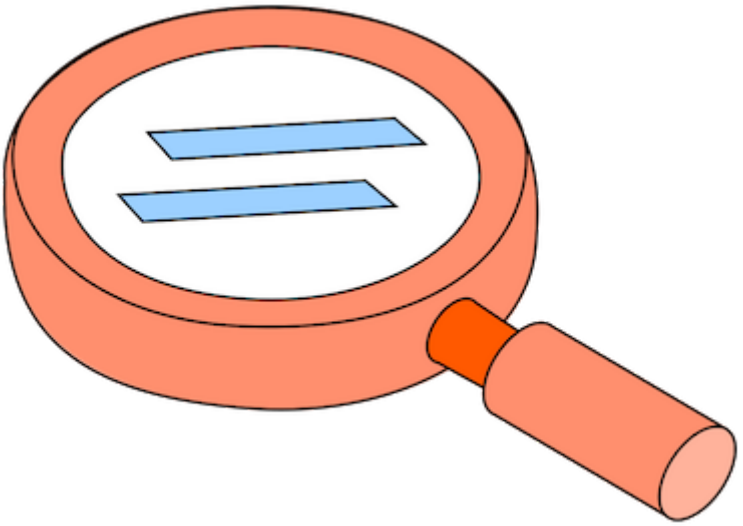


Coding with JS

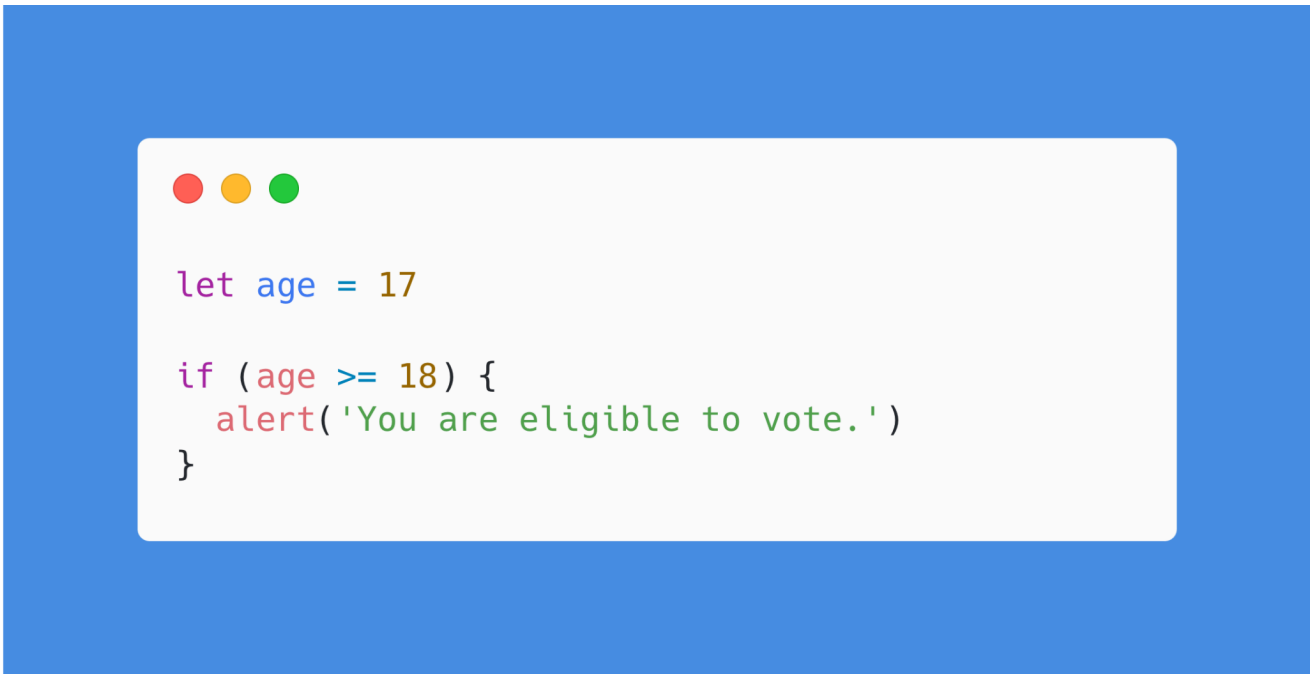
04

Selection

Selection with `if` and `else` statements

In JavaScript you can write an `if` allow you to execute different blocks of code based on one or more conditions. This is a fundamental concept in programming, as it helps you create more dynamic and responsive code.

Use the `if` keyword followed by a condition in brackets and a block of code enclosed in curly braces. If the condition is true, the code inside the block will run.

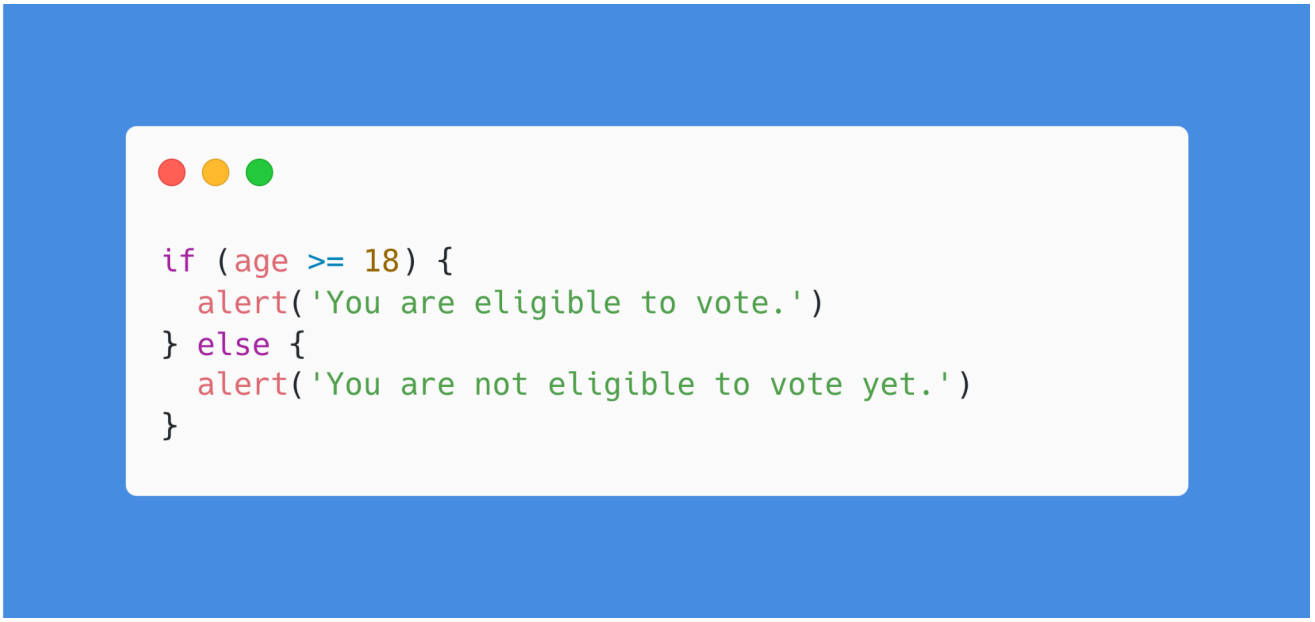


```
let age = 17

if (age >= 18) {
  alert('You are eligible to vote.')
}
```

In this example, the code inside the block will only run if the `age` variable is greater than or equal to `18`.

You can add an `else` block after an `if` statement to define a block of code that will runif the condition is false.

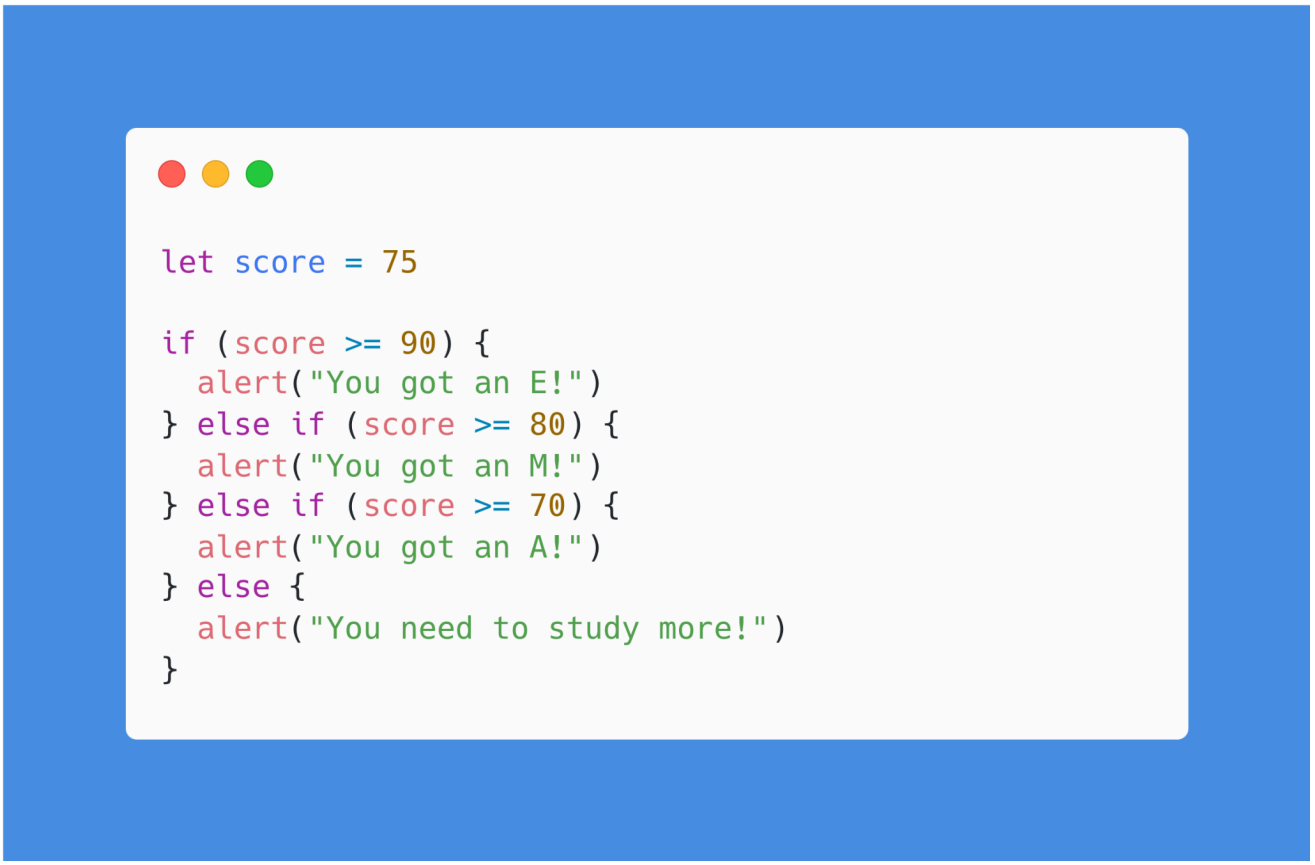


```
if (age >= 18) {
  alert('You are eligible to vote.')
} else {
  alert('You are not eligible to vote yet.')
}
```

In this example, if the `age` variable is less than `18`, the code inside the `else` block will run.

More conditions with `else if`

If you need to test multiple conditions, you can chain additional conditions using the `else if` keyword. For example:



```
let score = 75

if (score >= 90) {
  alert("You got an E!")
} else if (score >= 80) {
  alert("You got an M!")
} else if (score >= 70) {
  alert("You got an A!")
} else {
  alert("You need to study more!")
}
```

In this example, the code will test multiple conditions one after the other until one of them is true, or it reaches the `else` block.

By using `if` statements, you can create more flexible and responsive code that can make decisions and adapt to different situations based on the values of variables or user input.

Testing

Testing is essential to make sure that every pathway works correctly.

Run the program as many times as there are options or combinations of options to ensure each pathway works. You can plan this using a test plan which is a table to record the results. A test plan makes sure your testing is systematic.

🚗 Driving Age

```
let age = 18

if (age > 16) {
  alert("You're old enough to drive.")
}
```

Predict

Read the code carefully. When you're ready, write what you predict it will do.

What do you think the code will do?

Run

Run the code, and say whether your prediction was right or not, and note any differences.

Did it do what you predicted?

✅ ❌

Differences

Investigate

1. Why is the `alert` indented a couple of spaces?

2. Why does the string use double quotes?

3. How many variables are there in this code, and what are their names?

4. What does the **>** symbol mean?

5. What would happen if you changed the **>** symbol to the **<** symbol?

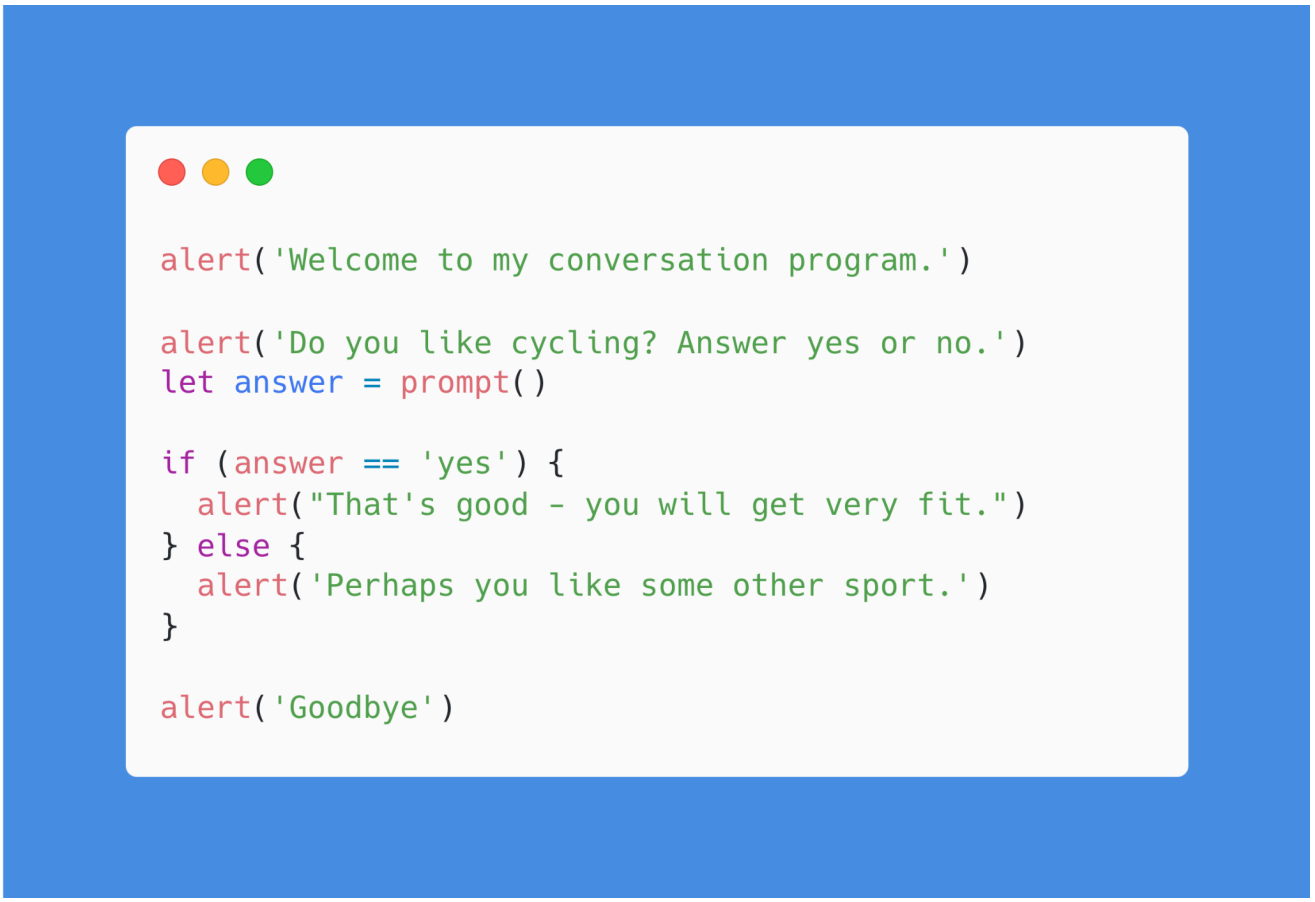
6. What does the **=** symbol do in this code?

Modify

Modify the program so that it:

- Asks the user for their age
- It also tells the user that they are not old enough to drive if their age isn't over 16

💬 Conversation



```
alert('Welcome to my conversation program.')

alert('Do you like cycling? Answer yes or no.')
let answer = prompt()

if (answer == 'yes') {
  alert("That's good - you will get very fit.")
} else {
  alert('Perhaps you like some other sport.')
}

alert('Goodbye')
```

Predict

Read the code carefully. When you're ready, write what you predict it will do.

What do you think the code will do?

Run

Run the code, and say whether your prediction was right or not, and note any differences.

Did it do what you predicted?

✅ ❌

Differences

Investigate

1. What would happen if the code used the word `Alert()` instead of `alert()`?

2. What would happen if you type “Yes” instead of “yes” or “no” when running the code? *Try it and see.*

3. Why do you need an opening curly bracket `{` at the end of the `if` line and after the word `else`?

4. Why do you need a closing curly bracket `}` at the start of the word `else` and on line 8?

5. What is the difference between `=` and `==` ? Both are used in this code.

6. What would be the difference between running these two lines?
   - `let answer = prompt()`
   - `let answer = prompt('Select 1 or 2')`

7. Why is `alert("That's good - you will get very fit")` and the next `alert()` after it a few spaces in from the other lines?

8. Why does the `if` statement look so much like a `while` statement? Why are they the same colour?

Modify

1. Modify the program to have a conversation with somebody about a different topic.

   Examples are given below but you can add your own questions.

Welcome to my sports discussion program. Do you like running? ***yes*** That's good. Goodbye!	Welcome to my sports discussion program. Do you like running? ***no*** Maybe you like a different sport. Goodbye!

2. Add another `if` statement inside the first one to ask another question if the user says 'yes'.

Welcome to my sports discussion program. Do you like running? ***yes*** That's good - do you do athletics? ***yes*** Good luck in your next race. Goodbye!	Welcome to my sports discussion program. Do you like running? ***no*** Maybe you like a different sport. Goodbye!
Welcome to my sports discussion program. Do you like running? ***yes*** That's good - do you do athletics? ***no*** Just for fun then. Goodbye!	

3. Add another `if` statement inside the first `else` to ask another question if the user says 'no'.

Welcome to my sports discussion program. Do you like running? ***yes*** That's good - do you do athletics? ***yes*** Good luck in your next race. Goodbye!	Welcome to my sports discussion program. Do you like running? ***no*** Do you watch Olympic athletics? ***yes*** That's good - it's inspiring. Goodbye!
Welcome to my sports discussion program. Do you like running? ***yes*** That's good - do you do athletics? ***no*** Just for fun then. Goodbye!	Welcome to my sports discussion program. Do you like running? ***no*** Do you watch Olympic athletics? ***no*** It's not for everyone. Goodbye!

Make

1. Write a new program that uses the skills from the first one.

> Ask the user their name and how old they are, then tell them something based on their age.

Tip: You will need to get the user's age as a number. You can do this the usual two-line way:

```
let age = prompt()
age = Number(age)
```

or combine the two lines in one…

```
let age = Number(prompt())
```

Using > (*greater than*) **or <** (*less than*)

If the user is more than 65, tell them that they can retire. If they are less than 5, tell them they need supervision when using a computer.

Using >= (*greater than or equal to*)

If the user is greater than or equal to 18, tell them that they're old enough to vote.

Using != *(not equal to)*

If the user is not the same age as you, tell them so.

Tip: A test that the age is not 99 looks like this:

```
if (age != 99)
```

2. Ask another person to test your program.

Extension

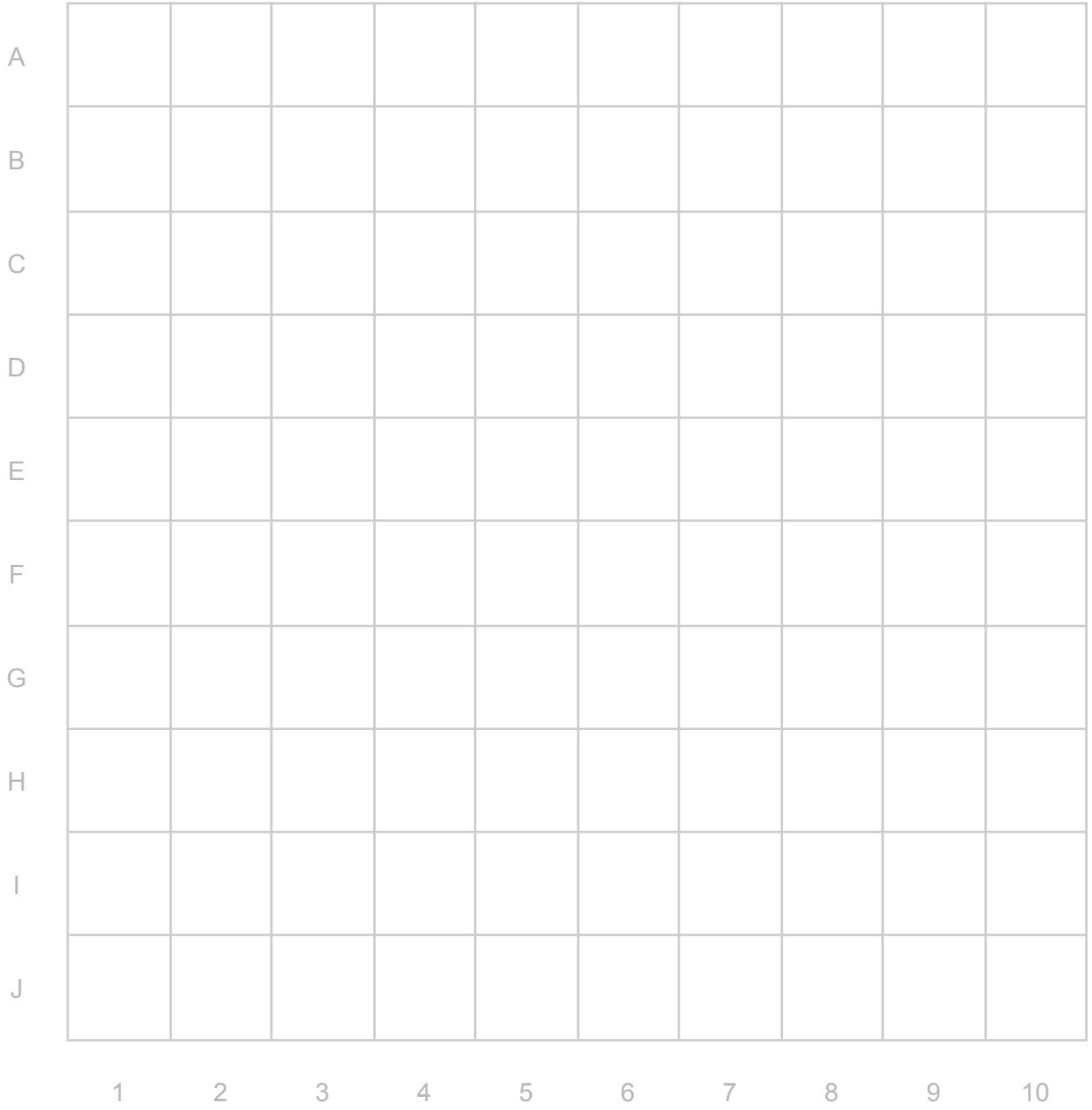
Improve the program so that if the user puts in a number below 1 or above 130, it tells them that the age is invalid.

Tip: You can use `&&` *to do both the conditions in one* `if` *statement.*

Battleship

Place your ships on the board by writing in the letters either horizontally or vertically. Take turns with a partner to try to guess where their ships are and sink all theirs before they sink yours.

Your board

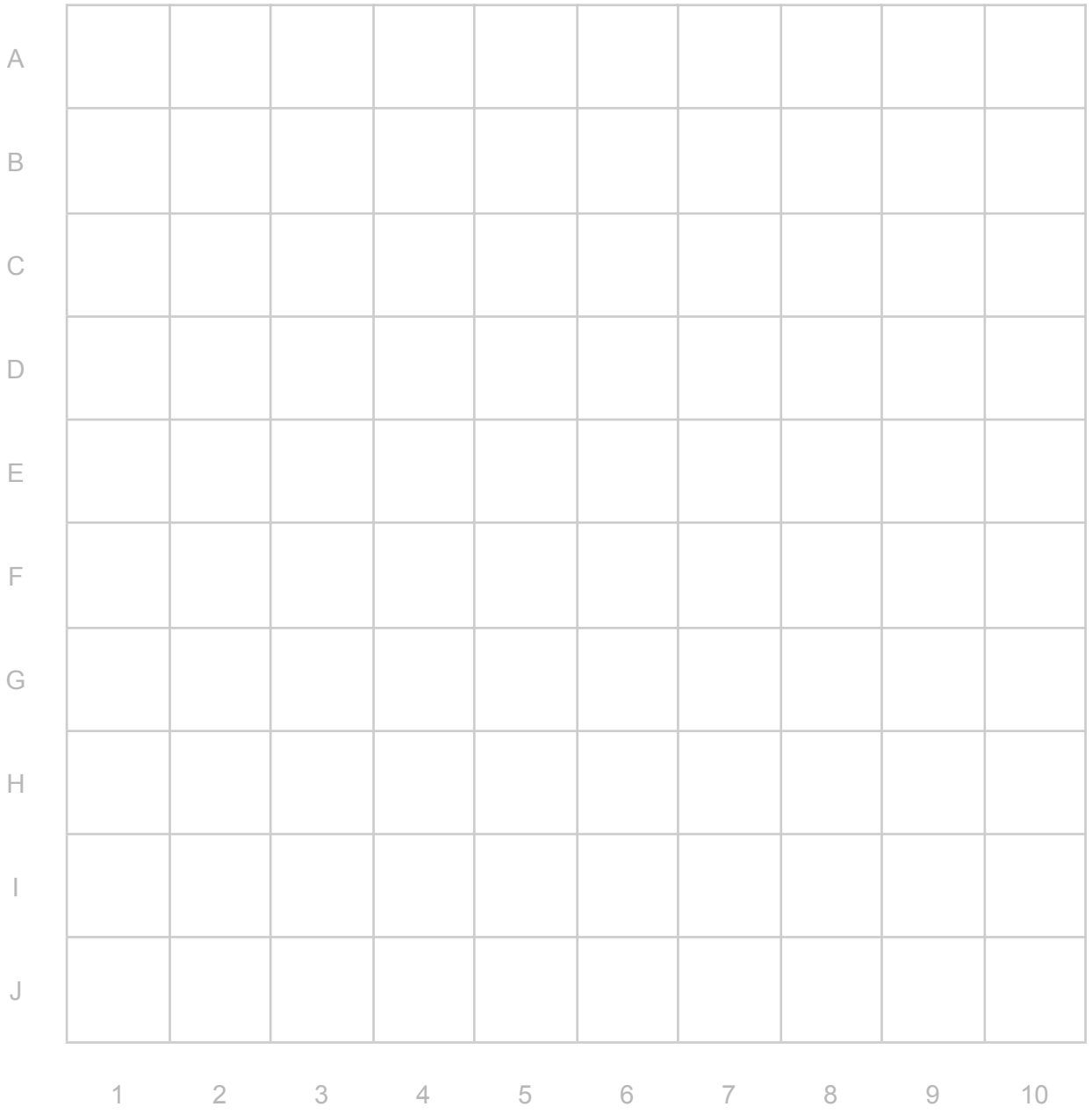


Your ships

Selection	Iteration	Variables	Input	Output
IIIII	WWWW	LLL	PPP	AAA

Mark where you've guessed, and whether it was a hit or a miss.

Their board



Their ships

Selection	Iteration	Variables	Input	Output
IIIII	**WWWW**	**LLL**	**PPP**	**AAA**

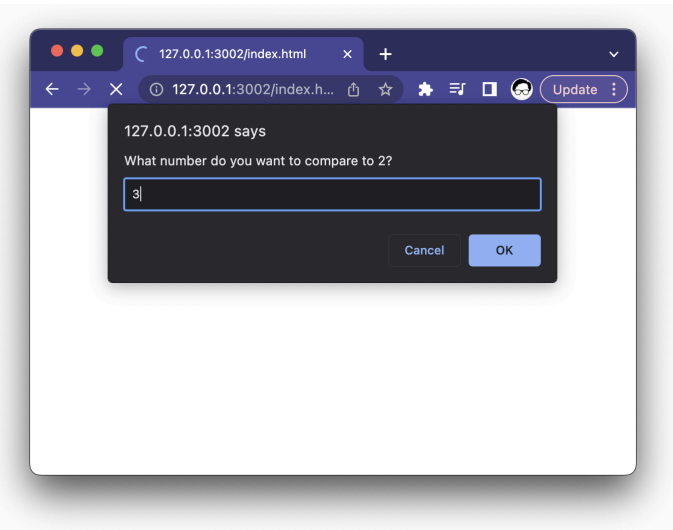
⚖️ Is It More Than 2?

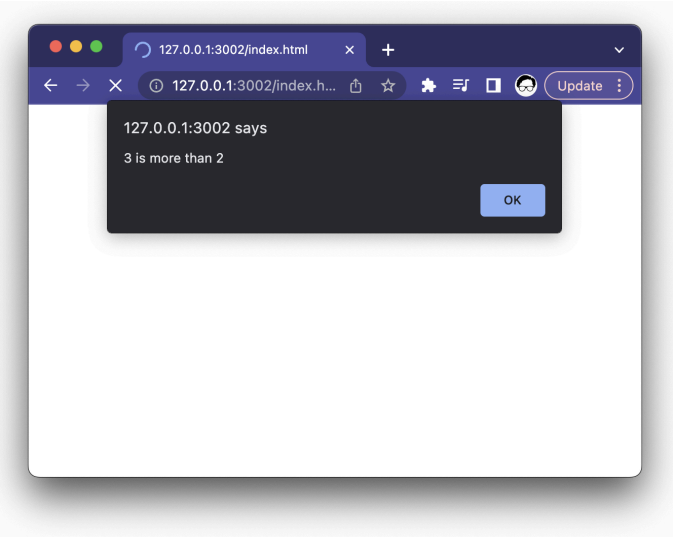
This simple program is useless - apart from helping you practice using `if` statements (conditionals).

Task

Create a program that takes an input number from the user, compares it to 2, and outputs whether it's more or not.

Example output





Extension

Keep asking them for numbers and telling them if they’re more than two until they say ‘Stop!’

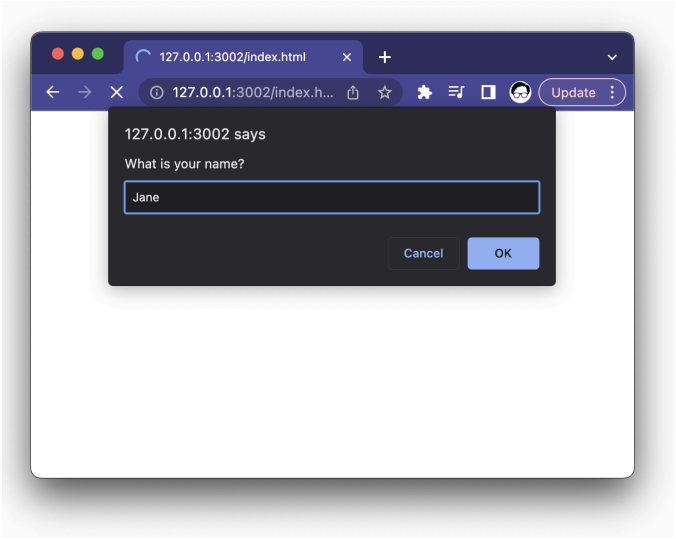
Capital

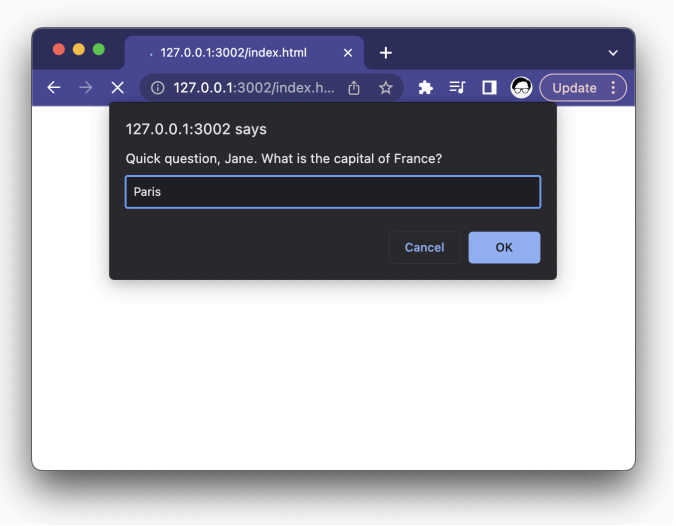
This project is the basis for a quiz. It lets you practice checking if the user is right about a question you've programmed.

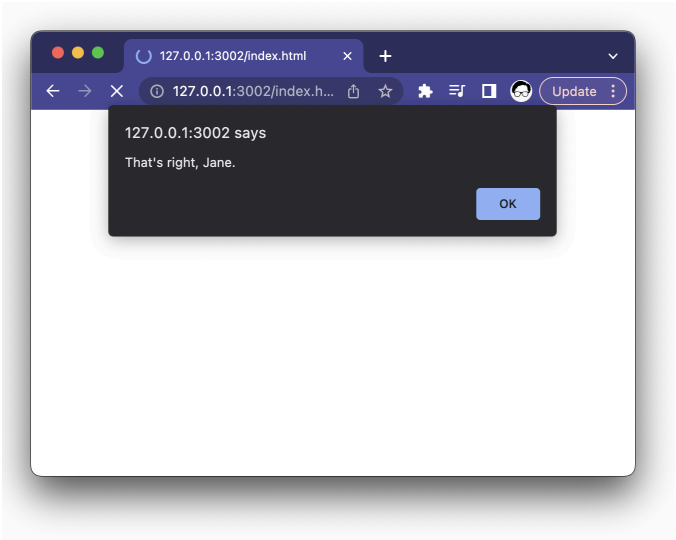
Task

> Create a program that asks for the user's name and then asks them (using their name) what the capital of France is. Tell them whether they got it correct or not, using their name again.

Example output







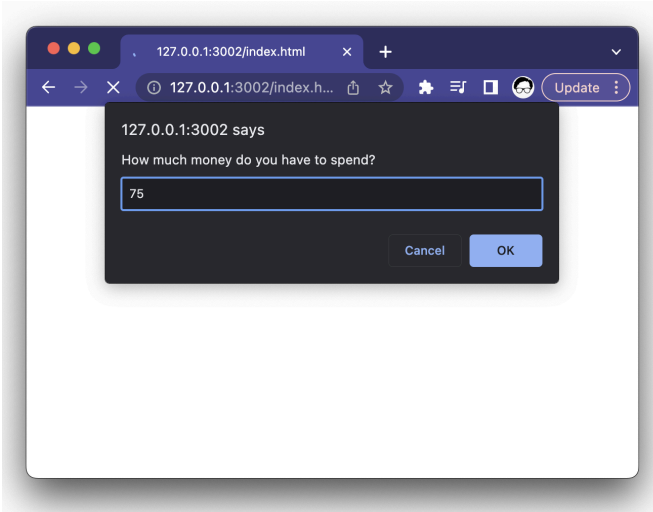
🏷️ Sale Calculator

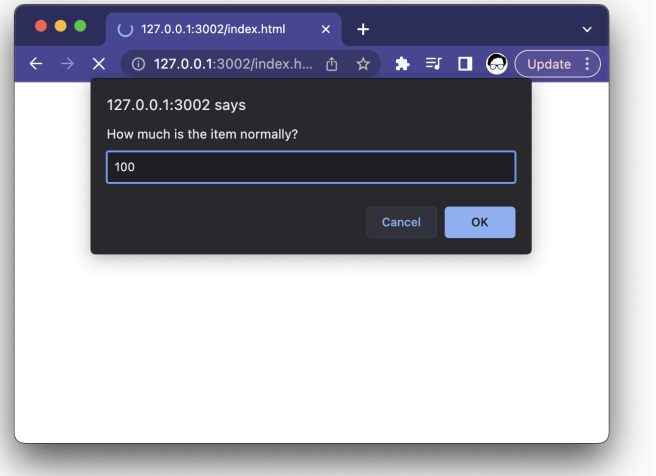
This project combines some work with variables, with selection.

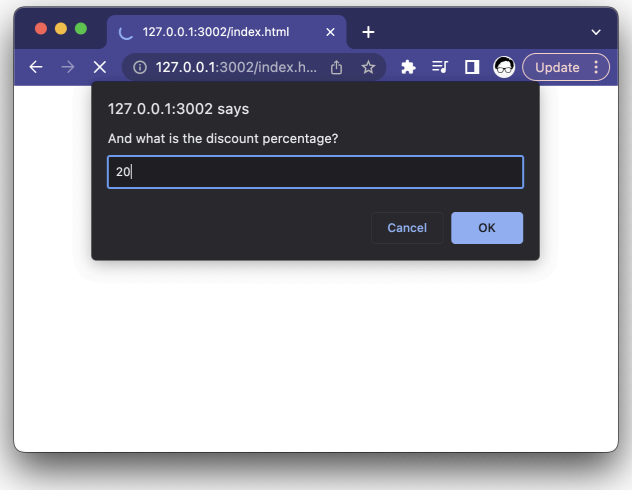
Task

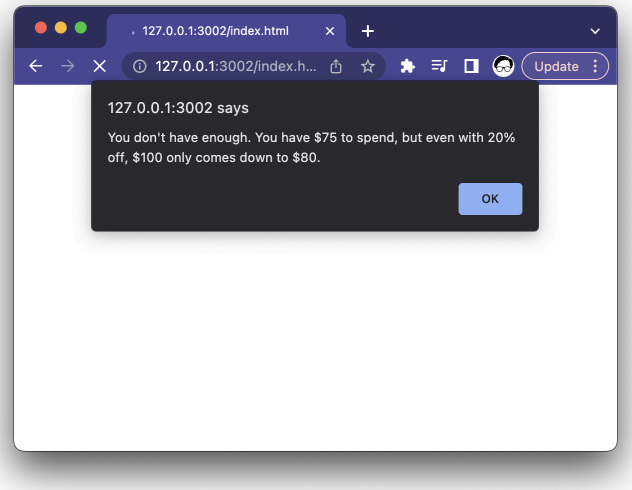
Create a program that tells the user if they can afford an item on sale.
Ask the user how much money they have, what the ticket price of the item is,
and what the discount percentage is. Then, tell them if the money they have
is enough to cover the ticket price minus the discount.

Example output









Word brlSacem

Unscramble the words.

oolp	_____
koclb	_____
qlaeu	_____
nto	_____
esls	_____
artgeer	_____
ulryc	_____
fi	_____
leihw	_____
ioeatrtni	_____
icndnooti	_____
eicsenlto	_____

Debugging

Circle all of the errors in these blocks of code.

```
let age == 18

if (age = 16) {
  atlert('You are old enough to drive.')
}
```

```
alert('Welcome to my conversation program.')

alert('Do you like cycling? Answer yes or no.')
answer = prompt()

if (answer = 'yes')
  alert('That's good - you will get very fit.")
else {
  alert('Perhaps you like some other sport.')
}

alert('Goodbye')
```

```
let password = 'abc123"
let userGuess = proompt('What is your password?')

let attempts = 3
let maxAttempts = 1

while (userGuess != password && attempts <= maxAttempts) {
  userGuess = prompt('Incorrect password, please try again.')
  attempts = attempts + 1
}

if (userGuess == password) {
  alert('Login successful.')
} else {
  alert('Login failed.')
}
```

Predict

Read the code carefully. When you're done circling the bugs, write what you predict it will do when they're fixed.

What do you think the code will do?