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Fullstack Web Development Tutorial Lesson 4

Today’s lesson will cover

- Logical operators
- Loops
- Switch statement

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JavaScript fundamentals

Logical Operators

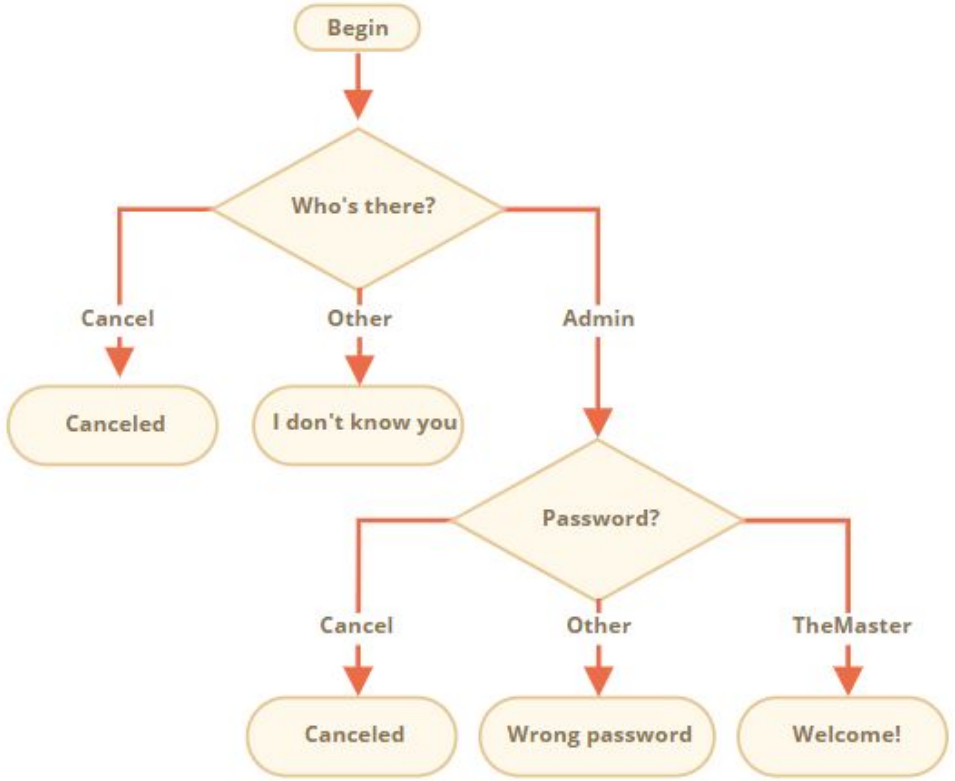
- There are three logical operators in JavaScript: `||` (OR), `&&` (AND), `!` (NOT)
- Although they are called “logical”, they can be applied to values of any type, not only boolean. Their result can also be of any type.
- In classical programming, the logical OR is meant to manipulate boolean values only. If any of its arguments are `true`, it returns `true`, otherwise it returns `false`.
    - In JavaScript, the operator is a little bit trickier and more powerful
- In classical programming, AND returns `true` if both operands are truthy, otherwise `false`
- The boolean NOT operator is represented with an exclamation sign `!`
    - Accepts a single argument and does the following:
        - Converts the operand to boolean type: `true/false`.
        - Returns the inverse value.
        - A double NOT `!!` is sometimes used for converting a value to boolean type

Exercise: Logical Operators

- Write the code which asks for a login username with `prompt`.
- If the visitor enters `"Admin"`, then `prompt` for a password, if the input is an empty line or `Esc` – show "Canceled", if it's another string – then show "I don't know you".

The password is checked as follows:

- If it equals "TheMaster", then show "Welcome!",
- Another string – show "Wrong password",
- For an empty string or cancelled input, show "Canceled"
- Hint: passing an empty input to a prompt returns an empty string `''`. Pressing `ESC` during a prompt returns `null`.



Loop: while

- *Loops* are a way to repeat the same code multiple times
- While loop
  - While the `condition` is truthy, the `code` from the loop body is executed
  - If `i++` was missing from the example above, the loop would repeat (in theory) forever
- Do...while loop
  - condition check can be moved *below* the loop body using the `do..while` syntax
  - The loop will first execute the body, then check the condition, and, while it's truthy, execute it again and again
  - This form of syntax should only be used when you want the body of the loop to execute **at least once** regardless of the condition being truthy

Loop: for

- The `for` loop is more complex, but it's also the most commonly used loop
- Syntax:

  -
    ```
    for (begin; condition; step) {
      // ... loop body ...
    }
    ```
- <u>For loop steps:</u>
  - begin: Executes once upon entering the loop.
  - condition: Checked before every loop iteration. If false, the loop stops.
  - body: Runs again and again while the condition is truthy.
  - step: Executes after the body on each iteration.
- <u>General loop algorithm</u>
  - Run begin
  - → (if condition → run body and run step)
  - → (if condition → run body and run step)
  - → (if condition → run body and run step)
  - → ...

Loop: for *(Contd.)*

- Inline variable declaration: The “counter” variable `i` is declared right in the loop. This is called an “inline” variable declaration. Such variables are visible only inside the loop.
- You can skip parts of the loop and it will still work
  - note that the two `for` semicolons `;` must be present. Otherwise, there would be a syntax error.
- Breaking loop:
  - Normally, a loop exits when its condition becomes falsy.
  - But we can force the exit at any time using the special `break` directive.
- Continue directive:
  - The `continue` directive is a “lighter version” of `break`. It doesn’t stop the whole loop. Instead, it stops the current iteration and forces the loop to start a new one (if the condition allows).
- Label a loop by declaring a name followed by colon `:`

Exercise: Loops

- An integer number greater than `1` is called a prime if it cannot be divided without a remainder by anything except `1` and itself.
- In other words, `n > 1` is a prime if it can't be evenly divided by anything except `1` and `n`.
- For example, `5` is a prime, because it cannot be divided without a remainder by `2`, `3` and `4`.
- **Write the code which outputs prime numbers in the interval from `2` to `n`.**
- For `n = 10` the result will be `2,3,5,7`.
- P.S. The code should work for any `n`, not be hard-tuned for any fixed value.

The Switch Statement

- A `switch` statement can replace multiple `if` checks.
- It gives a more descriptive way to compare a value with multiple variants.
- The `switch` has one or more `case` blocks and an optional default

  -
    ```
    switch(x) {
      case 'value1':  // if (x === 'value1')
         ...
         [break]

      case 'value2':  // if (x === 'value2')
         ...
         [break]

      default:
         ...
         [break]
    }
    ```
- Type matters
- Group switch cases

Exercise: Switch statement

- Rewrite the code below using a single `switch` statement:

  ```
  let a = +prompt('a?', '');

  if (a == 0) {
    alert( 0 );
  }
  if (a == 1) {
    alert( 1 );
  }

  if (a == 2 || a == 3) {
    alert( '2,3' );
  }
  ```

  ```
  switch(x) {
    case 'value1':  // if (x === 'value1')
      ...
      [break]

    case 'value2':  // if (x === 'value2')
      ...
      [break]

    default:
      ...
      [break]
  }
  ```

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Self Study Assignments

To Dos

- Continue freecodecamp Javascript. Ideally finish before we resume after summer.
- Continue with FCC HTML, CSS lessons. Ideally finish all the lessons by end of this month.
- Work on the HTML, CSS assignments to make the projects as complete as you desire and push latest version on Git repository
- Share your freecodecamp profile link with Elena so that we can track your progress by Friday 05 June, 2020

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Feedback

What works best for you?

- What do you prefer when it comes to individual and peer to peer tasks?
    - Put out common goals to work towards work as a guide even if working at own pace
    - Get feedback from everyone?

What’s worth knowing?

- You don’t need to know it all
- You don’t need to have everything in your head rather need to understand what we are covering so that you can later on refer to these when working on projects, or learn other need by need basis things leveraging on the fundamental understanding
- You need to code regularly outside of class hours and weekdays
- Focus on doing and building instead of beating yourself up trying to understand in and out of everything there is of each of the technologies you’ll learn. The deeper understanding will happen subconsciously once you get used to being able to use the tools you are familiar with
- How much you develop in 12 weeks depends on you