

Introduction to Programming

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Partners

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What's your favorite cartoon character, and why?

Goals

Goal 1: You will know how to implement an indefinite loop.

Goal 2: You will understand the difference between definite and indefinite loops.

Vocabulary

Definite Loop
Indefinite Loop
Game Loop
Main Loop
Infinite Loop
while-loop

Code

```
while (...) { ... }
```

Coding Warm Up

- Write a program that repeats the following indefinitely
 - Asks the user for input (e.g., "Enter something")
 - Displays that input (e.g., "You entered 'something'")
- The program should quit when you enter "quit"

warmup.html

```
<!doctype html>
<html>
<head>
  <title>Warm Up</title>
</head>
<body>
  <script src="warmup.js"></script>
</body>
</html>
```

warmup.js

```
var input = "";
while (input != "quit") {
  input = prompt("Enter something");
  alert("You typed " + input);
}

alert("Goodbye.");
```

Algorithmic Thinking

- Computers closed.
- Write a program that will write all of the prime factors of number entered by the user.
 - For example. If the user entered "75", the output would be "3, 5, 5"
 - For example. If the user entered "3757208", the output would be "2, 2, 2, 7, 13, 13, 397"
- Think on your own for 3 minutes.
- Share with your table.
- Create a flow chart.
- Code in pairs.

Coding Warm Up

- Let's think of a program that prompts the user three times for a sale amount and a commission rate. Then print the total commission earned on the HTML page. Use a for-loop.

What is the sale amount? **15**

What is the commission rate (%)? **8**

What is the sale amount? **45**

What is the commission rate (%)? **10**

What is the sale amount? **10**

What is the commission rate (%)? **5**

Total sales: 70.00

Total commission: 6.20

```
<!doctype html>
<html>
<head>
    <title>Commission</title>
</head>
<body>
    <script src="commission.js"></script>
</body>
</html>
```

```
var salesTotal = 0;
var commTotal = 0;

for (var i=0; i<3; i++) {
    var saleString = prompt("What is the sale amount?");
    var commRateString = prompt("What is the commission rate?");
    sale = parseFloat(saleString);
    commRate = parseFloat(commRateString);

    var comm = sale * (commRate / 100.0);

    salesTotal = salesTotal + sale;
    commTotal = commTotal + comm;
}

var message1 = "Total sales: " + salesTotal.toFixed(2);
var message2 = "Total commission: " + commTotal.toFixed(2);

var para = document.createElement("p");
para.textContent = message1;
document.body.appendChild(para);

var para2 = document.createElement("p");
para2.textContent = message2;
document.body.appendChild(para2);
```


While Loop

- Write a program that prompts the user over and over **indefinitely** for a sale amount and a commission rate. Then print the total commission earned on the HTML page. Use a while-loop.

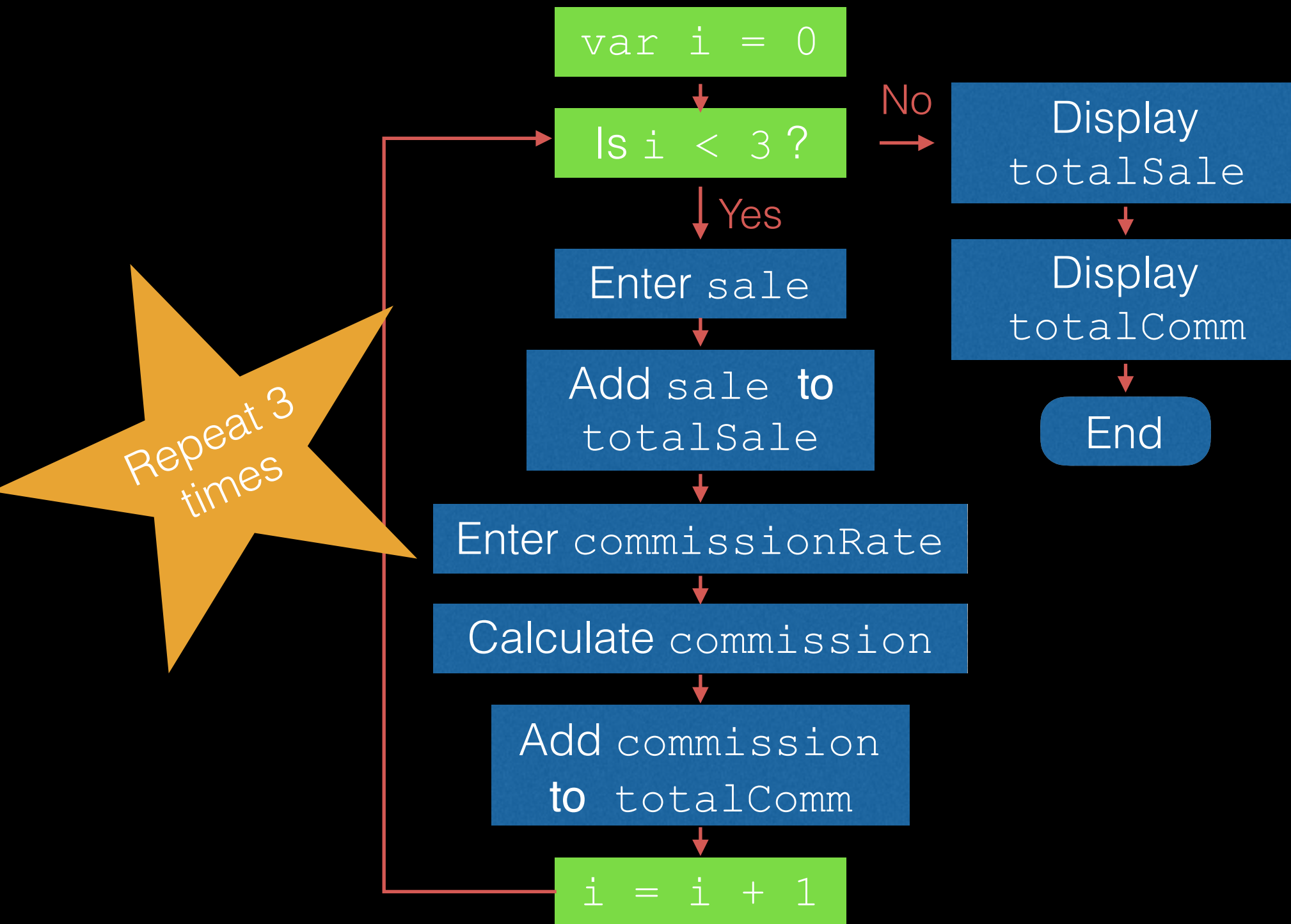
```
What is the sale amount? 15
What is the commission rate (%)? 8
Would you like to enter another sale? Y
```

```
What is the sale amount? 45
What is the commission rate (%)? 10
Would you like to enter another sale? Y
```

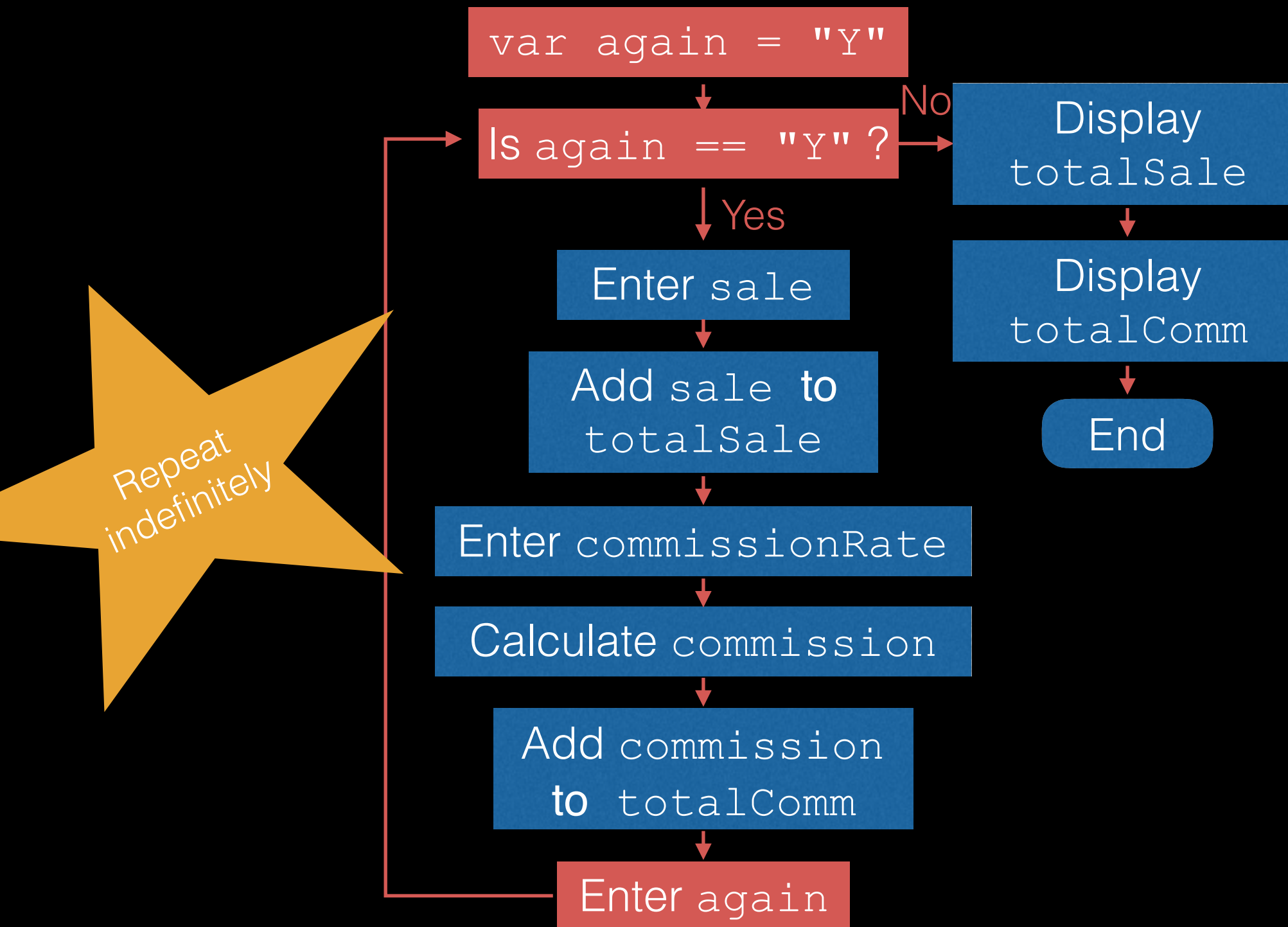
```
What is the sale amount? 10
What is the commission rate (%)? 5
Would you like to enter another sale? N
```

```
Total sales: 70.00
Total commission: 6.20
```

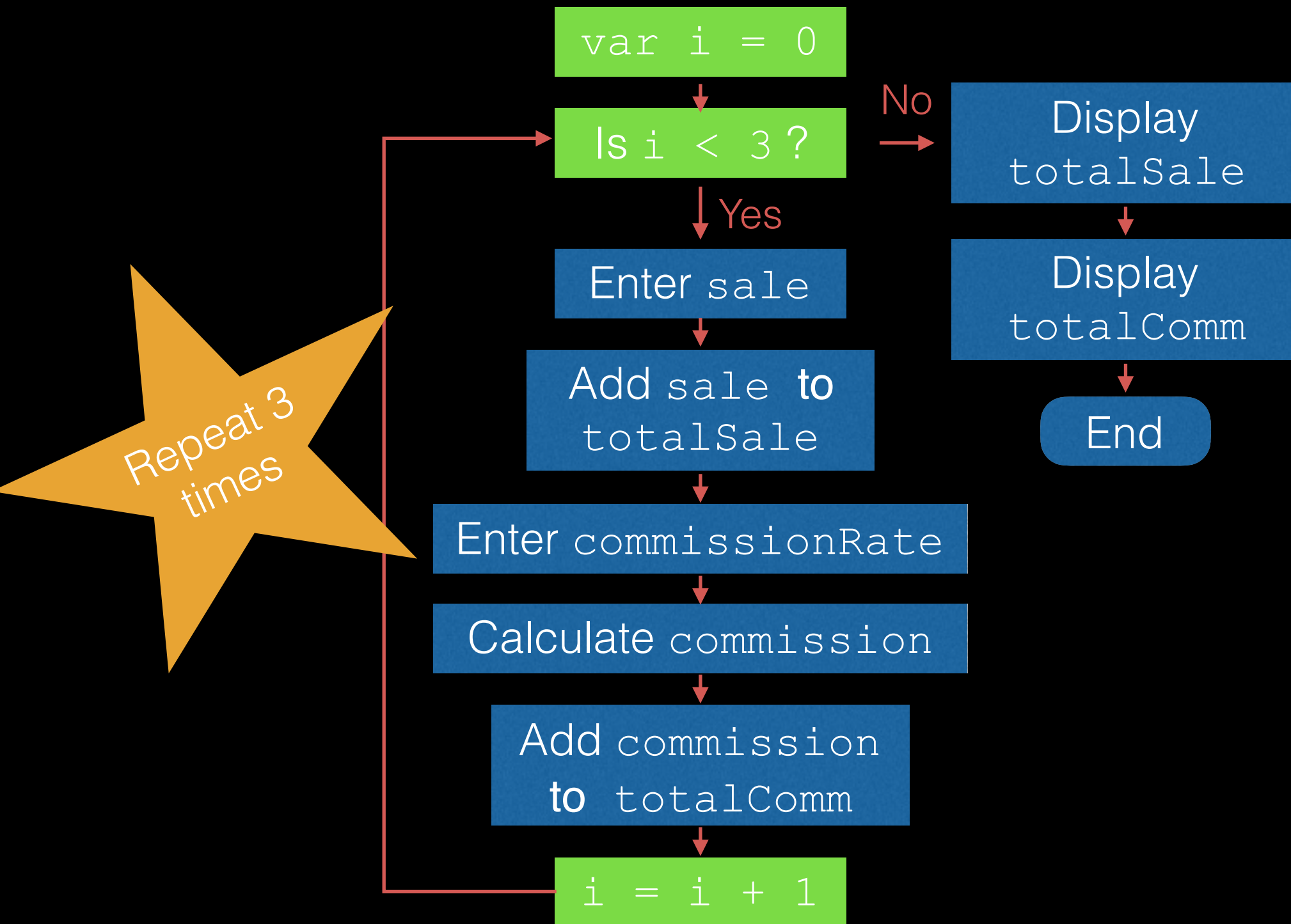
For Loop



While Loop



For Loop



For Loop

```
for ( var i = 0  Is i < 3 ?  i = i + 1 ) {
```

```
    Enter sale
```

```
    Add sale to  
    totalSale
```

```
    Enter commissionRate
```

```
    Calculate commission
```

```
    Add commission  
    to totalComm }
```

```
    Display  
    totalSale
```

```
    Display  
    totalComm
```

For Loop

```
for ( var i = 0; i < 3; i = i + 1 ) {  
    var sale = prompt("Enter sale amount:");  
    saleTotal = saleTotal + sale;  
    var commRate = prompt("Enter comm rate:");  
    var comm = sale * (commRate / 100);  
    commTotal = commTotal + comm;  
}
```

Display
saleTotal

Display
commTotal

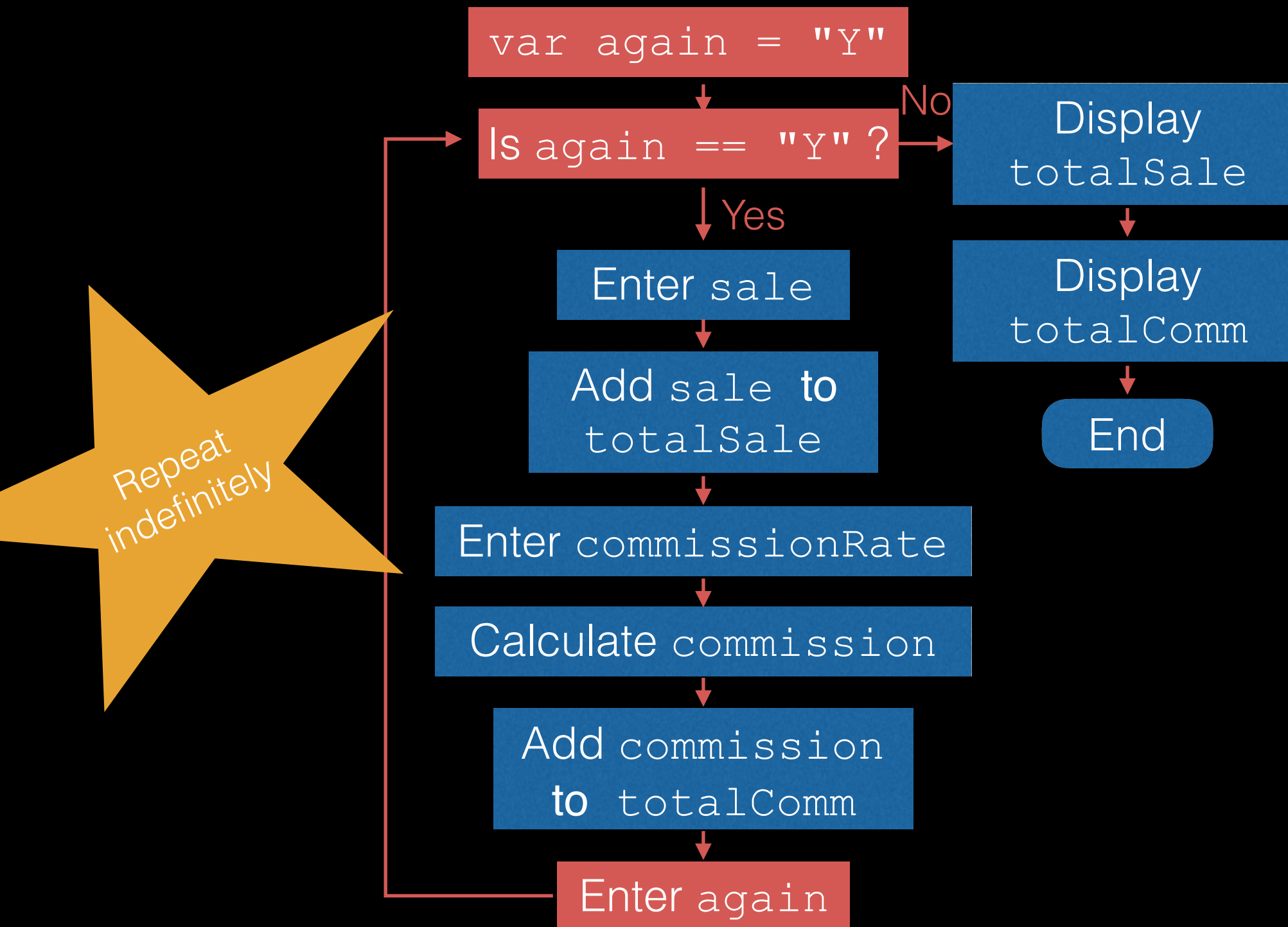
```
var salesTotal = 0;
var commTotal = 0;

for (var i=0; i<3; i=i+1) {
    var saleString = prompt("What is the sale amount?");
    var commRateString = prompt("What is the commission rate?");
    sale = parseFloat(saleString);
    commRate = parseFloat(commRateString);

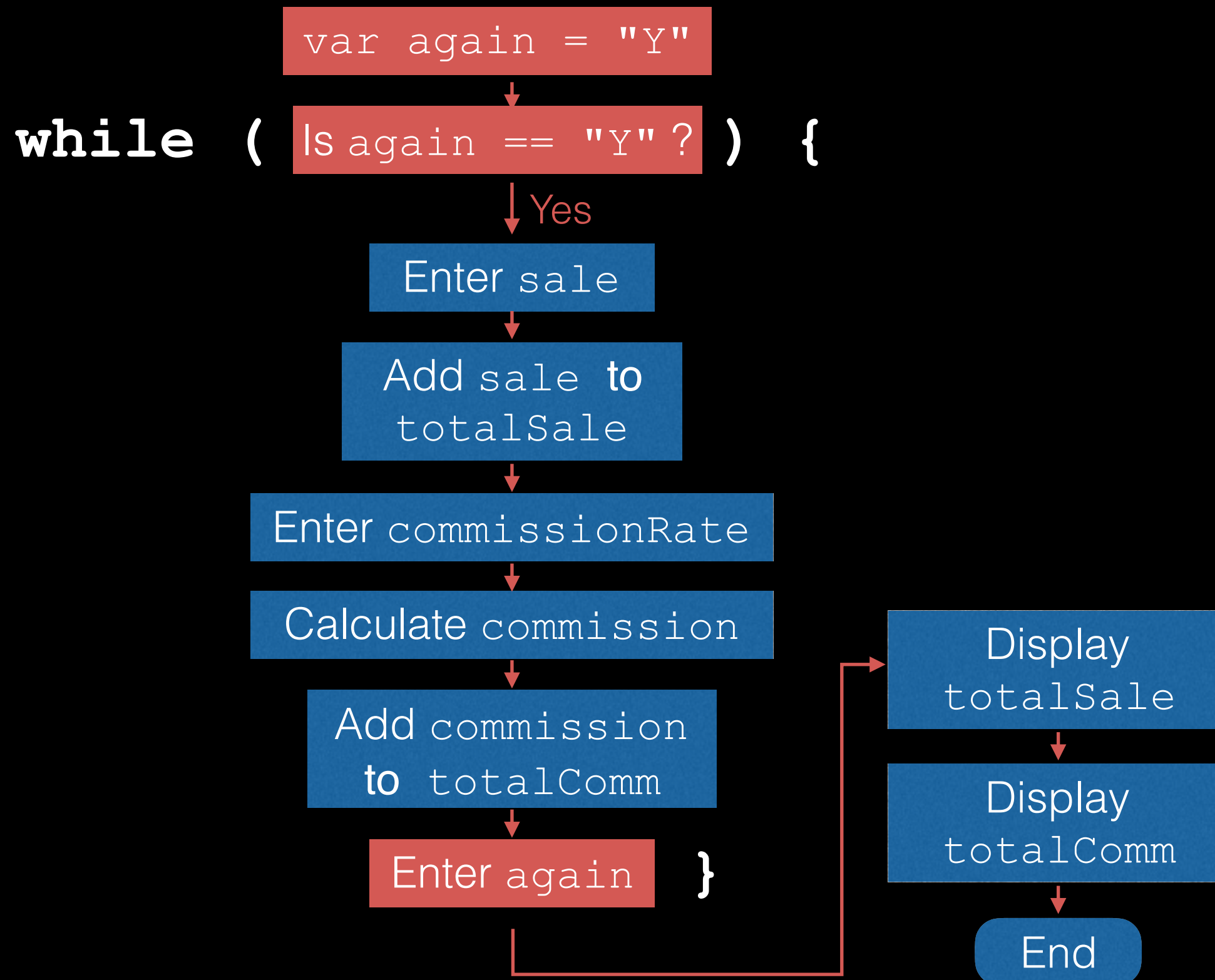
    var comm = sale * (commRate / 100.0);

    salesTotal = salesTotal + sale;
    commTotal = commTotal + comm;
}
```


While Loop



While Loop



While Loop

```
var again = "Y"
↓
while ( again == "Y" ) {
    var sale = prompt("Enter sale amount:");
    saleTotal = saleTotal + sale;
    var commRate = prompt("Enter comm rate:");
    var comm = sale * (commRate / 100);
    commTotal = commTotal + comm;
    again = prompt("Enter another sale?");
}
```

Display
totalSale



Display
totalComm



End

```
var salesTotal = 0;
var commTotal = 0;
var again = "Y";

while (again == "Y") {
    var saleString = prompt("What is the sale amount?");
    var commRateString = prompt("What is the commission rate?");
    sale = parseFloat(saleString);
    commRate = parseFloat(commRateString);

    var comm = sale * (commRate / 100.0);

    salesTotal = salesTotal + sale;
    commTotal = commTotal + comm;

    again = prompt("Enter another sale?");
}
```

While Loop

```
var salesTotal = 0;
var commTotal = 0;
var again = "Y";

while (again == "Y") {
    var saleString = prompt("What is the
    sale amount?");
    var commRateString = prompt("What is
    the commission rate?");
    sale = parseFloat(saleString);
    commRate = parseFloat(commRateString);

    var comm = sale * (commRate / 100.0);

    salesTotal = salesTotal + sale;
    commTotal = commTotal + comm;

    again = prompt("Enter another sale?");
}
```

Indefinite
Loop

For Loop

```
var salesTotal = 0;
var commTotal = 0;

for (var i=0; i<3 i++) {
    var saleString = prompt("What is the
    sale amount?");
    var commRateString = prompt("What is
    the commission rate?");
    sale = parseFloat(saleString);
    commRate = parseFloat(commRateString);

    var comm = sale * (commRate / 100.0);

    salesTotal = salesTotal + sale;
    commTotal = commTotal + comm;
}
```

Definite
Loop

When would you use a while loop?

1. Ask the user for input again and again

```
while (answer != "") { ... }
```

2. Game Loop

```
while (lives > 0) { ... }
```

3. Main Loop / Infinite Loop

```
while (true) { ... }
```

3. Main Loop / Infinite Loop

```
while(true) {...}
```

```
while(true) {  
    Check for updates to myStory  
  
    if (update=="Y") {  
        Post new pictures  
    }  
}
```

```
while(quit != "Y") {  
    Check for updates to myStory  
  
    if (update=="Y") {  
        Post new pictures  
    }  
  
    quit = prompt("Quit? Y/N");  
}
```

1. Complete Task3-1 BetterGuessingGame
2. Homework Task3-2 MultiplicationPractice

Goals

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