Loops

Girls Code Club Lancaster, 2021-2022

SHEro - Anita Borg

Video #1 -
https://www.youtube.com/watch?v=hHieLtOMdfU

Video #2 -
https://www.youtube.com/watch?v=ApyTBucW4BA

https://en.wikipedia.org/wiki/Anita_Borg

RECAP - ANITA BORG

Anita Borg was a computer scientist and huge advocate for women in computer programming. After graduating college, she co-founded *Systers*, which was an online community for women to discuss their experiences and work. Programs like this are really important so that women involved can feel a sense of community.

She created the Institute for Women in Technology, which helped those already in computer science as well as those thinking of changing their careers to join the field. She also started a yearly celebration for Grace Hopper, called GHC, where women are celebrated in computer science. GHC stands for Grace Hopper Celebration.

Anita Quiz!

Building Blocks for our Websites

HTML/CSS

The structure and style!

Javascript

The **action** in our website.

Loops

Make something happen X number of times.

Variables

Video Here

Conditionals

Review Video Here

Any Questions?

What is a Loop?

- Loops - **continue** to do something with our code **until** they are **stopped**
- Always a **conditional** to stop the loop
- Often be called **recursive**, or recurring, because it keeps acting **again** and **again.**

Types of Loops

Foreach Loop

For each apple in my basket, I will take a bite. **If** the apples are gone, I'll stop.

While Loop

While it's cold outside, I'll wear a jacket. **If** the weather warms up, I'll take the jacket off.

For Loop

For 5 times, I will pet my dog. **If** I've pet my dog 5 times, I'll stop.

Infinite Loop

The world is always spinning. It **never** stops!

Examples

Hula Hoop

Timer

A timer uses a sort of **while loop**. It's not an infinite loop because you can **stop** it.

https://giphy.com/explore/hula-hoop-girl

Count to 10

```
1  // Example 1 ----------------------------------
2  // We are going to count to the number 10!
3  // Setup
4  var countingBlock =
   document.getElementById("countingBlock");
5  var countingNumbers = 1;
7  // Start your code below this line.
```

Put your hand on your head when you find this code!

Add This Code!

```
while (countingNumbers <= 10) {
    countingBlock.innerHTML =
        countingBlock.innerHTML + "<p>" + countingNumbers + "</p>";
    countingNumbers = countingNumbers + 1;
}
```

What is Our Code Doing?

- Writing our first while loop!
- Loop will keep going until **countingNumbers** is 10.
    - Note: Remember that we need a way to STOP the loop.
- Inside our loop, we're adding 1 to **countingNumbers** each time the code runs.
- Once **countingNumbers** gets to 10, the loop will stop.
- Also in our loop, we are adding a with the value of **countingNumbers** to **countingBlock**.
    - Note: This will basically print the number that we've counted onto our website.

Bonus

Can you make the website count to 15?

Basic Loop

```
17  // Example 2 ----------------------------------
18  // We are going to put 5 lines of text on the screen.
19  // Setup
20  var containerForText =
    document.getElementById("basicPrintingBlock");
21  var numberOfLines = 1;
22
23  // Start your code below this line.
```

Put your hand on your head when you find this code!

Add This Code!

```
while (numberOfLines <= 5) {
    numberOfLines = numberOfLines + 1;
    containerForText.innerHTML =
        containerForText.innerHTML + "<p>I love to code!</p>"
}
```

What is Our Code Doing?

- Each time we're in the loop, we need to add **1** to **numberOfLines**, so that the next time the code goes to loop it knows if it needs to stop (when **numberOfLines** is greater than 5).
- Our conditional is currently checking if **numberOfLines** is less than or equal to **5**.

Bonus

Can you print 10 lines on the screen?
Can you change the text that gets printed on the screen?

Stopwatch

```
36 // Example 3 ---------------------------------
37 // We are going to build a stopwatch that starts at 0
   and shows a timer changing for 2 minutes.
38 // setTimeOut is a NEW function - this let's us do
   something every 1, 2, 3, etc. seconds. So that this
   looks and works like a real timer, we are going to use
   setTimeOut to make our code run every 1 second.
39 var isWatchStillGoing = false;
40 var startSeconds = 0;
41 var startMinutes = 0;
42
```

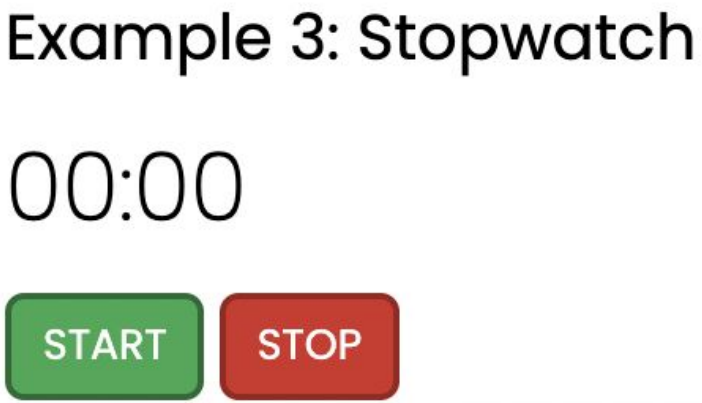
Put your hand on your head when you find this code!

What is Our Code Doing?

- We're going to build a timer that starts at 0 and shows a timer changing every second for 2 minutes.
    - Note: This is a little tough to do in code. You could write a loop that counts "seconds" 60 times and makes a minute every time we get to 60, but the code will go so, so fast that you won't actually see the numbers change until we've counted to 120, or 2 "minutes".
- We're going to solve for this using **setTimeout**, which is a function we'll explain more later.

What is Our Code Doing?

- **isWatchStillGoing** - tells the code whether we have started or stopped the timer using these buttons.
- **startSeconds** - controls how many seconds show on the timer.
- **startMinutes** - controls how many minutes show on the timer.



Add This Code!

```
function onStartWatch() {
    isWatchStillGoing = true;
    increaseTime();
}

function onStopWatch() {
    isWatchStillGoing = false;
}
```

What is Our Code Doing?

- Writing our first while loop!
- Loop will keep going until **countingNumbers** is 10.
    - Note: Remember that we need a way to STOP the loop.
- Inside our loop, we're adding 1 to **countingNumbers** each time the code runs.
- Once **countingNumbers** gets to 10, the loop will stop.
- Also in our loop, we are adding a with the value of **countingNumbers** to **countingBlock**.
    - Note: This will basically print the number that we've counted onto our website.

What is Our Code Doing?

- This code is telling our stopwatch what to do when we start or stop it.
- **onStartWatch** - controls starting the watch - it sets **isWatchStillGoing** to **true** (starts the watch) and calls our **increaseTime()** function (responsible for increasing the time on the watch).
- **onStopWatch** - tells the watch it's time to stop! It sets **isWatchStillGoing** to **false**.

setTimeOut

What is Our Code Doing?

Because our code is in a **setTimeout** function, it is doing the following steps every time the function is called:

- Wait one second
- Is the watch going AND is it less than 2 minutes? Yes!
- Increase the seconds
    - If we have made it to 60 seconds, restart the seconds at 0 and increase the minutes
- Update our website to show the new time
- Call the function again
- Wait one second

Add the code from your packet.

Quiz

What is HTML?

What is CSS?

What is Javascript?

What is a variable?

Quiz

What is a loop?

What does do?

What is <img></img>?

What is a conditional?

THANKS

Do you have any questions?
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