ASYNC PROGRAMMING

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What does it mean for code to be synchronous?

SYNCHRONOUS CODE

If you have two lines of code (Line 1 and Line 2), Line 2 cannot run until Line 1 is done executing

BUYING TICKETS

You can't start buying a ticket until the people in front of you are done buying theirs

People behind you cannot buy their ticket until you are done buying yours

SYNCHRONOUS CODE EXAMPLE

CODEPEN

ASYNCHRONOUS CODE

Line 1 can schedule a task for the future

Line 2 runs before the task is finished

SIT DOWN RESTAURANT

Don't have to wait for others to get their order and finish eating before you get your order

Food is received as soon as it is finished cooking

ASYNCHRONOUS CODE EXAMPLE

CODEPEN

ASYNCHRONOUS CODE EXAMPLE

CODEPEN

REMINDER

Asynchronous does not mean multi-threaded

Javascript can have asynchronous code, but it is single-threaded

CALLBACKS

CALLBACKS

What is a callback function?

CALLBACKS

A callback function is:

1. Passed as an argument to another function

2. Invoked after some event

CALLBACKS EXAMPLE

You are on the phone with a friend

Ask for a mutual friend's number (will take a few minutes)

Synchronous - Stay on the phone until they find number

Asynchronous - Go work on other tasks until friend calls you back with information

CALLBACKS EXAMPLE

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Why use asynchronous code?

Can we replace all asynchronous code with synchronous code?

No.

This is a very bad idea!

WHY NOT?

JavaScript only has a single thread (unless you use Web Workers)

The webpage will be unresponsive while script is running

SCOPING EXAMPLE

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CALLBACK HELL

CODEPEN

HOW TO DEAL WITH ASYNC CODE?

Libraries

Promises

LIBRARIES

https://caolan.github.io/async/

PROMISES

A promise is an object that may produce a value some time in the future: resolved or unresolved

3 states: Fulfilled, rejected, or pending

Attach callbacks to handle fulfilled value or rejection

PROMISES EXAMPLE

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PROMISES EXAMPLE

CODEPEN

ASYNCHRONOUS PROGRAMMING WITH PROMISES AND CALLBACKS IN ANGULAR

REFERENCES

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