JavaScript Basics #04

JavaScript is a programming language that drives the web: from front-end user interface design to server-side backend programming, you'll find JavaScript at every stage of a web site and web application. In this course, you'll learn the fundamental programming concepts and syntax of the JavaScript programming language.

Making Decisions in Your Code with Conditional Statements

Conditional statements let you control the "flow" of your program. You're able to run different code based on conditions in your program.

Introducing Conditional Statements

You can change what your program does by adding decision-making to it. Programmers make a program react to different situations using JavaScript conditional statements.

if...else

The if statement executes a statement if a specified condition is truthy. If the condition is falsy, another statement can be executed.

```
const answer = prompt('Which planet is closest to the sun?');

if ( answer.toUpperCase() === 'MERCURY' ) {
  console.log("That's correct!");
} else {
  console.log("Sorry, that's incorrect");
}
```

Comparison Operators

The most important part of a conditional statement is the condition itself. It's a test that checks to see if something is either true or false. JavaScript provides "comparison operators" to help with conditional statements.

Operator	Description	Example	Result
==	Equal to	1 == 1	true
===	Equal in value and type	1 === '1'	false
!=	Not equal to	1 != 2	true
!==	Not equal in value and type	1 !== '1'	true
>	Greater than	1 > 2	false
<	Less than	1 < 2	true
>=	Greater than or equal to	1 >= 1	true
<=	Less than or equal to	2 <= 1	false

Challenge 01

Add a conditional statement that tests if the value in variable a is greater than the value in variable b. If it is, log the message "a is greater than b" to the console. Then, add an else clause that logs the message "a is not greater than b".

```
const a = 10;
const b = 20;
const c = 30;

if (a > b) {
console.log("a is greater than b");
} else {
console.log("a is not greater than b");
}
```

Boolean Values

Every condition evaluates to either true or false. True and false have a specific meaning in JavaScript, they're called "Booleans," and along with strings and numbers, they represent a third type of value (or data type) in JavaScript.

```
let correctGuess = false;
const number = 6;
const guess = prompt('Guess a number between 1 and 10.');

if ( +guess === number ) {
  correctGuess = true;
}

if ( correctGuess ) {
  console.log('You guessed the number!');
} else {
  console.log(`Sorry. The number was ${number}.`);
}
```

Program Multiple Outcomes

Add variety to your programs using 'else if' statements. 'else if' provides multiple program paths with numerous conditions.

else if Statement

Use the else if statement to specify a new condition if the first condition is false.

Syntax

```
if (condition1) {
  //  block of code to be executed if condition1 is true
} else if (condition2) {
  //  block of code to be executed if the condition1 is false and condition2 is true
} else {
  //  block of code to be executed if the condition1 is false and condition2 is false
}
```

Example

```
const weather = 'snow';

if ( weather === 'sun' ) {
  console.log("It's sunny, so I'm going swimming.");
```

```
} else if ( weather === 'rain' ) {
  console.log("It's raining, so I will read a book.");

} else if ( weather === 'snow' ) {
  console.log("It's snowing, so I'm going sledding.");

} else {
  console.log("I don't know what I'm doing today.");
}
```

Challenge 02

Create a conditional statement that tests if the isAdmin variable is true. If it's true, set the value of the message variable to "Welcome admin".

```
const isAdmin = true;
const isStudent = false;
let message;

if (isAdmin === true) {
message = "Welcome admin";
}
```

Challenge 03

Add an else if clause that tests if the isStudent variable is true. If it's true, set the value of the message variable to "Welcome student".

```
const isAdmin = false;
const isStudent = true;
let message;

if ( isAdmin ) {
  message = 'Welcome admin';
} else if (isStudent){
message = 'Welcome student';
}
```

Challenge 04

Add a final else clause to this conditional statement. If both the isAdmin and isStudent variables are false, the value of the message variable should be "Access denied".

```
const isAdmin = false;
const isStudent = false;
let message;

if ( isAdmin ) {
  message = 'Welcome admin';
} else if ( isStudent ) {
  message = 'Welcome student';
} else {
  (isAdmin === false && isStudent === false)
  message = "Access denied";
}
```

Test Multiple Conditions With the && Operator

JavaScript has a particular operator to test more than one condition. It's called a logical "AND" operator and represented by two ampersands (&&).

The logical AND operator (&&) returns true if both operands are true and returns false otherwise.

```
const a = 3;
const b = -2;

console.log(a > 0 && b > 0);
// expected output: false
```

Test Multiple Conditions With the || Operator

The logical OR (||) operator (logical disjunction) for a set of operands is true if and only if one or more of its operands is true.

```
const a = 3;
const b = -2;

console.log(a > 0 || b > 0);
// expected output: true
```

Document Your Code with Comments

JavaScript provides ways to leave messages in your code. When you or another developer review your code later, these messages (or comments) can quickly help describe what's going on in the program. You can add comments anywhere in your JavaScript code; they're ignored by a web browser and don't affect how your program works.

```
// a one line comment

/* this is a longer,
 * multi-line comment
 */
```

The Conditional Challenge

You've learned enough to put together complete programs! Now you're going to write a simple quiz application utilizing most of your new-found JavaScript knowledge.

```
/*
  1. Store correct answers
   - When quiz begins, no answers are correct
*/
let correct = 0;

// 2. Store the rank of a player
```

```
let rank;

// 3. Select the <main> HTML element
const main = document.querySelector('main');

/*
  4. Ask at least 5 questions
   - Store each answer in a variable
   - Keep track of the number of correct answers
*/
const answer1 = prompt("Name a programming language that's also a gem.");
if ( answer1.toUpperCase() === 'RUBY' ) {
  correct += 1;
}
const answer2 = prompt("Name a programming language that's also a snake.");
if ( answer2.toUpperCase() === 'PYTHON' ) {
  correct += 1;
}
const answer3 = prompt("What language do you use to style web pages?");
if ( answer3.toUpperCase() === 'CSS' ) {
  correct += 1;
}
const answer4 = prompt("What language do you use to build the structure of web pages?");
if ( answer4.toUpperCase() === 'HTML' ) {
  correct += 1;
}
const answer5 = prompt("What language do you use to add interactivity to a web page?");
if ( answer5.toUpperCase() === 'JAVASCRIPT' ) {
  correct += 1;
}

/*
  5. Rank player based on number of correct answers
   - 5 correct = Gold
   - 3-4 correct = Silver
   - 1-2 correct = Bronze
   - 0 correct = No crown
*/
if ( correct === 5 ) {
  rank = "Gold";
} else if ( correct >= 3 ) {
  rank = "Silver";
} else if ( correct >= 1 ) {
  rank = "Bronze";
} else {
  rank = "None :(";
}

// 6. Output results to the <main> element
main.innerHTML = `
  <h2>You got ${correct} out of 5 questions correct.</h2>
  <p>Crown earned: <strong>${rank}</strong></p>
`;
```

Challenge 05

Something's wrong with this script. The value in the variable money is 9. But if you preview this script, the browser displays the message "Time to go to the theater." Fix this script so that it correctly tests the money and today variables and prints the proper alert message: "It's Friday, but I don't have enough money to go out."

```
const money = 9;
const today = 'Friday'

if ( money > 10 && today === 'Friday' ) {
  alert("Time to go to the theater.");
} else if ( money >= 50 && today === 'Friday' ) {
  alert("Time for a movie and dinner.");
} else if ( money < 10  && today === 'Friday' ) {
  alert("It's Friday, but I don't have enough money to go out.");
} else {
  alert("This isn't Friday. I need to stay home.");
}
```