Concepts

Willian Z

Concepts

- Human - Device Interaction
- Architectural Approaches
- JavaScript

Concepts

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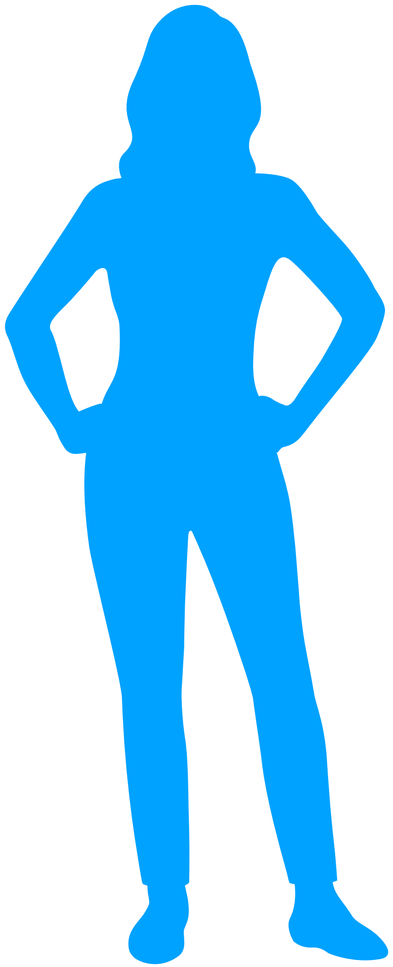
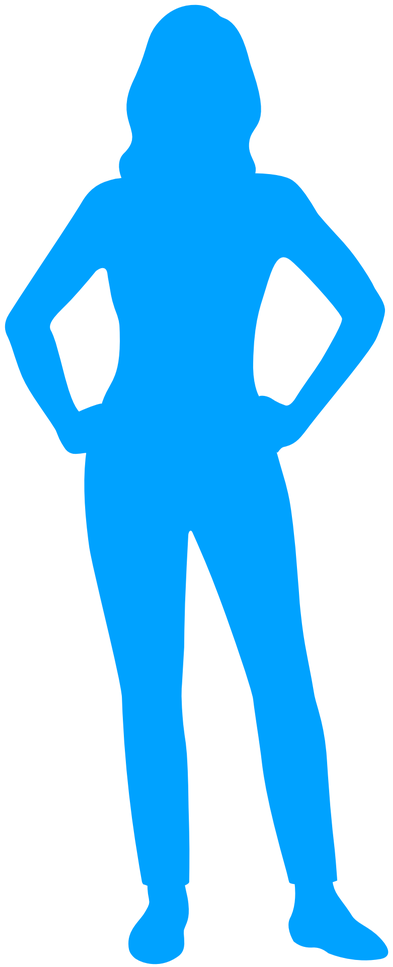
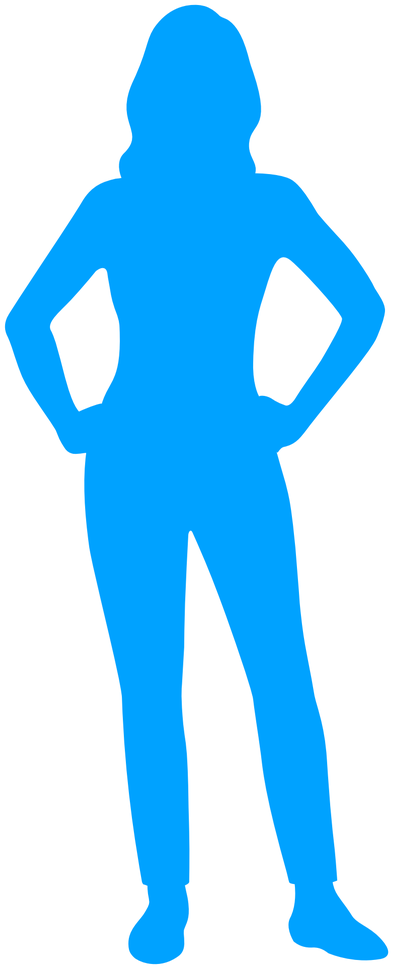
- Architectural Approaches
- JavaScript



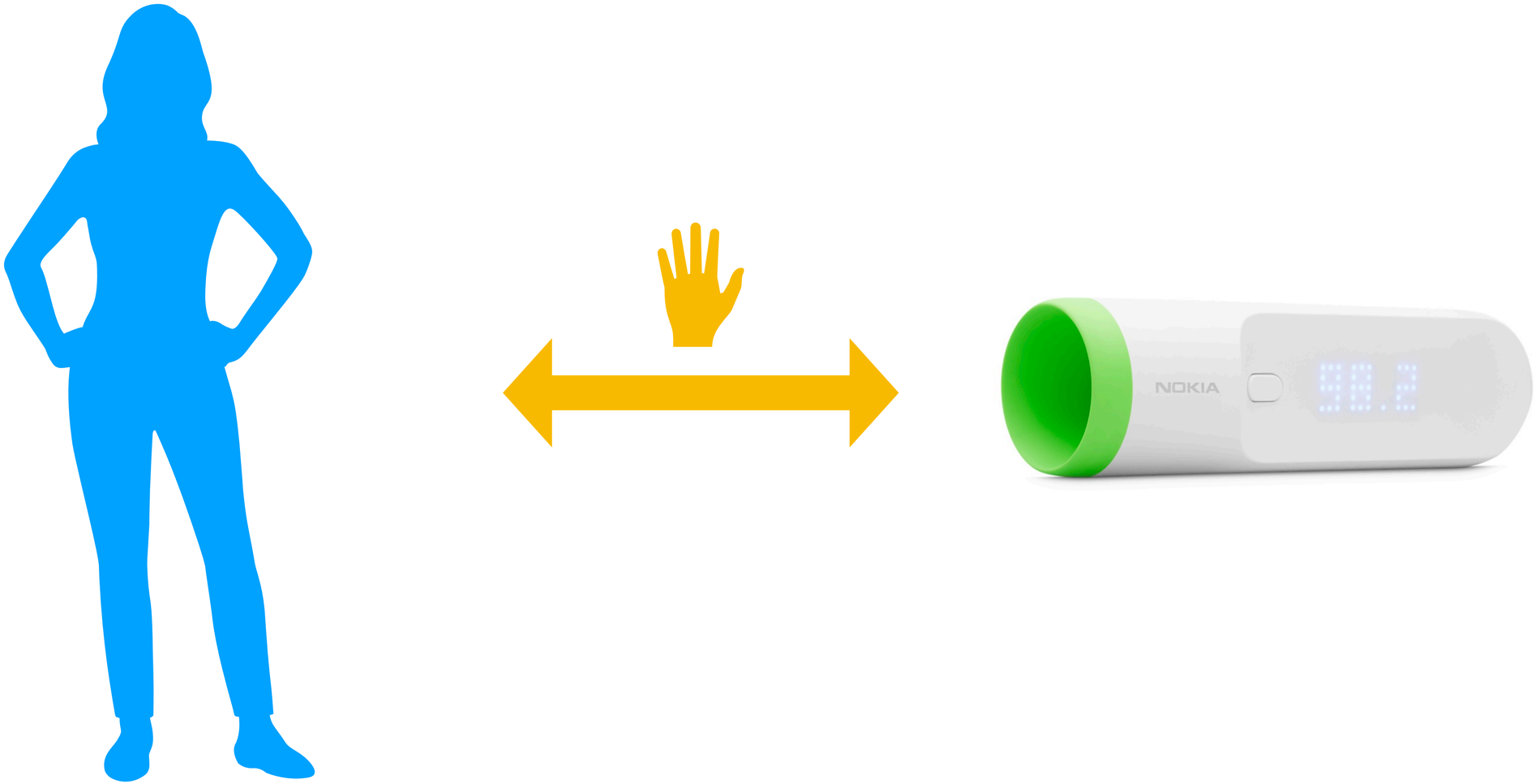

amazon


amazon

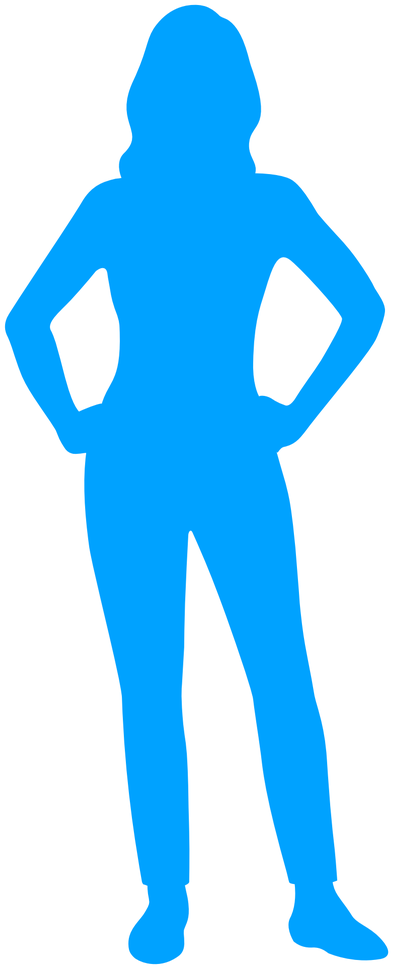





SONY


NOKIA

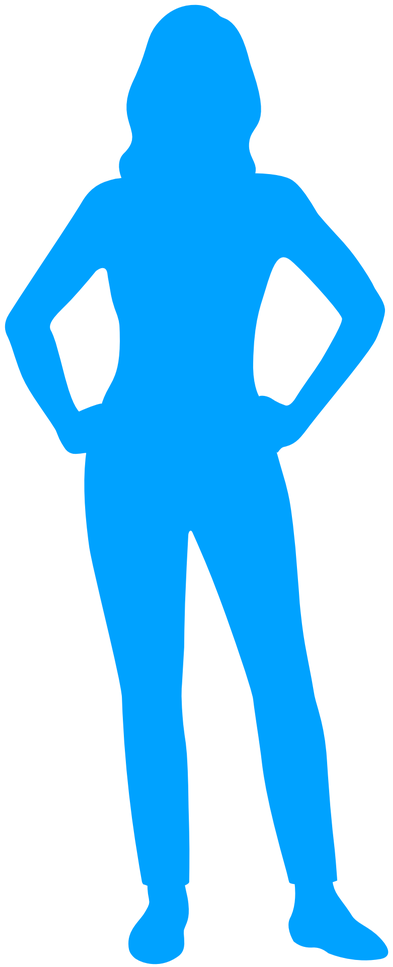

amazon

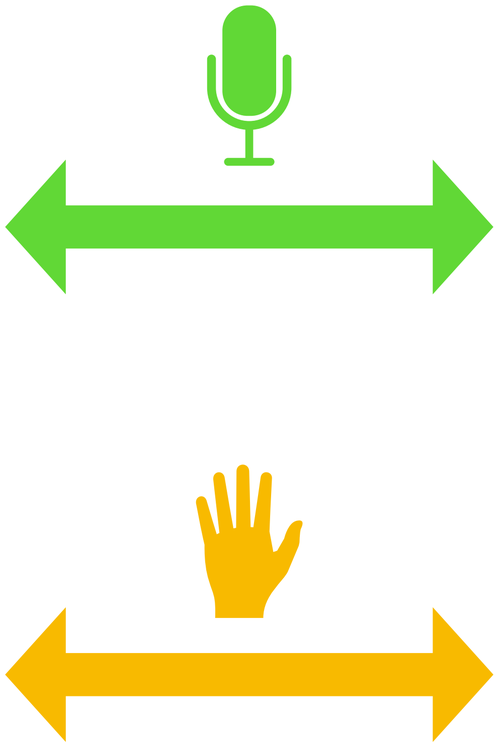


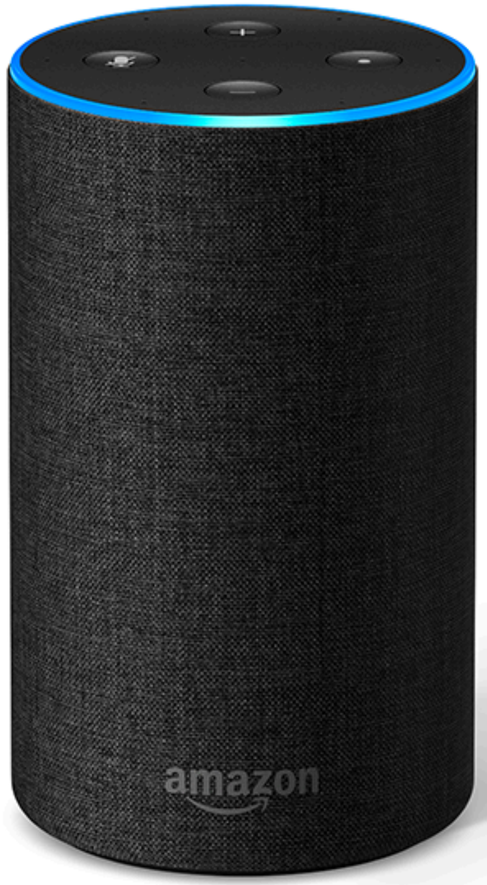

SONY


NOKIA

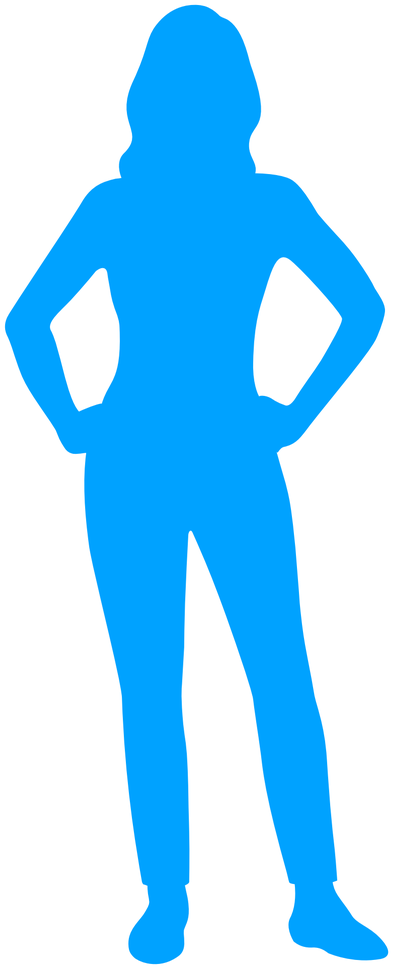

amazon

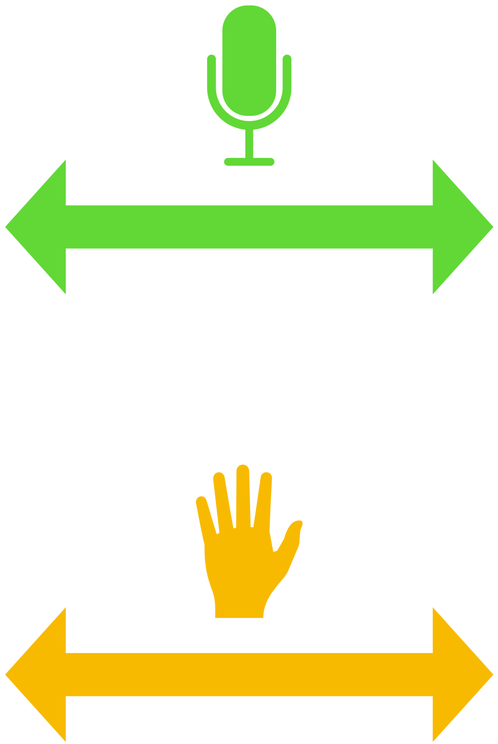


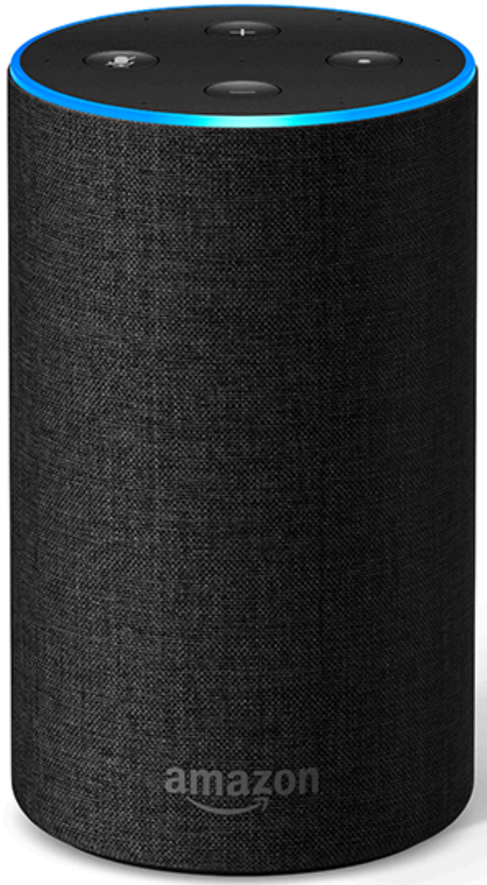



amazon

	Voice	Other Sensors
Encoding	Language / Music	Predefined rules
Learning Curve	almost **0**	**Lot**
Debts	• Language should be "smart enough" • Music are copyrighted	• use manual to guide user • commercial Product would pick from those with priori
Benefits	With internet, you have the **whole world**	Precise rule






amazon

	Voice	Other Sensors	AR / VR
Encoding	Language / Music	Predefined rules	<Imagine and insert here>
Learning Curve	almost **0**	**Lot**	<Imagine and insert here>
Debts	• Language should be "smart enough" • Music are copyrighted	• use manual to guide user • commercial Product would pick from those with priori	<Imagine and insert here>
Benefits	With internet, you have the **whole world**	Precise rule	<Imagine and insert here>

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Scenario


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amazon


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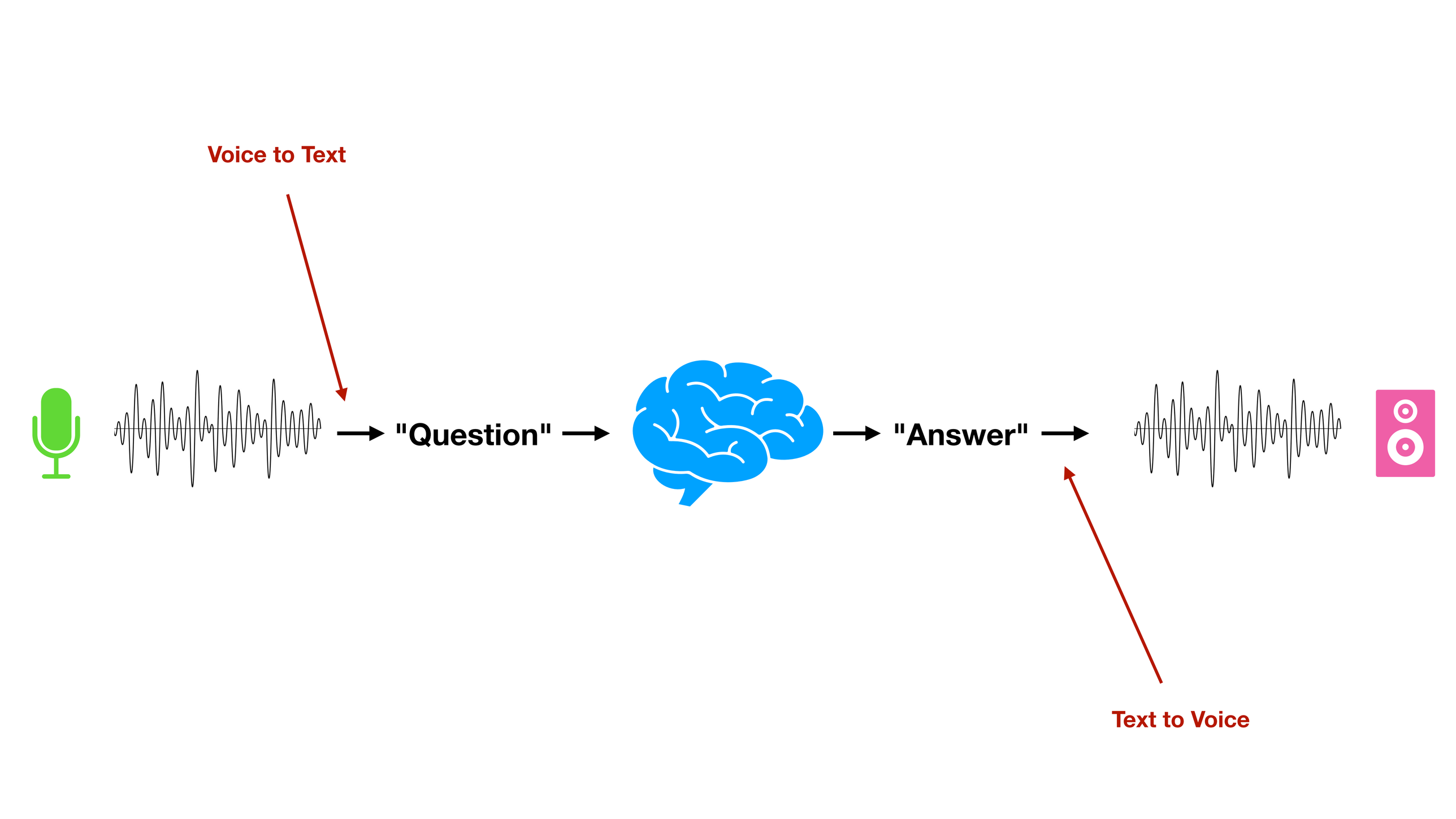
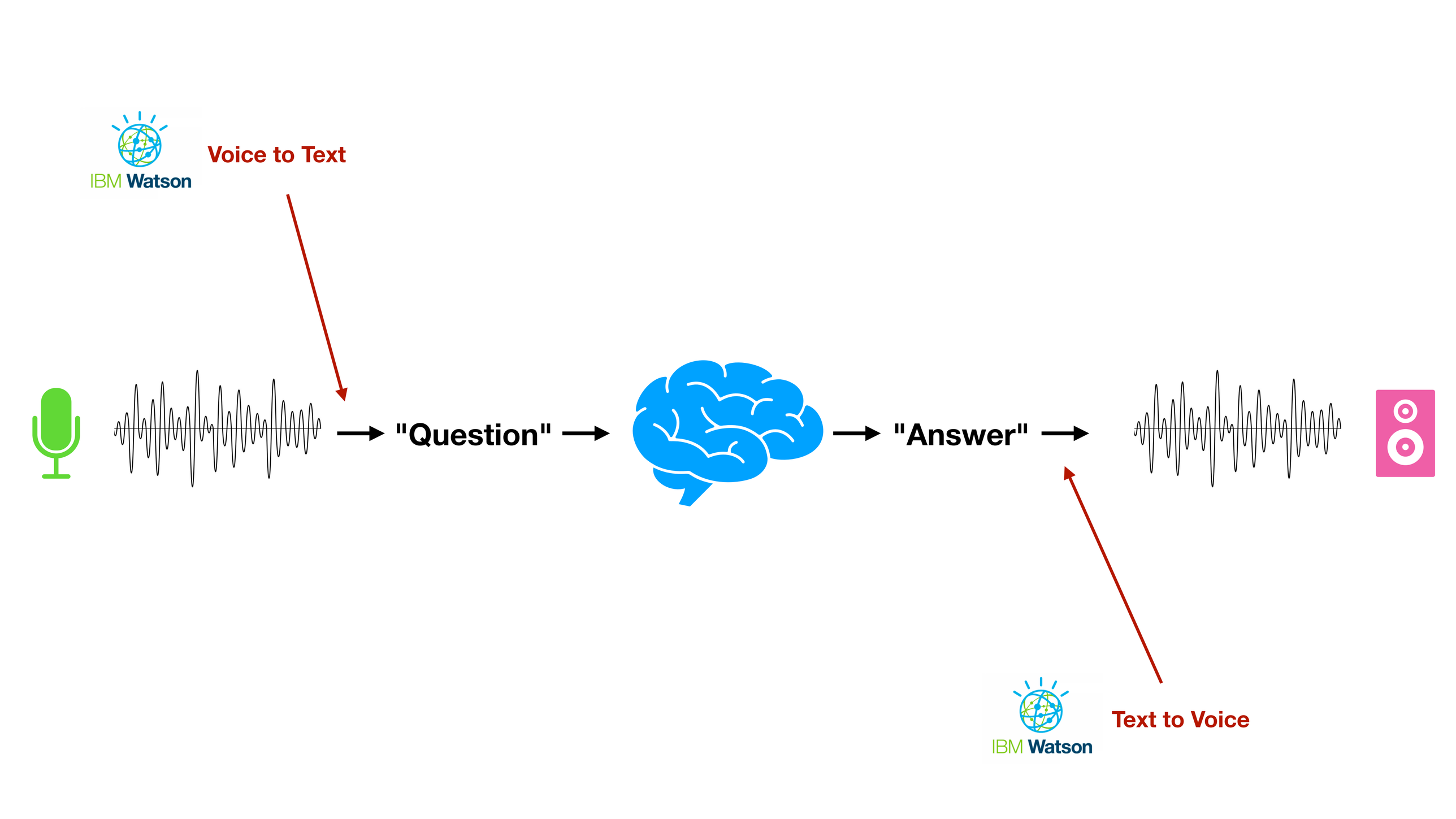
amazon


amazon

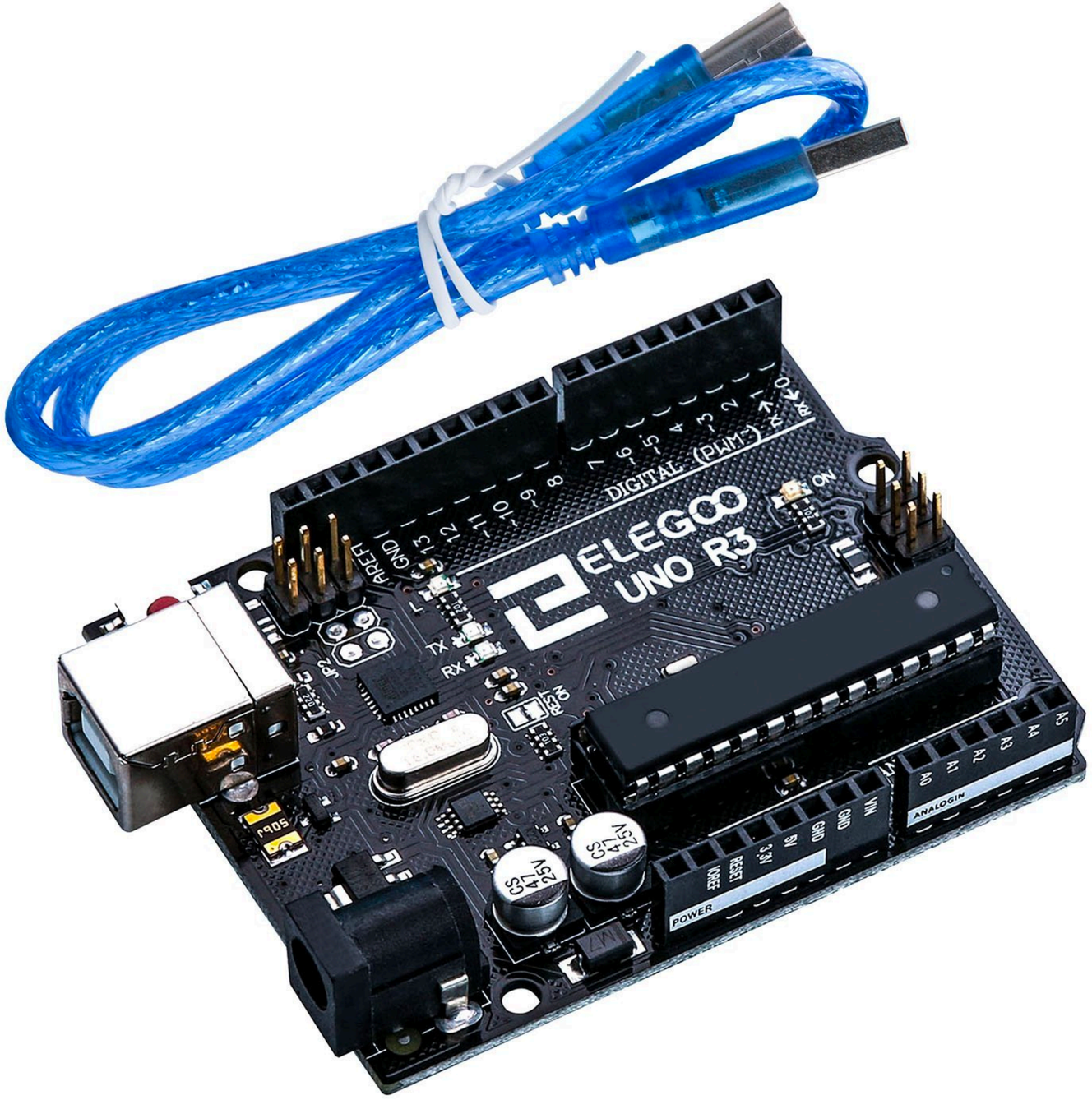

amazon

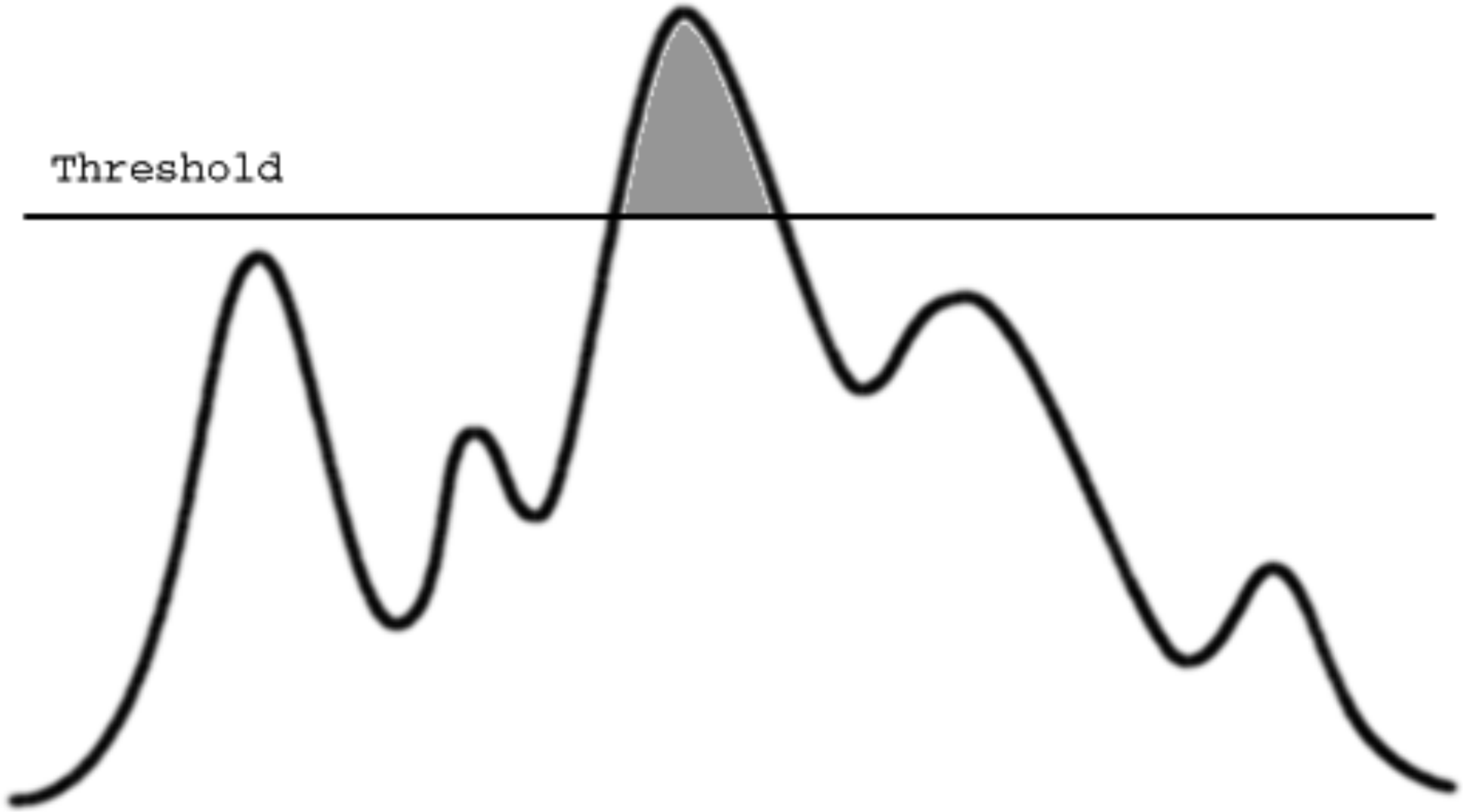

"Question"
"Answer"


Voice to Text
"Question"
"Answer"
Text to Voice

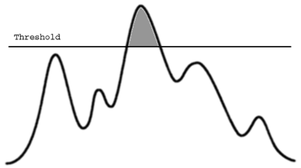

IBM Watson
Voice to Text
"Question"
"Answer"
IBM Watson
Text to Voice

Implement

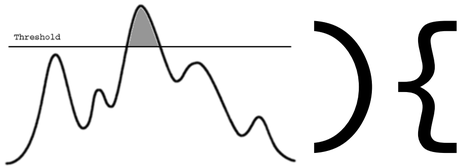

ELEGOO
UNO R3
DIGITAL (PWM~)
POWER
ANALOGIN


Threshold

```
if(
```



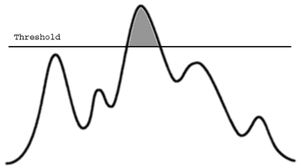

```
){

}
```

if(

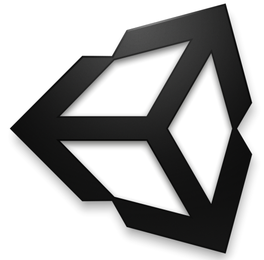
){

}

```
if(
```

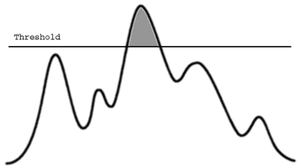



```
){
```

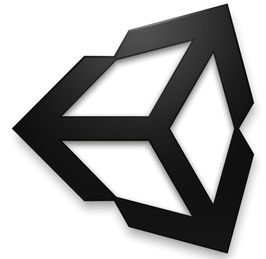


```
}
```

```
if(
```

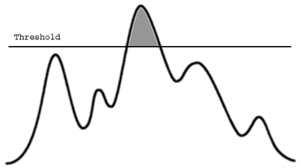



```
){
```



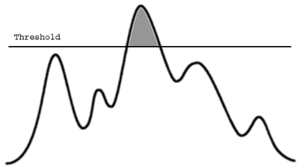
```
}
```

```
if(
```




```
){
```

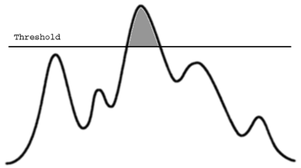

```
}
```

if(

){

}

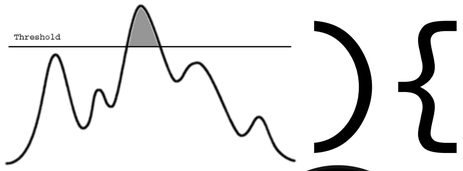
```
if(
```




```
){
```

```
if(    ){
```

```
        }
    }
```

if(

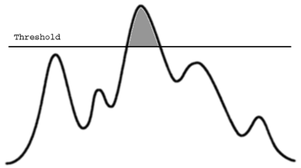
)){



if(){

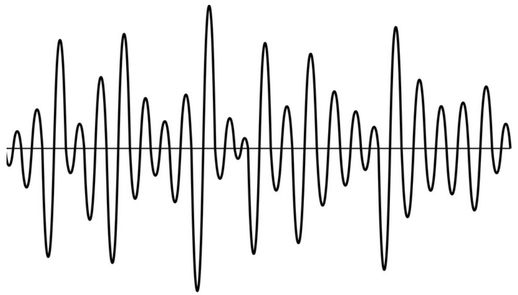
}

}

if(

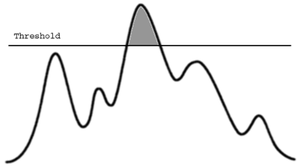
){

if(
){



}

}

```
if(  ){
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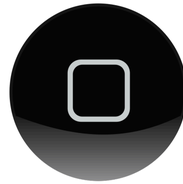
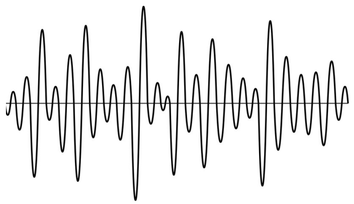
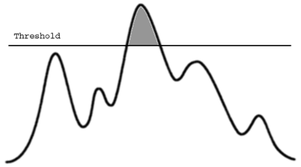
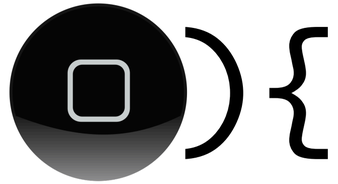
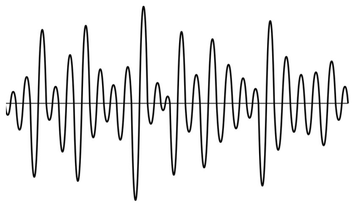
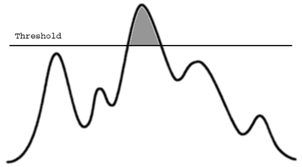
                while(                 ){
                        
                }
```

```
if(  ){
        if(  ){
                while(  ){
                        
                }
```

```
if(  ){
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                while( 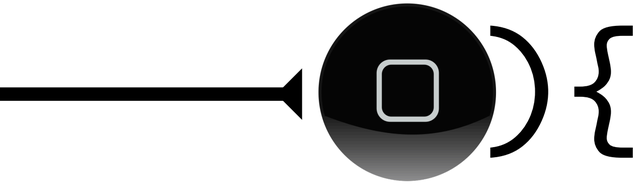 ){
                        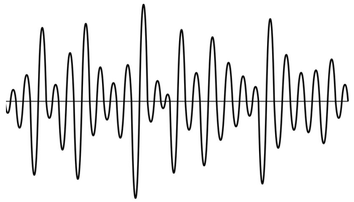
                }
                if(  ){
```
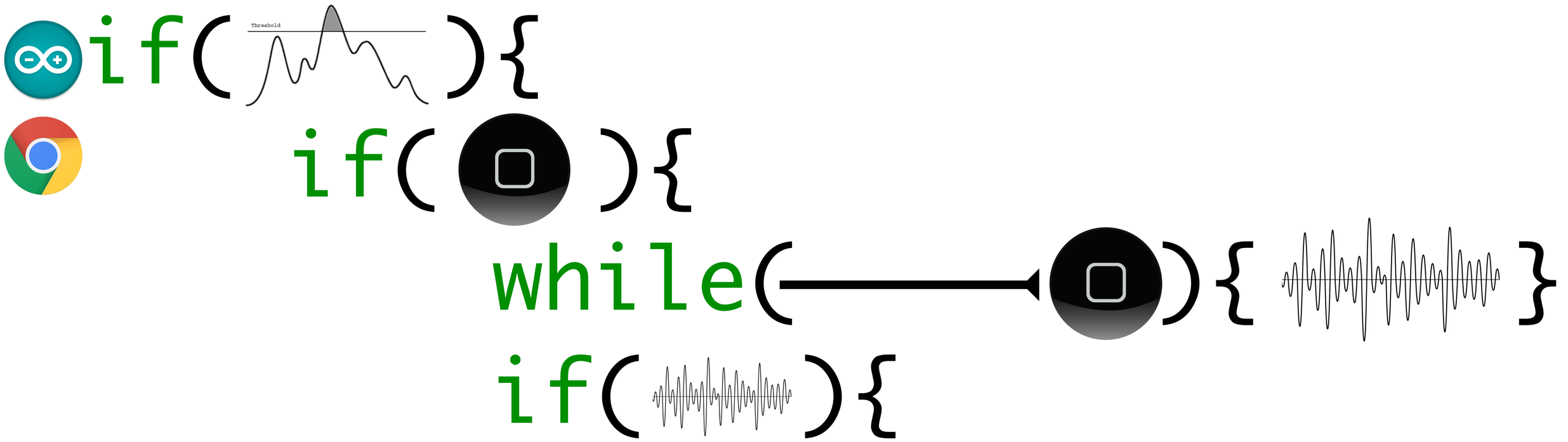
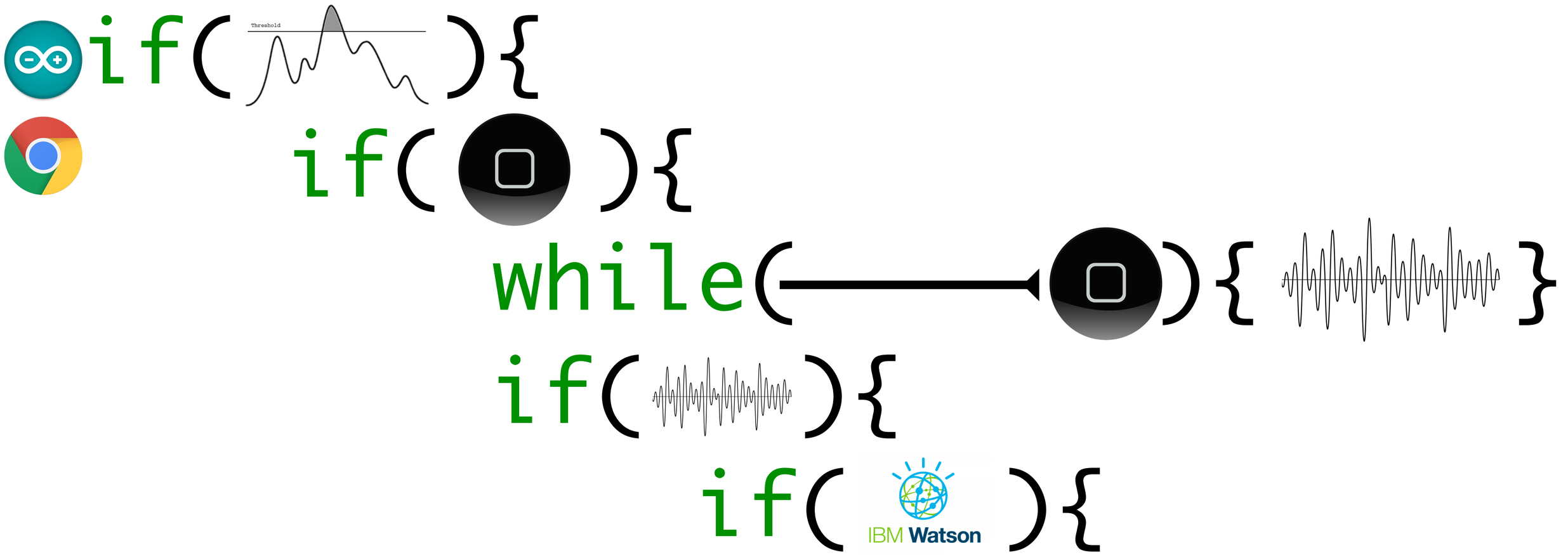
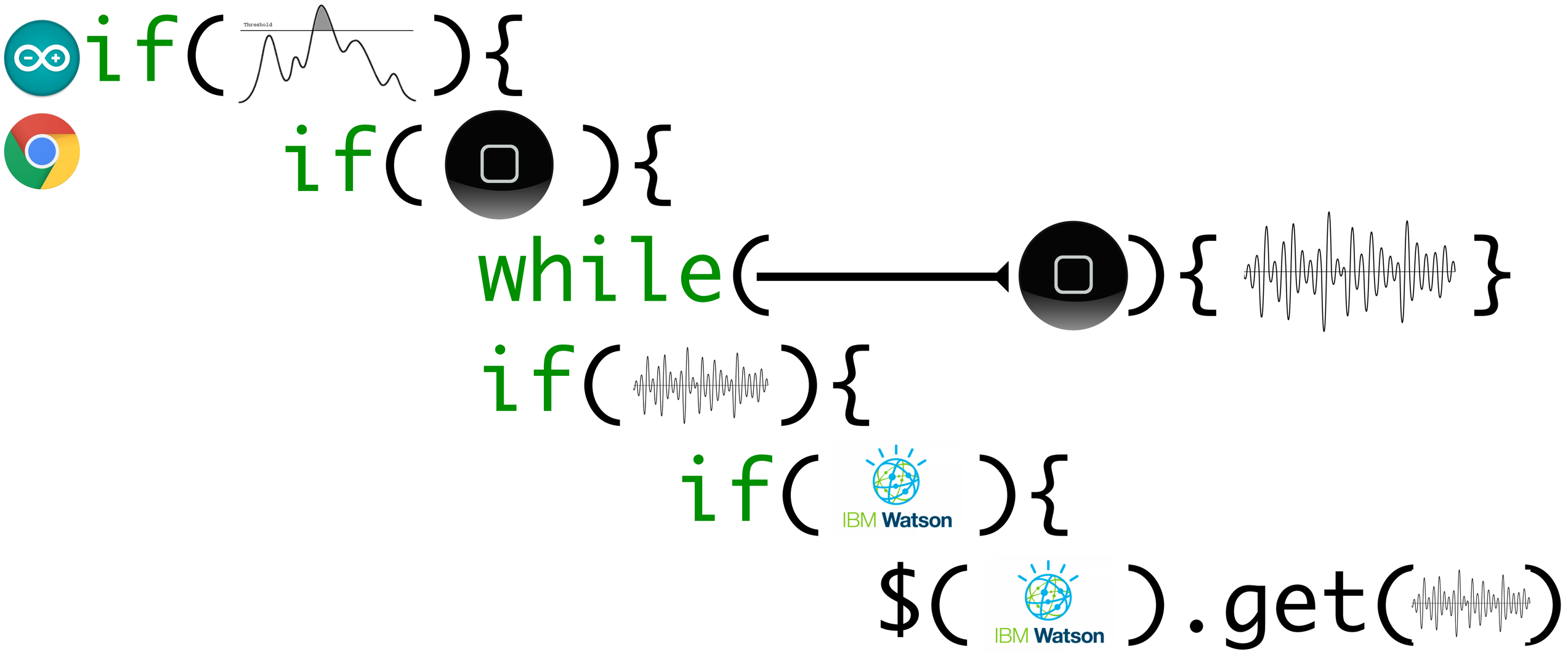
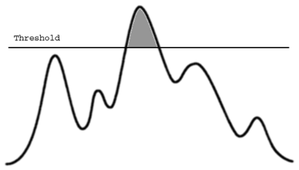
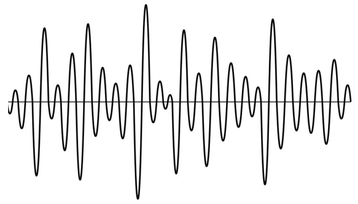


if(Threshold){
if(▢){
while(▢){ }
if( ){


if(Threshold){
if(▢){
while(▢){ }
if( ){
if(IBM Watson){

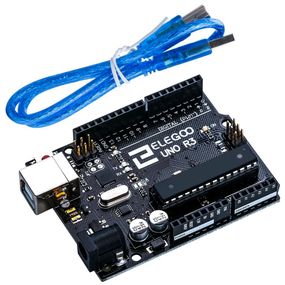

if(Threshold){
if( ){
while( ){ }
if( ){
if(IBM Watson){
$(IBM Watson).get( )


```
if(  ){
    if(  ){
        while(  ){  }
        if(  ){
            if(  ){
                $(  ).get(  )
                .then{
                    "Question"
```

```
if(  ){
    if(  ){
        while(  ){  }
            if(  ){
                if( IBM Watson ){
                    $( IBM Watson ).get(  )
                    .then{
                        "Question"
```

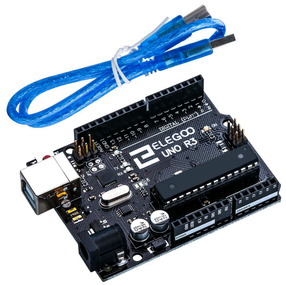
if(Threshold){
if( ){
while( ){ }
if( ){
NO!
if(IBM Watson){
Express
$(IBM Watson).get( )
.then{
"Question"

Refactoring



Hardware

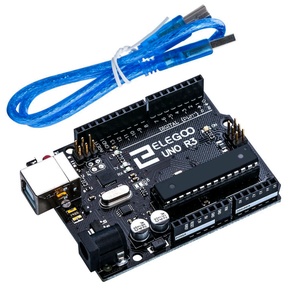
Arduino



Hardware

API

Arduino

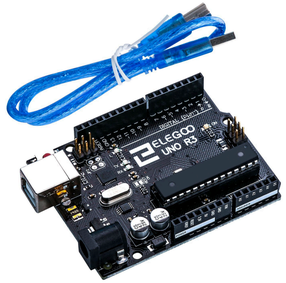


Hardware

Browser

API

Arduino



Hardware

API

API Definition

<time_elapsed>\t<sensor1>\t<sensor2>\t<sensor3>\t<sensor4>\t<sensor5>\n

ID	Sensor Name	Value Range	≥	Common Value	Default threshold	Notes
1	Force	0-1023	1	0	12	
2	Bend	0-1023	2	~170	360	
3	Photo	0-1023	3	0	10	
4	Touch	0-1023	4	~7	20,000	
5	Tilt 1	0-1	-	0	n/a	
6	Tilt 2	0-1	-	1	n/a	
7			-			
8						
9						

API

Final Project - Joy Stick

File Edit View Insert Format Tools Add-ons Help Last edit was 1 day ago

SHARE

100% Heading 2 Arial 16 Editing

API Definition

<time_elapsed>\t<sensor1>\t<sensor2>\t<sensor3>\t<sensor4>\t<sensor5>\n

ID	Sensor Name	Value Range	≥	Common Value	Default threshold	Notes
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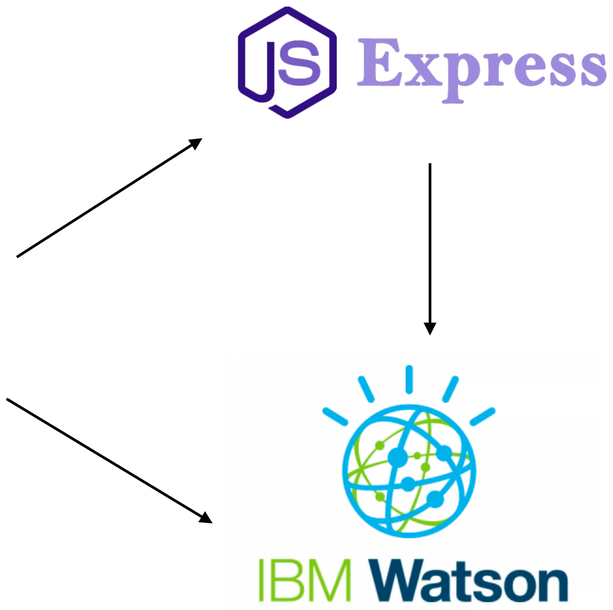
2	Bend	0-1023	2	~170	360	
3	Photo	0-1023	3	0	10	
4	Touch	0-1023	4	~7	20,000	
5	Tilt 1	0-1	-	0	n/a	
6	Tilt 2	0-1	-	1	n/a	
7			-			
8						
9						

Browser


Express
IBM Watson

Browser

Express

IBM Watson

Browser


JS

Concepts

- Human - Device Interaction
- Architectural Approaches
- JavaScript

Event Listener

```
let bend  = new ThresholdedSensor(360);
```

```
let bend  = new ThresholdedSensor(360);

bend.on('press', ()=>{
     ... do something here ...
})
```

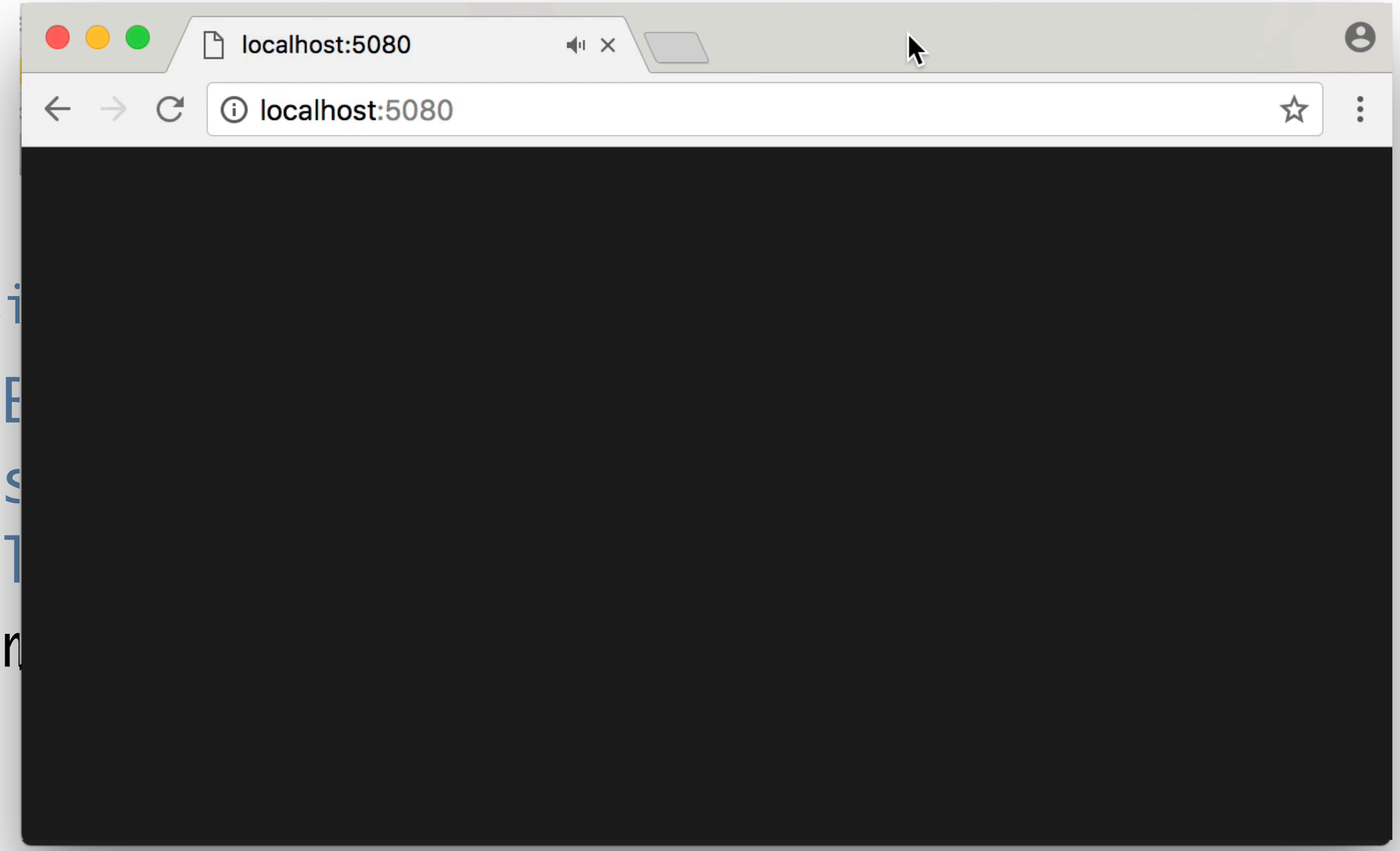
```
let siriButton = new SiriButton([force], keyboard);


siriButton.on('press', ()=>{
    siriSound.start();
})
```

```
let siriButton = new SiriButton([force], keyboard);


siriButton.on('press', ()=>{
    siriSound.start();
})
```

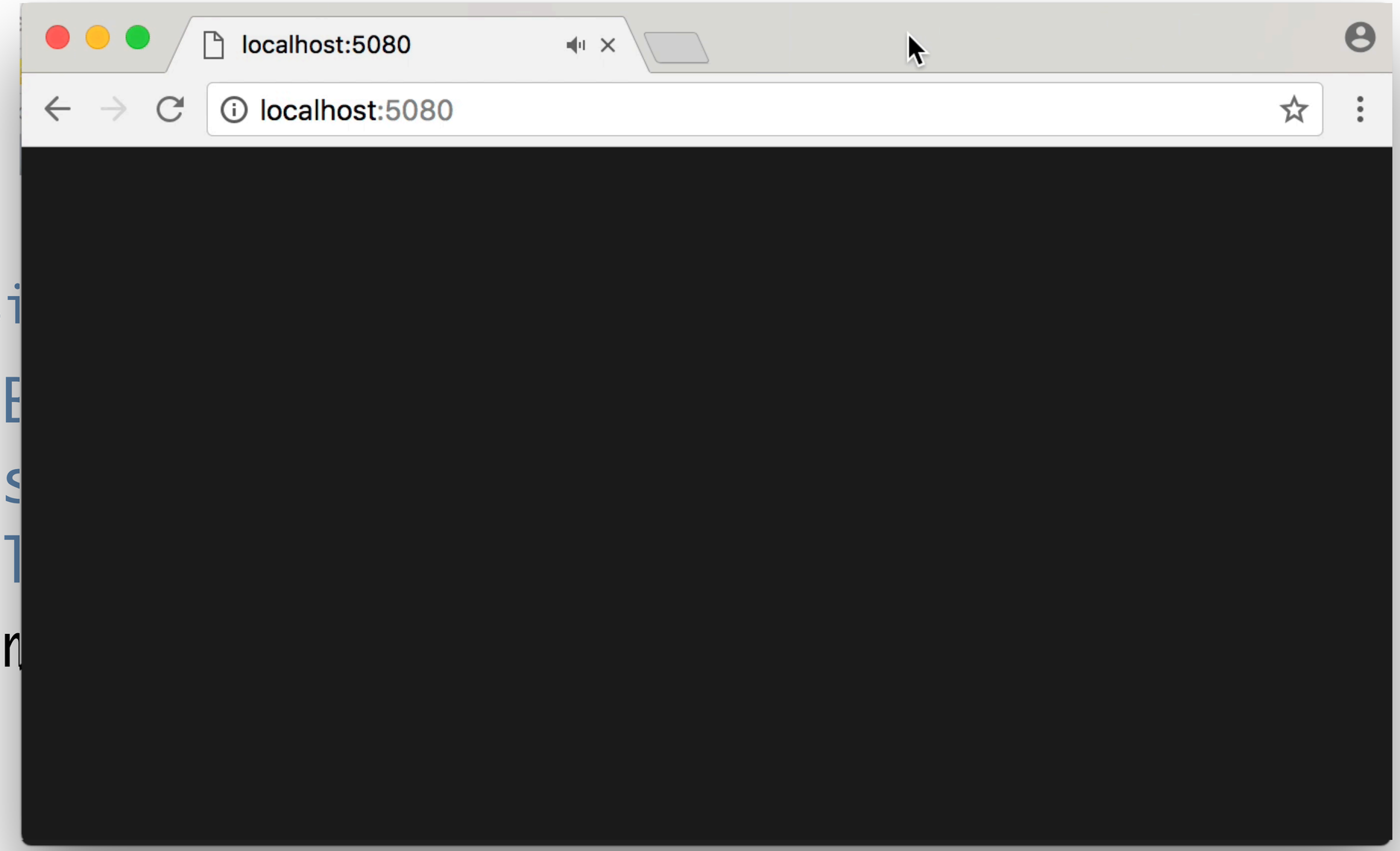
```
let siriButton = new SiriButton([force], keyboard);
siriButton.on('press', ()=>{
    siriSound.start();
    light.cyan()

})
```

```
let siriButton = new SiriButton([force], keyboard);
siriButton.on('press', ()=>{
    siriSound.start();
    light.cyan()
    mic_to_text()
})
```

```
let si
siriE
      s
      l
      n
})
```

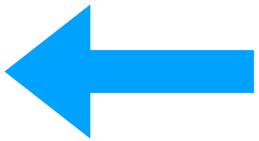


```
let si
siriE
      s
      l
      n
})
```

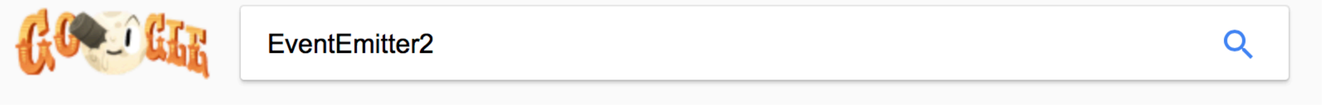


```
let siriButton = new SiriButton([force], keyboard);
siriButton.on('press', ()=>{
    siriSound.start();
    light.cyan()
    mic_to_text()
})
```

```
let siriButton = new SiriButton([force], keyboard);
siriButton.on('press', ()=>{
    siriSound.start();
    light.cyan()
    mic_to_text()
})
```



```
let siriButton = new SiriButton([force], keyboard);

class SiriButton extends EventEmitter2{
      ...
}
```



async/await

```
async function take_lonnnnng_time(){
    visit_google()
    go_get_a_pizza_from_pizza_man()
}
```

```
async function take_lonnnnng_time(){...}
```

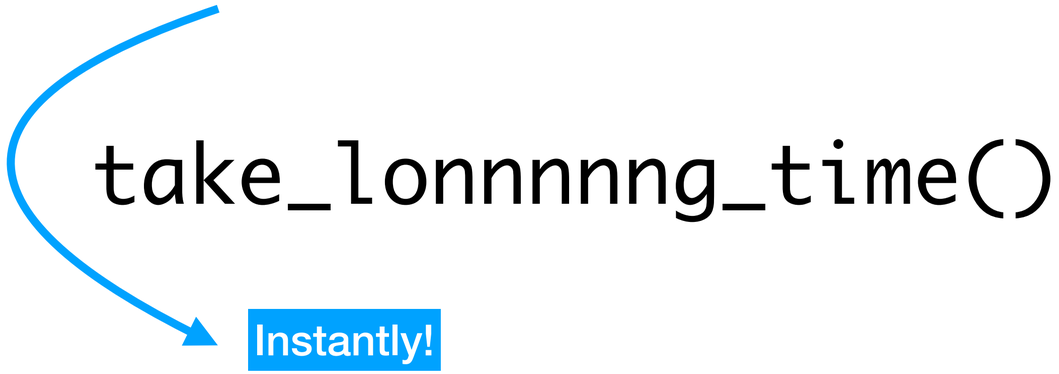
```
async function take_lonnnnng_time(){...}
```

```
take_lonnnnng_time()
```

```
async function take_lonnnnng_time(){...}
```

```
take_lonnnnng_time()
```

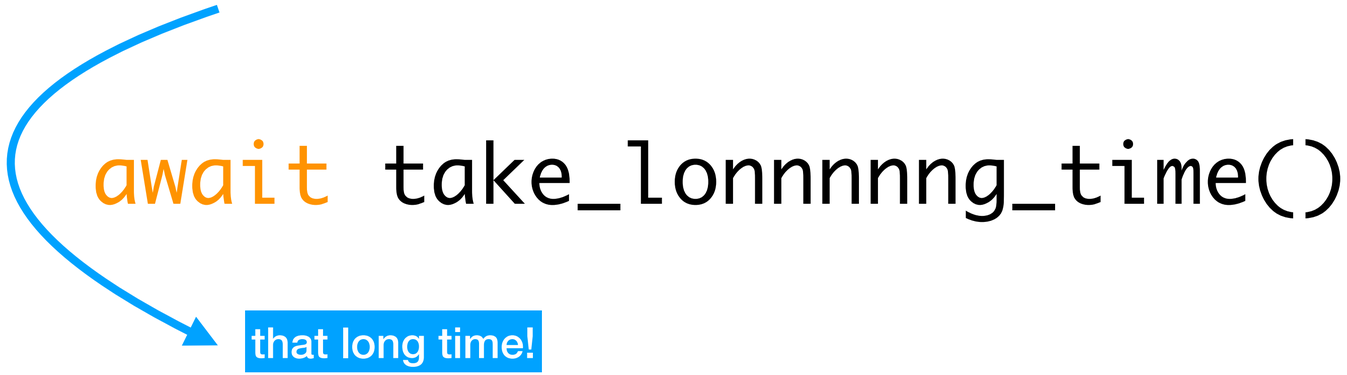
```
async function take_lonnnnng_time(){...}
```



```
async function take_lonnnnng_time(){...}
```

```
await take_lonnnnng_time()
```

```
async function take_lonnnnng_time(){...}
```



```
async function take_lonnnnng_time(){
    visit_google()
    return go_get_a_pizza_from_pizza_man(
}
```

```
let pizza = await take_lonnnnng_time()
```

that long time!

async/await

async/await

- C#
- Python
- Hack
- Dart
- Kotlin
- Scala
- Rust

Example

```
siriButton.on('press', ()=>{
    await siriSound.start();


})
```

Example

```
siriButton.on('press', ()=>{
    await siriSound.start();


})
```

Example

```
siriButton.on('press', ()=>{
    await siriSound.start();
    light.cyan()
    let question = await mic_to_text()
})
```

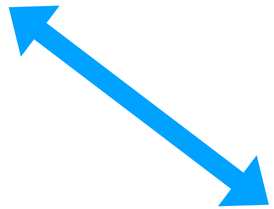
Example

```
await wait_until(device, "press")
```

Example

```
await wait(5000)
```

async /await



Event Listener

async/await = Promise

async/await

- Promise
- Future
- Delay
- Deferred
- Task (implement yourself)

async/await

- Promise
- Future
- Delay
- Deferred
- Task (implement yourself)

for CSer:

∈ Monad

Sentence Library

Example – real code

```
let siri_question = talker.askForName();
await popup_and_play(siri_question)

let name = await ask_with_dialog_and_indicator_sound(siri_question.text)

instrction = talker.okey_play(name);
await popup_and_play(instrction)
```

Example

```
let siri_question = talker.askForName();
await popup_and_play(siri_question)

let name = await ask_with_dialog_and_indicator_sound(siri_question.text)

instrction = talker.okey_play(name);
await popup_and_play(instrction)
```

Example

```
class SentenceLibrary {
    okey_play(name){
          switch (this.lang) {
              case 'ja-jp':return this.sentence(`こんにちは、${name}さん、じゃあ、行きますか! `);
              case 'es-es': return this.sentence(`Hola, ${name}, que tal?`);
              case 'en-us':
              case 'en-gb':
              default: return this.sentence(`OK, ${name}, Let's play`);
          }
     }
}
```

```
instrction = talker.okey_play(name);
```

Run loop

```
loop {
    ?
}
```

There's actually no loop

There's actually no loop

```
async function listen_new_conversation(){
    let [siriButton, e] = await wait_until(conversation_listener, 'press')
    if(siriButton){

        await pressAsk()

        listen_new_conversation()
    }else{
        await other taskes
        somehow listen_new_conversation()
    }
}
```

There's actually no loop

```
async function listen_new_conversation(){
    let [siriButton, e] = await wait_until(conversation_listener, 'press')
    if(siriButton){

        await pressAsk()

        listen_new_conversation()
    }else{
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        somehow listen_new_conversation()
    }
}
```

Very very long, maybe takes time of a game!

There's actually no loop

```
async function listen_new_conversation(){
    let [siriButton, e] = await wait_until(conversation_listener, 'press')
    if(siriButton){

        Very very long, maybe takes time of a game!

        listen_new_conversation()
    }else{
        await other taskes
        somehow listen_new_conversation()
    }
}
```

ありがとう

arigatou