Introduction to Programming

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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(…) {…}
```

Partners

- Michael & Matthew
- Jake & Reese
- Chloe & Lauren
- Lorenzo & Kendall
- Lindsay & Nic
- Thomas B & Dom
- Max & Alaa
- Naz & Jack
- Izzy & Thomas C

What's your favorite cartoon character, and why?

Coding Warm Up

- Write 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
```

```html
<!doctype html>
<html>
<head>
    <title>Commission</title>
</head>

<body>
    <script>
        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");
        var text = document.createTextNode(message1);
        para.appendChild(text);
        document.body.appendChild(para);

        para = document.createElement("p");
        text = document.createTextNode(message2);
        para.appendChild(text);
        document.body.appendChild(para);
    </script>
</body>
</html>
```

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
```
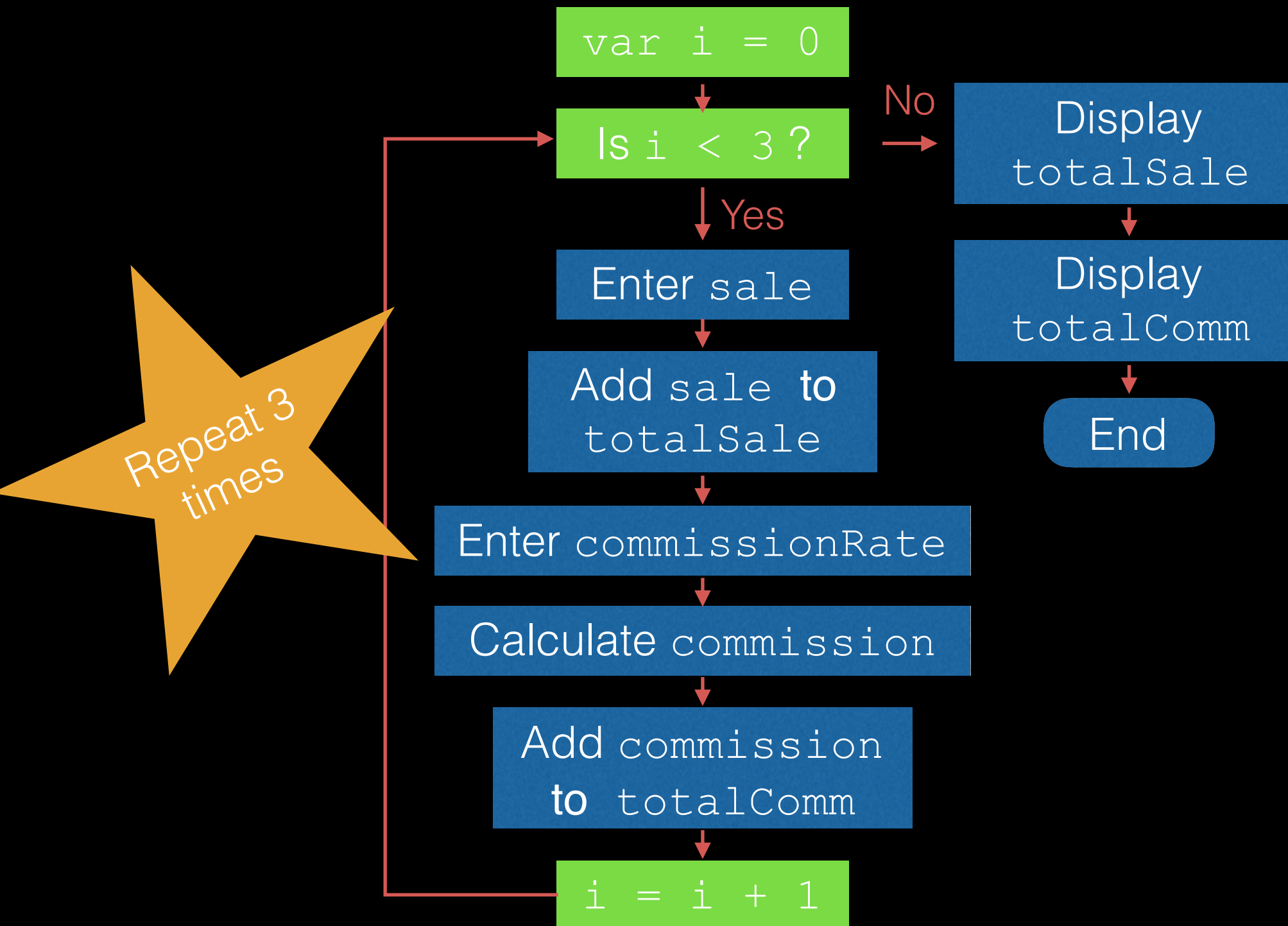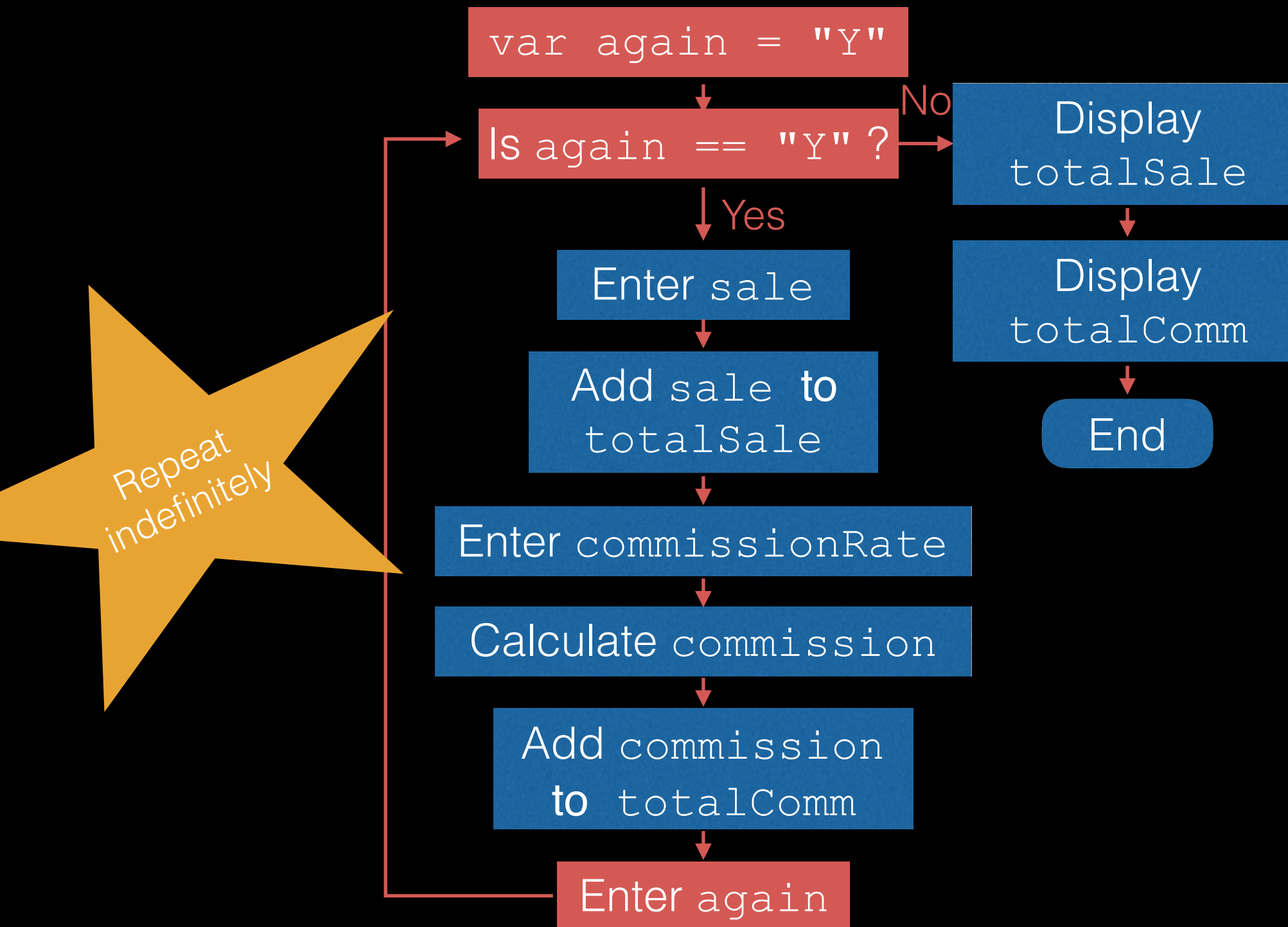
For Loop

```
var i = 0
```
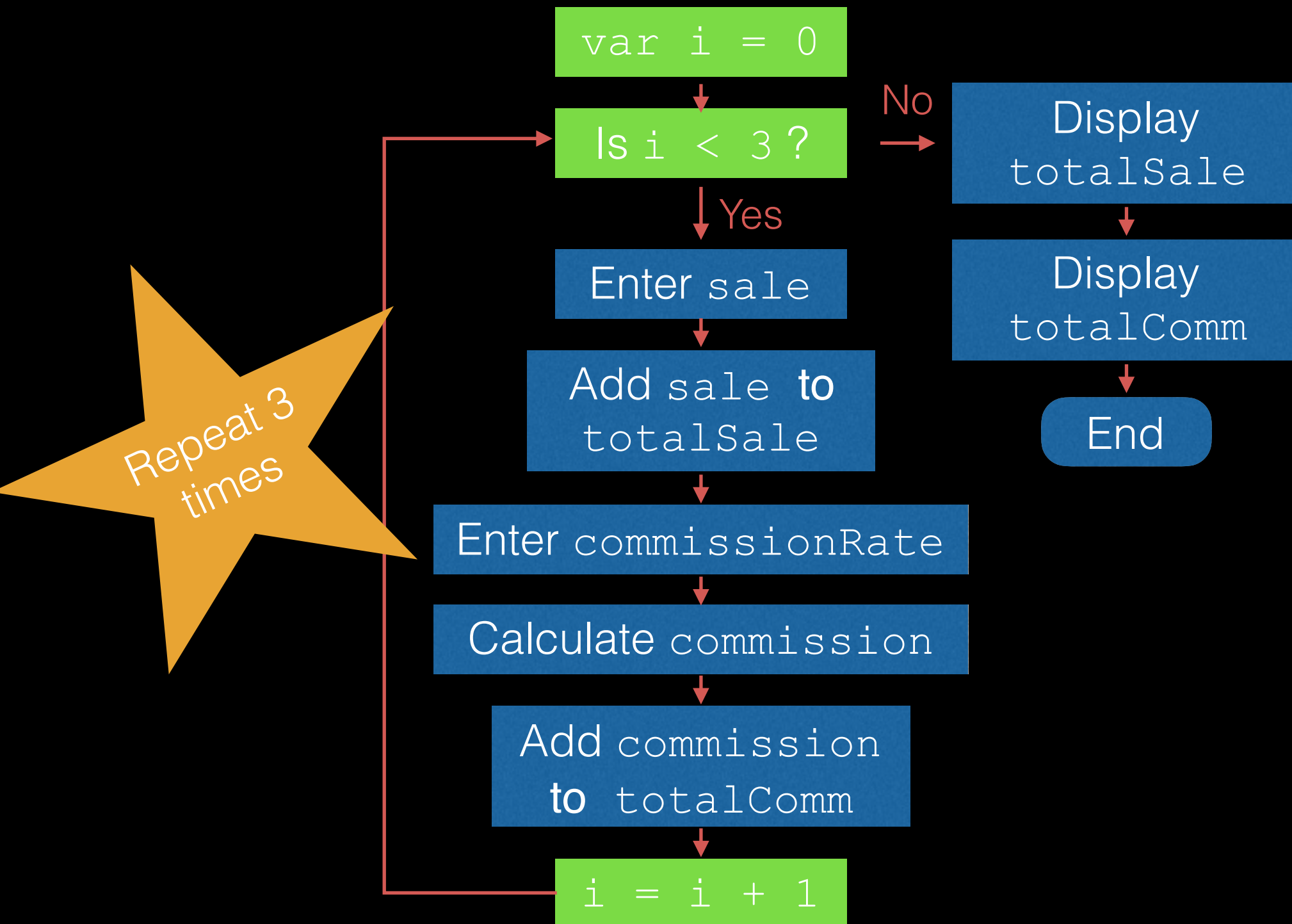
```
Is i < 3 ?
```

No → Display `totalSale`

Yes ↓

Enter `sale`

Add `sale` **to** `totalSale`

Enter `commissionRate`

Calculate `commission`

Add `commission` **to** `totalComm`

```
i = i + 1
```

Display `totalComm`

End

Repeat 3 times

While Loop

```
var again = "Y"
```

Is `again` == `"Y"` ?

No → Display `totalSale`

↓ **Yes**

Enter `sale`

Display `totalComm`

Add `sale` **to** `totalSale`

End

Enter `commissionRate`

Calculate `commission`

Add `commission` **to** `totalComm`

Enter `again`

Repeat indefinitely

For Loop

```
var i = 0
```

```
Is i < 3 ?
```

No → Display `totalSale`

↓ Yes

Enter `sale`

Add `sale` **to** `totalSale`

Enter `commissionRate`

Calculate `commission`

Add `commission` **to** `totalComm`

```
i = i + 1
```

Display `totalComm`

End

Repeat 3 times

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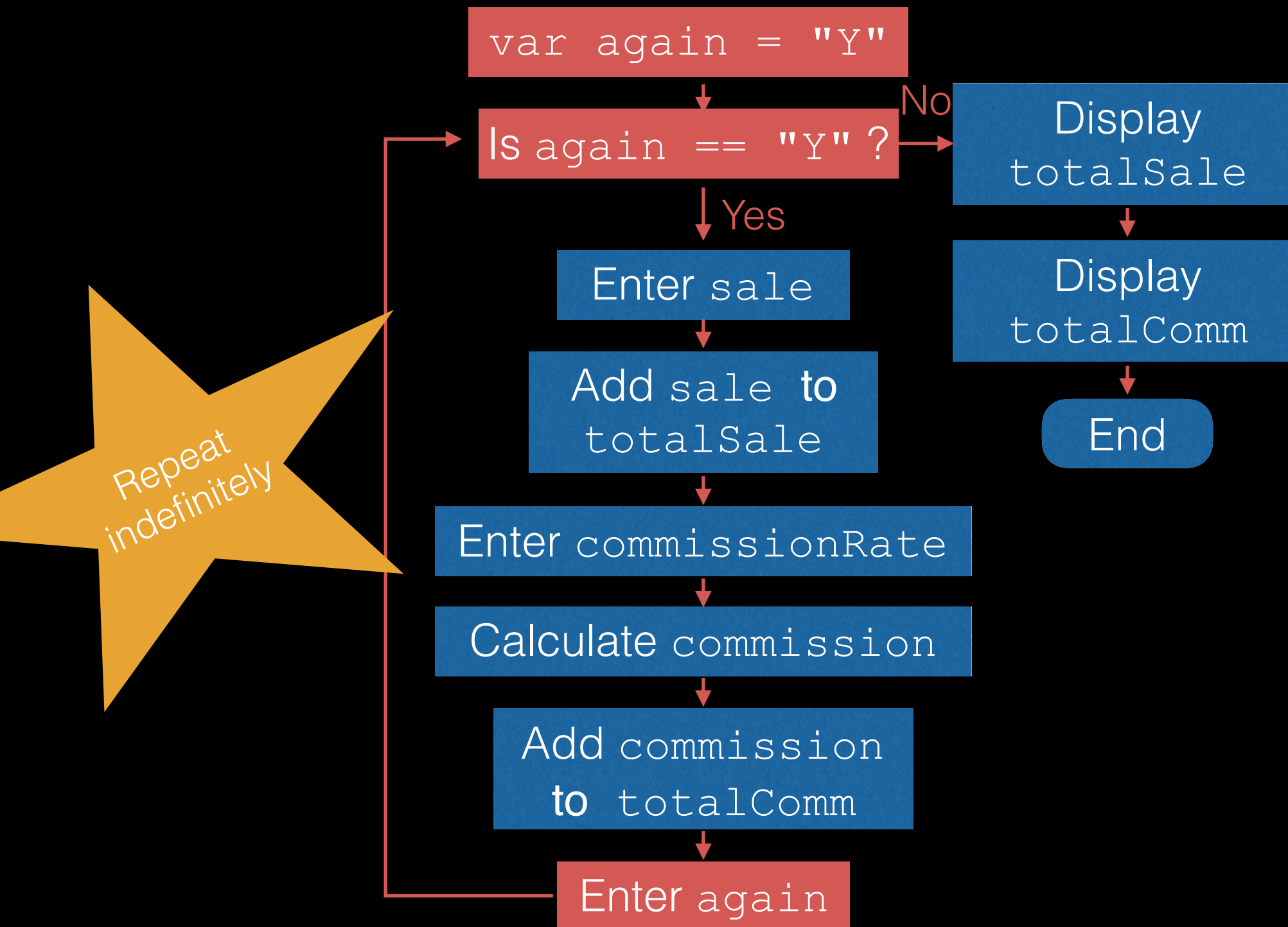
```
var salesTotal = 0;
var commTotal = 0;

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;
}
```
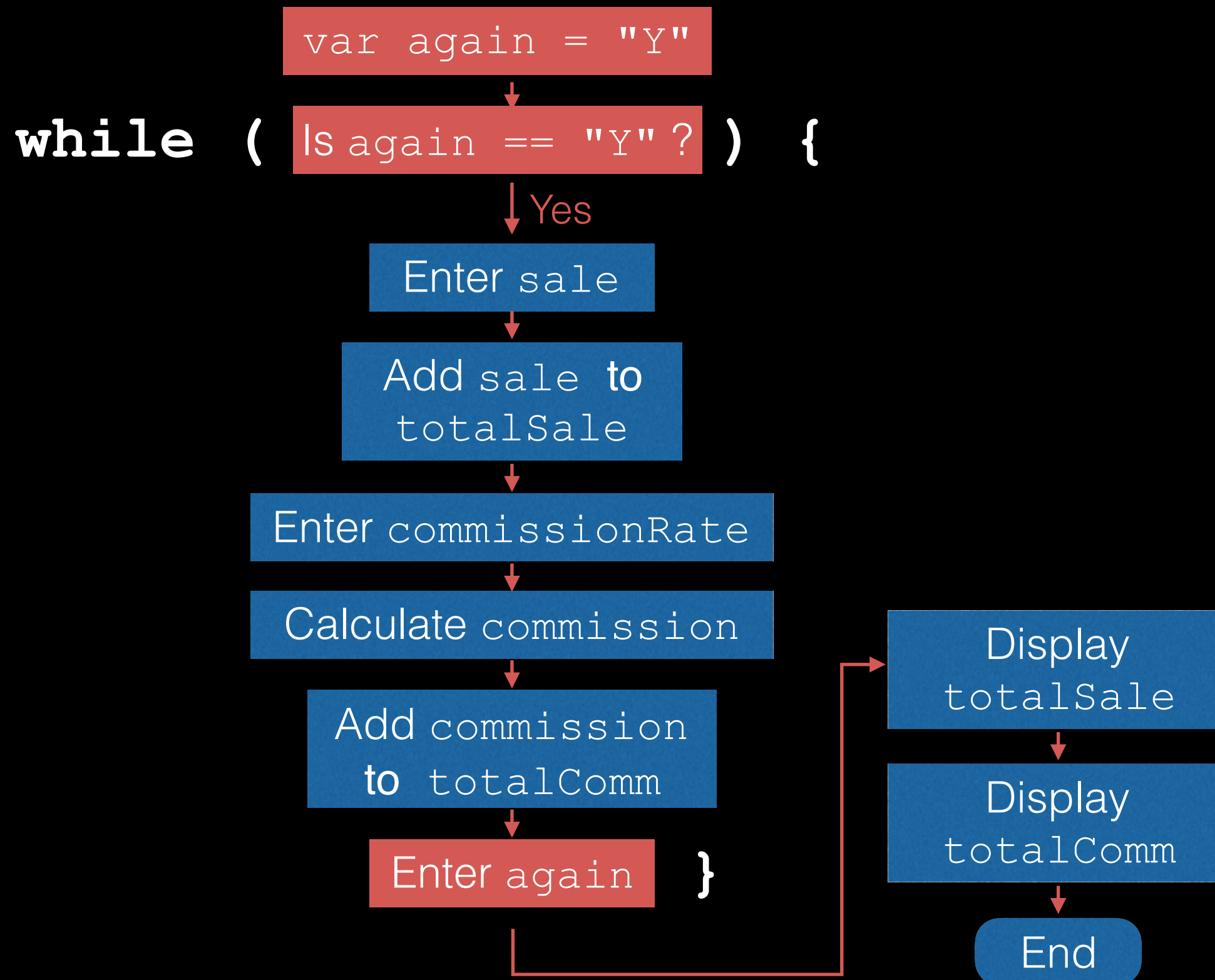
While Loop

```
var again = "Y"
```

Is `again == "Y"` ? → No → Display `totalSale`

Yes ↓

Enter `sale`

Add `sale` **to** `totalSale`

Enter `commissionRate`

Calculate `commission`

Add `commission` **to** `totalComm`

Enter `again`

Display `totalComm`

End

Repeat indefinitely

While Loop

```
var again = "Y"
```

while (** Is again == "Y" ? **) {

↓ Yes

Enter sale

Add sale **to** totalSale

Enter commissionRate

Calculate commission

Add commission **to** totalComm

Enter again **}**

Display totalSale

Display totalComm

End

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");
}
```

Goals

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

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

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```
while(…) {…}
```