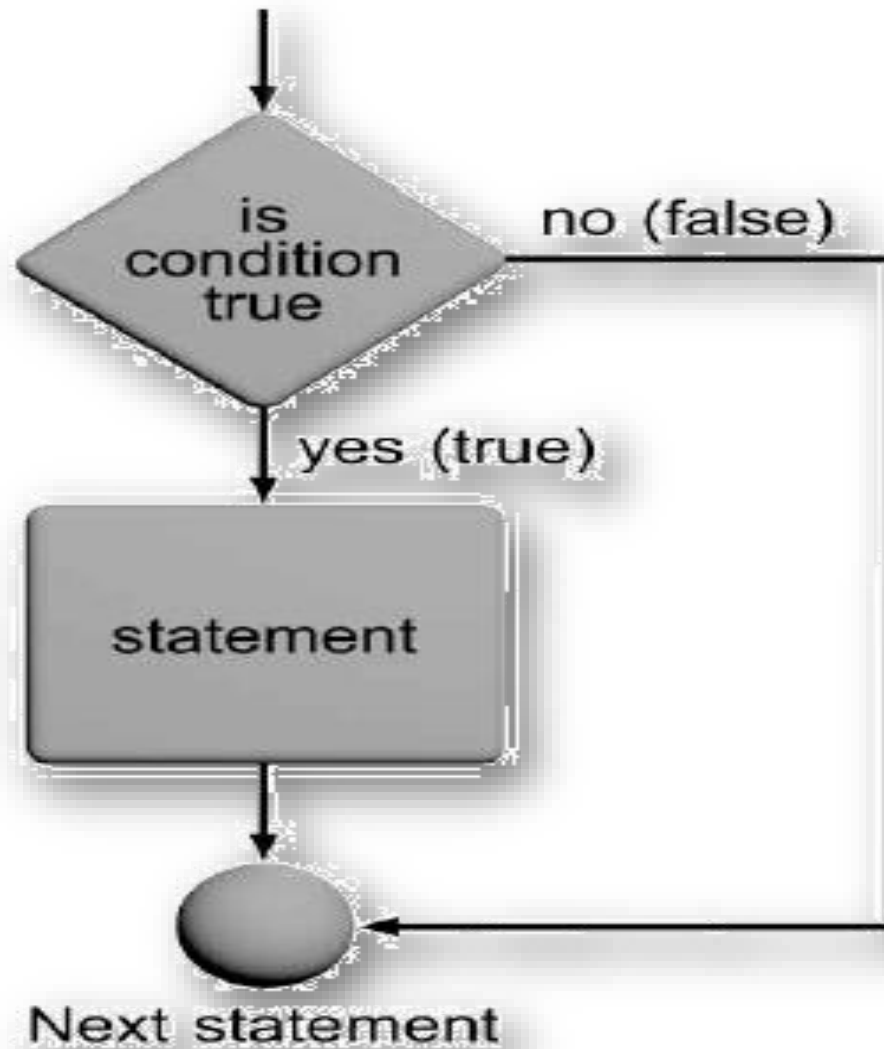
```

1.  #include <stdio.h>
2.  #define LIMIT 3000.0
3.  int main(){
4.      int IDnum; float miles;
5.      printf("please type in car numer and mileage:");
6.      scanf("%d %f", &IDnum, &miles);
7.      if(miles>LIMIT) //No semicolon here
8.          printf("car %d is over the limit.\n", IDnum);
9.      printf("End of program output.\n");
10.     return 0;
11. }
```

**your car is over the limit,  
hava a rest, please**

**One-way if statement**

## 4.2 The if and if-else Statements



**Figure 4.2** One-way if statement flowchart

## 4.2 The if and if-else Statements

### ➤ *Compound Statements* 复合语句

- Although only a *single statement* 简单语句 is permitted in an if statement, this statement can be a single *compound statement*

```
{
    statement1;
    statement2;
    statement3;
    .
    .
    .
    last statement;
}
```

- //as many statements as necessary
- //can be placed within the *braces*
- //each statement must end with *semicolon ;*

Figure 4.3 A compound statement

## 4.2 The if and if-else Statements

### ➤ The if-else Statement

— The most commonly used if-else statement is

1. *if (expression)*
2. *statement1;*
3. *else*
4. *statement2;*

- If the value of expression is 0,
- statement2, the statement after the reserved word else, is executed

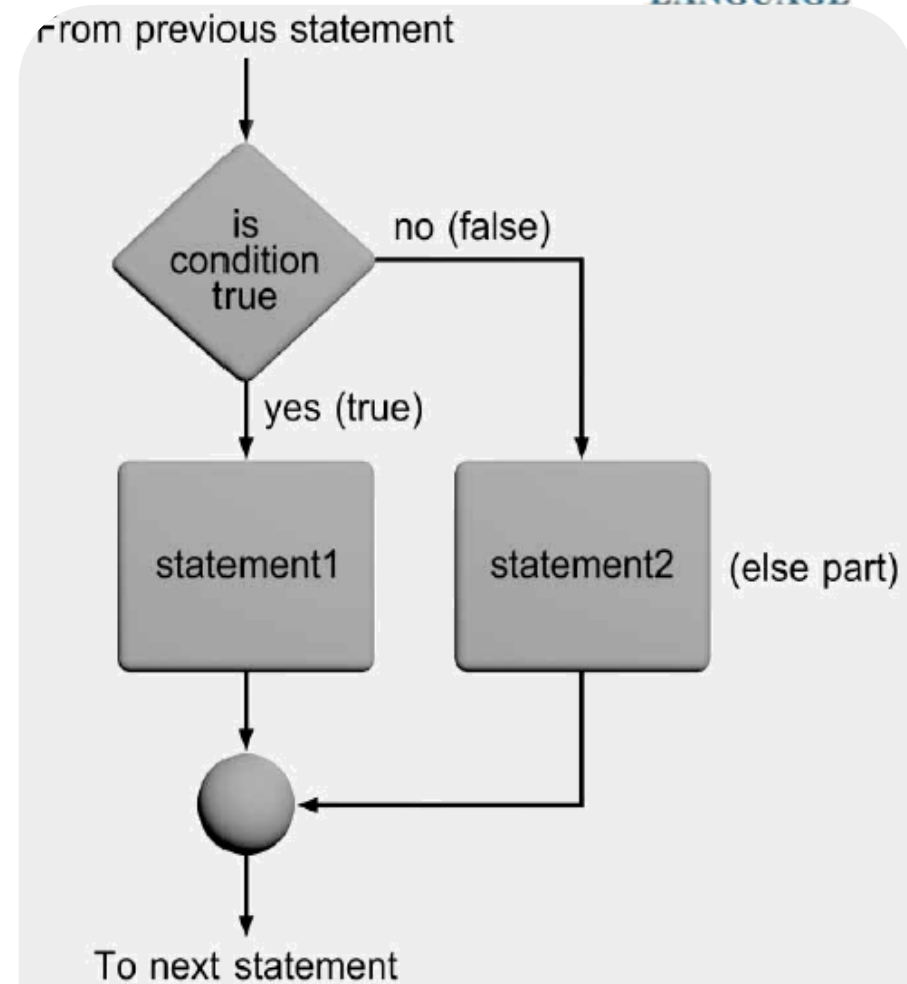


Figure 4.4 The if-else flowchart

## 4.2 The if and if-else Statements

### ➤ Program 4.2 taxes

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```

1.  #include <stdio.h>
2.  #define LOWRATE 0.02
3.  #define HIGHRATE 0.025
4.  #define CUTOFF 20000.0
5.  #define FIXEDAMT 400.0
6.  int main()
7.  {
8.  float taxable, taxes;
9.  printf("Please type in the taxable incomes:");
9.  scanf("%f", &taxable);
10. if (taxable<=CUTOFF)
11. taxes=LOWRATE*taxable;
12. else
13. taxes=HIGHRATE*(taxable-CUTOFF)+FIXEDAMT;
14. printf("Taxes are $7.2f\n", taxes);
15. return 0;
16. }
```

# 4.2 The if and if-else Statements

➤ **Program 4.3 a  
temperature  
conversion program**

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```

1.      #include <stdio.h>
2.      int main(){
3.          char tempType;
4.          double temp, fahrenheit, celsius;
5.          printf("Enter the temperature to be converted:");
6.          scanf("%d", &temp);
7.          printf("Enter an f if the temperature is in Fahrenheit");
8.          printf("\n or a c if the temperature is in Celsius:");
9.          scanf("\n%c", &tempType);
11.         if (tempType == 'f'){
12.             celsius = (5.0 / 9.0)*(temp - 32.0);
13.             printf("\nThe equivalent Celsius temperature is %6.2f",celsius);
14.         }
15.         else{
16.             fahrenheit = (9.0 / 5.0) * temp + 32.0;
17.             printf("\nThe equivalent Fahrenheit temperature is %6.2f", fahrenheit);
18.         }
19.         return 0;
20.     }
```

## 4.3 The if-else Chain

➤ Nested if statement 嵌套的if语句:

1. if (expression1)
2.     statement1;
3. else
4.     if (expression2)
5.         statement2;
6.     else
7.         statement3;

— Whether the indentation exists or not, the compiler will, by default, associate ***an else with the closest previous unpaired if***, unless braces are used to alter this default pairing



## 4.3 The if-else Chain

➤ if-else chain:

- if (expression1)
- statement1;
- else if (expression2)
- statement2;
- else
- statement3;

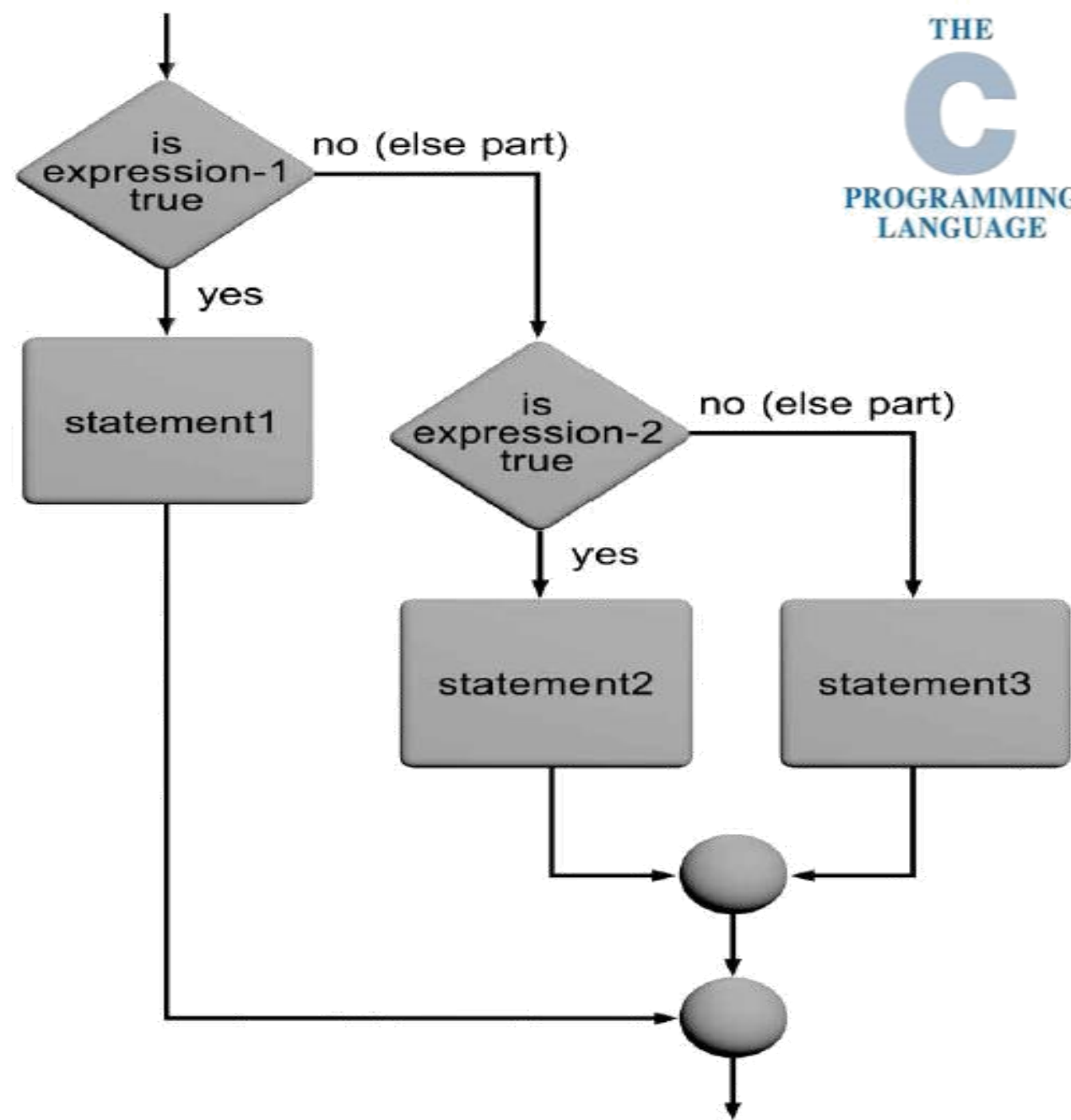


Figure 4.5 The if-else chain's flowchart

# 4.3 The if-else Chain

## ➤ Program 4.4 **Marital Status**

| Input Code | Marital Status |
|------------|----------------|
| M          | Married        |
| S          | Single         |
| D          | Divorced       |
| W          | Widowed        |

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```

1. #include <stdio.h>
2. int main() {
3.     char marcode;
4.     printf("Enter a marital code:");
5.     scanf("%c",&marcode);
6.     if (marcode=='M')
7.         printf("Individual is married.\n");
8.     else if (marcode == 'S')
10.        printf("Individual is single.\n");
11.    else if (marcode == 'D')
12.        printf("Individual is divorced.\n");
13.    else if (marcode=='W')
14.        printf("Individual is widowed.\n");
15.    else
16.        printf("An invalid code was entered.\n");
17.    return 0;
18. }
```

# Reference



- BOOK

- Some part of this PPT given by Prof 欧阳城添  
(Prof: Chengtian Ouyang)

- with special thank

- <https://www.codingunit.com/c-tutorial-first-c-program-hello-world>

