Async/Await

I Promise to await for async code...

What is “asynchronous” code?

Asynchronous (aka *async*) just means:
“takes some time” or

“happens in the future, not right now”…

…and JavaScript won't wait for it.

What is “asynchronous” code?

```
console.log("One")
setTimeout(() => console.log("Two"), 10)
console.log("Three")
```

- In which order will the logs fire?

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One
Three
```

What is "asynchronous" code?

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```
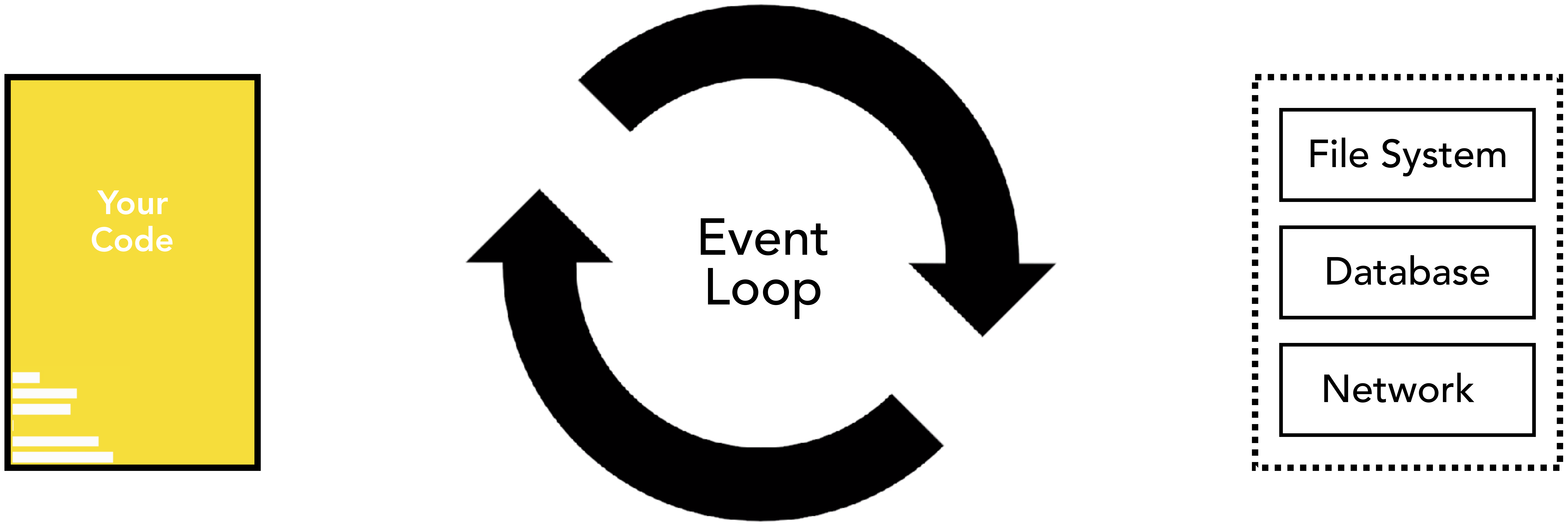

- In which order will the logs fire?

```
One
Three
Two
```

What is "asynchronous" code?



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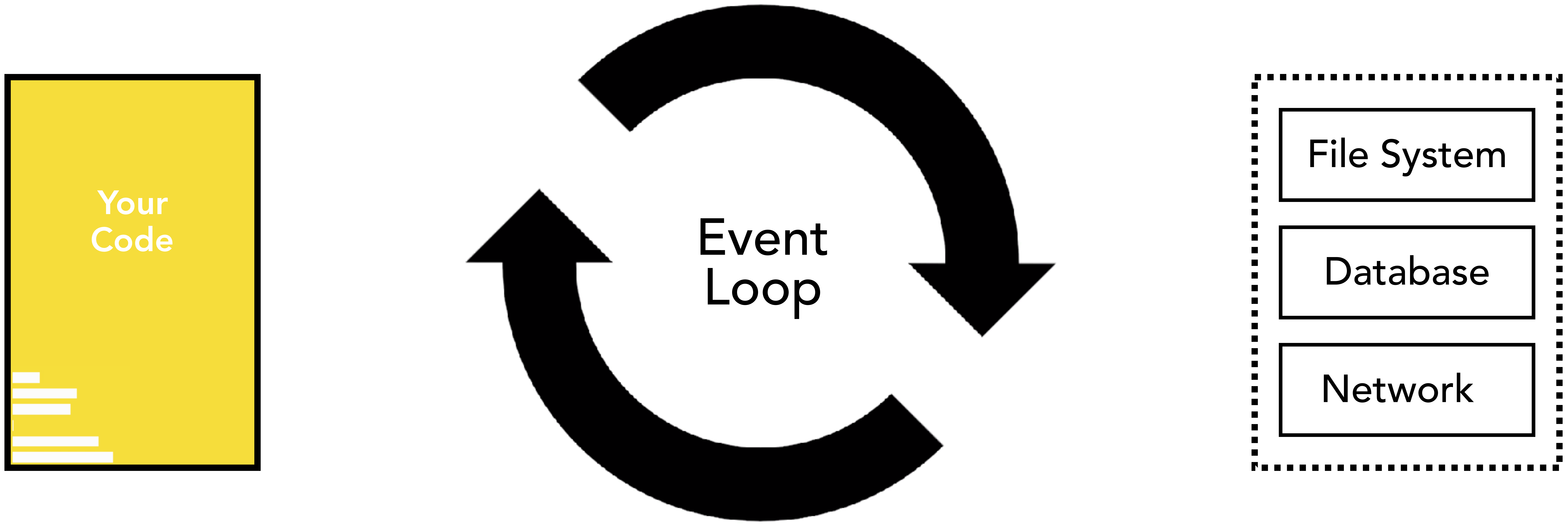

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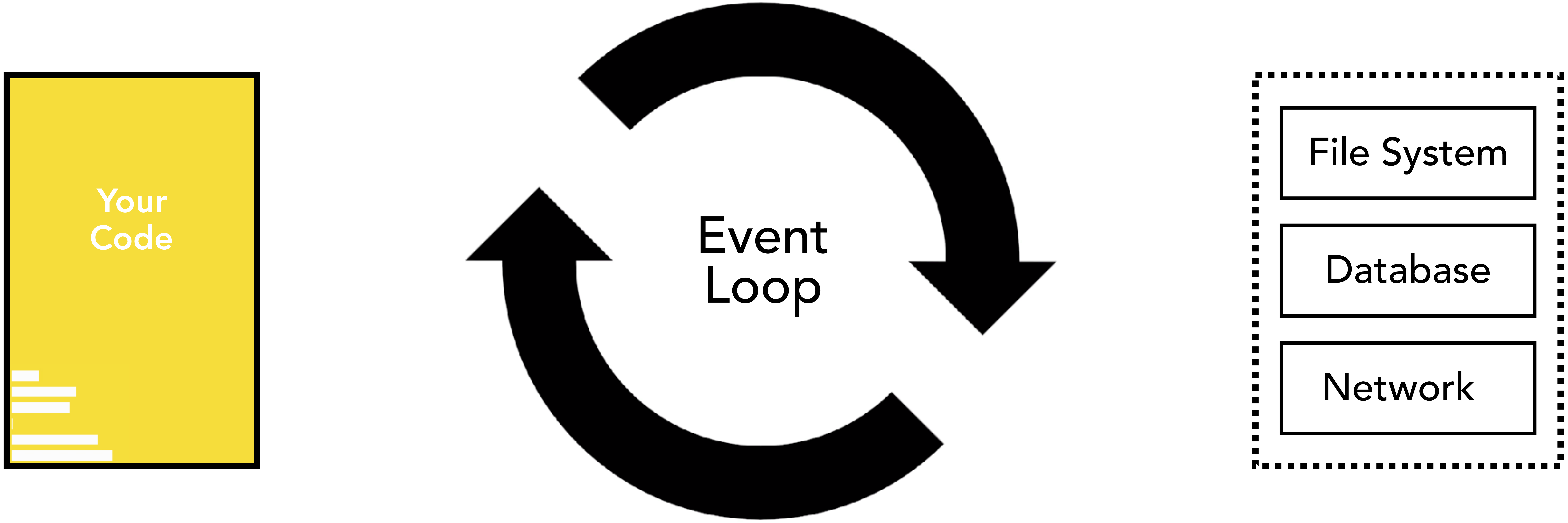

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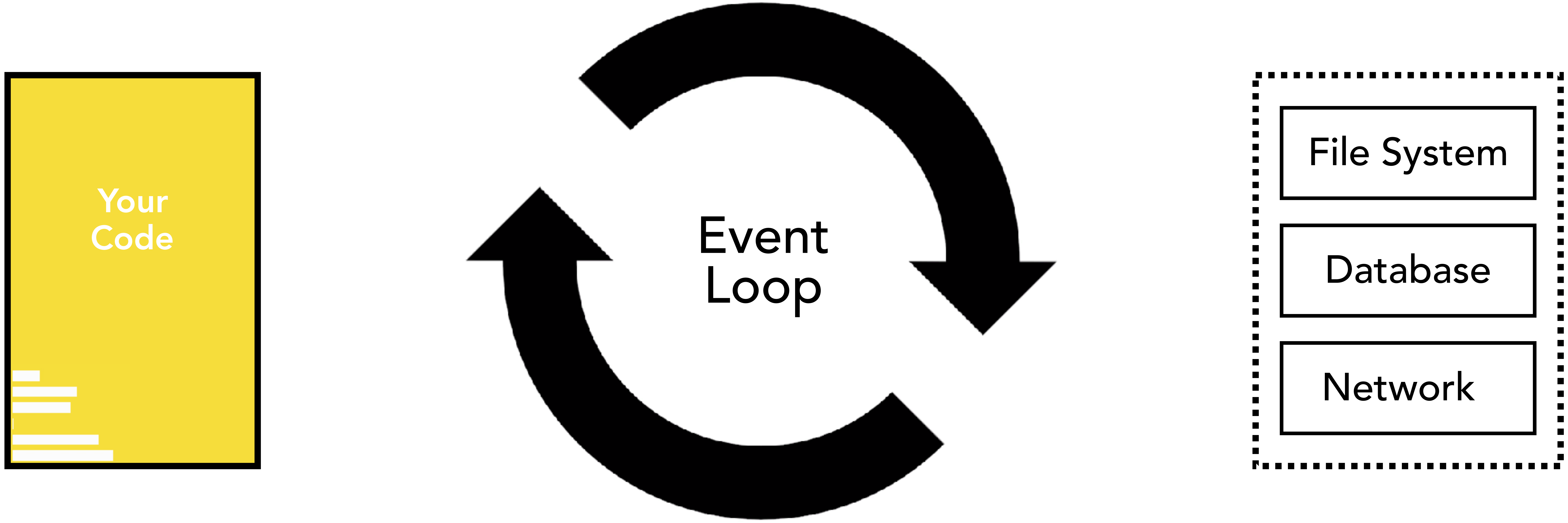

How to handle asynchronous code?

1. **Callbacks**

Async with callbacks

```
console.log("Getting Configuration")
fs.readFile('/config.json', 'utf8', (err, data) => {
  console.log("Got configuration:", data)
});
console.log("Moving on…");
```

Async with callbacks

```
console.log("Getting Configuration")
fs.readFile('/config.json', 'utf8', (err, data) => {
  console.log("Got configuration:", data)
});
console.log("Moving on…");
```

- BTW, In which order will the logs fire?

Problems with callbacks

```
const tryGetRich = () => {
  readFile('/luckyNumbers.txt', (err, fileContent) => {
    // Do something with lucky numbers
  })
}
```

Problems with callbacks

```
const tryGetRich = () => {
  readFile('/luckyNumbers.txt', (err, fileContent) => {
    nums = fileContent.split(",");
    nums.forEach(num => {
      bookmaker.getHorse(num, (err, horse) => {
        // Ok, this is getting a little confusing
      })
    })
  })
}
```

Problems with callbacks

```
const tryGetRich = () => {
  readFile('/luckyNumbers.txt', (err, fileContent) => {
    nums = fileContent.split(",");
    nums.forEach(num => {
      bookmaker.getHorse(num, (err, horse) => {
        bookmaker.bet(horse, (err, success) => {
          if(success) {
            // Help...
          }
        })
      })
      console.log('When will I run??')
    })
  })
}
```

Problems with callbacks

```
const tryGetRich = () => {
  readFile('/luckyNumbers.txt', (err, fileContent) => {
    nums = fileContent.split(",");
    nums.forEach(num => {
      bookmaker.getHorse(num, (err, horse) => {
        bookmaker.bet(horse, (err, success) => {
          if(success) {
            // Help..
          }
        })
      })
      console.log('When will I run??')
    })
  })
}
```

How to handle asyncronous code?

1. Callbacks
2. **Promises**

Callbacks vs Promises

CALLBACKS

```
const tryGetRich = () => {

 readFile('/luckyNumber.txt', (err, num) => {
   bookmaker.bet(num, (err, success) => {
     if(success) {
       console.log("I'm rich!")
     }
   })
 })

}
```

Callbacks vs Promises

CALLBACKS

```
const tryGetRich = () => {

 readFile('/luckyNumber.txt', (err, num) => {
   bookmaker.bet(num, (err, success) => {
     if(success) {
       console.log("I'm rich!")
     }
   })
 })

}
```

ASYNC/AWAIT

(PROMISSES)

```
const tryGetRich = async () => {

 let num = await readFileAsync(‘/luckyNumber.txt')
 let success = await bookmaker.bet(num)

 if(success) {
   console.log("I'm rich!")
 }

}
```

…but we are getting ahead of ourselves.

What is a Promise?

What is a Promise?

- A promise is a JavaScript object that represents the eventual result of an asynchronous operation.

What is a Promise?

- A promise is a JavaScript object that represents the eventual result of an asynchronous operation.
- Again, just an object with *value* and *status*.

What is a Promise?

```
readFileAsync(‘/luckyNumber.txt’)
```

What is a Promise?

```
readFileAsync('/luckyNumber.txt')
```

```
{
  [[PromiseValue]]: undefined,
  [[PromiseStatus]]: "pending"
}
```

What is a Promise?

```
readFileAsync('/luckyNumber.txt')
```

```
{
  [[PromiseValue]]: "42",
  [[PromiseStatus]]: "fullfilled"
}
```

Promise

```
const num = readFileAsync('/luckyNumber.txt')
```

async/await

```
const num = await readFileAsync('/luckyNumber.txt')
```

async/await

```
async function getNumber() {
  const num = await readFileAsync('/luckyNumber.txt')
}
getNumber()
```

async/await

```
const getNumber = async () => {
  const num = await readFileAsync('/luckyNumber.txt')
}
getNumber()
```

Demo

A word on error handling...

Try/Catch

```
function getLuckyGem(birthMonth) {
  const gems = ['Emerald', 'Amethyst', 'Jade', 'Opal', 'Sapphire', 'Perl',
                'Ruby', 'Agate', 'Diamond', 'Moonstone', 'Jasper', 'Onyx'];
  if (gems[birthMonth]) {
    return gems[birthMonth];
  } else {
    throw new Error('Invalid birth Month');
  }
}

try { // statements to try
  myGem = getLuckyGem(myMonth); // function could throw exception
}
catch (error) {
  myGem = 'unknown';
  console.error(error.message);
}
```

Try/Catch

```
const getNumber = async () => {

  try {
    let num = await readFileAsync('/luckyNumber.txt')
    let success = await bookmaker.bet(num)
  } catch (error) {
    console.error(error.message)
  }

}

getNumber()
```