JavaScript Quiz

- Event Loop - 4 questions
- Scope & Closures - 6 questions
- this Keyword - 5 questions
- Classes and Prototypes - 5 questions
- Generators & Iterators - 4 questions
- Garbage Collection - 6 questions
- Modules - 3 questions
- Miscellaneous - 17 questions

Event Loop

```
1  console.log(1);
2
3  function myFunction() {
4    console.log(2);
5  }
6
7  myFunction();
```

console

Call Stack

Web API

Event Loop

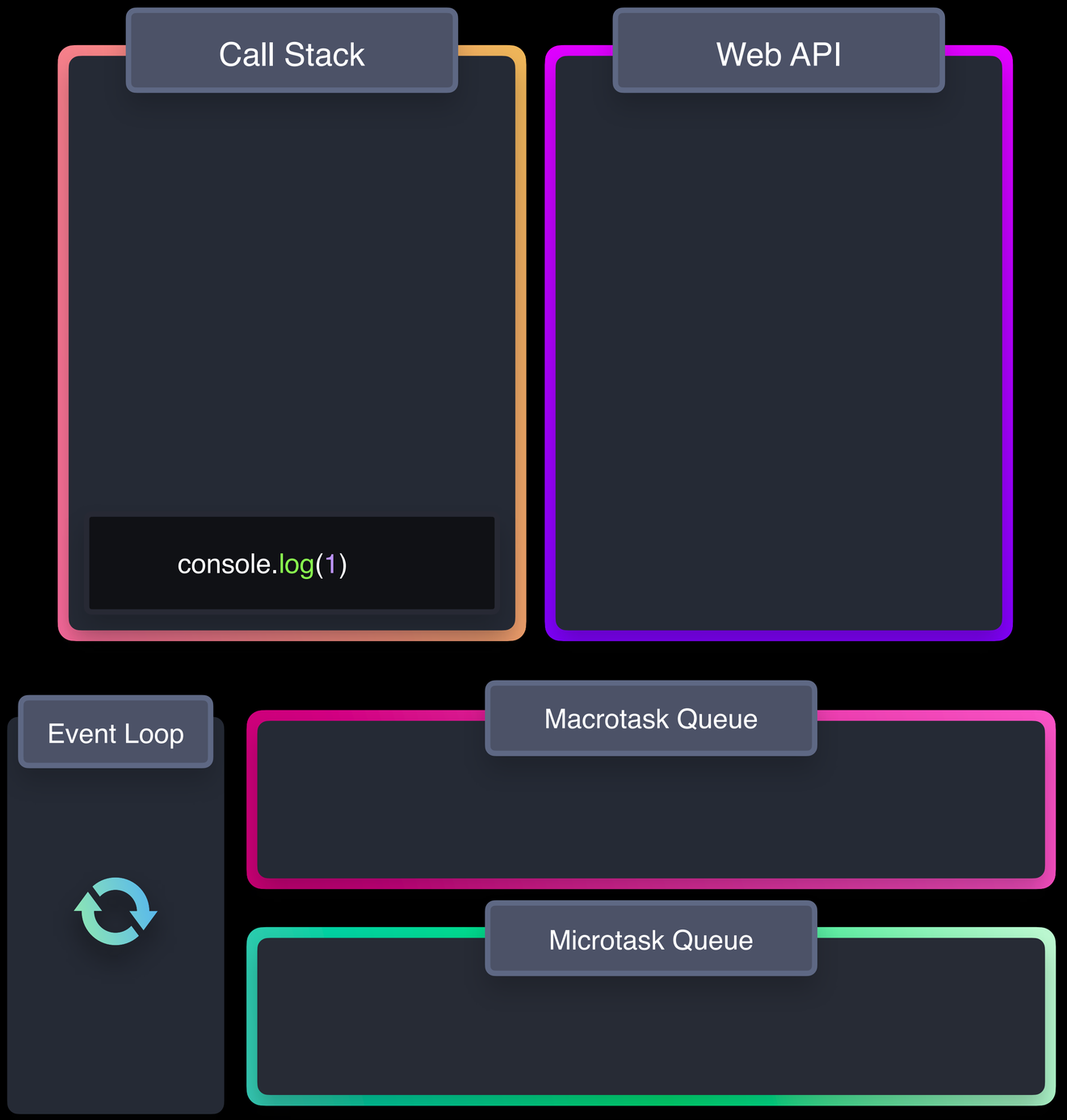
Macrotask Queue

Microtask Queue

```
1  console.log(1);
2
3  function myFunction() {
4    console.log(2);
5  }
6
7  myFunction();
```

console

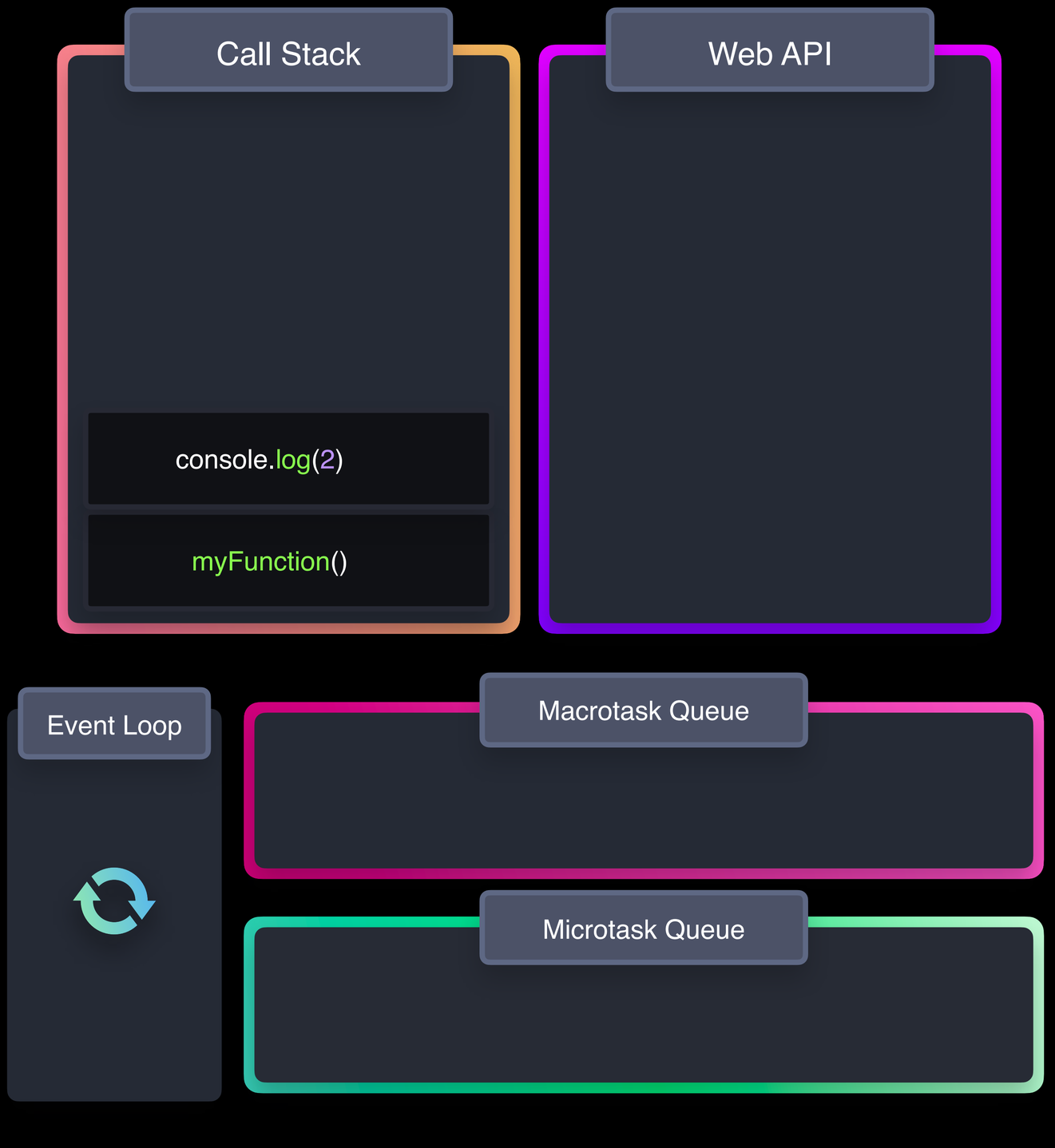
```
1
```



```
1  console.log(1);
2
3  function myFunction() {
4    console.log(2);
5  }
6
7  myFunction();
```

console

```
1
2
```



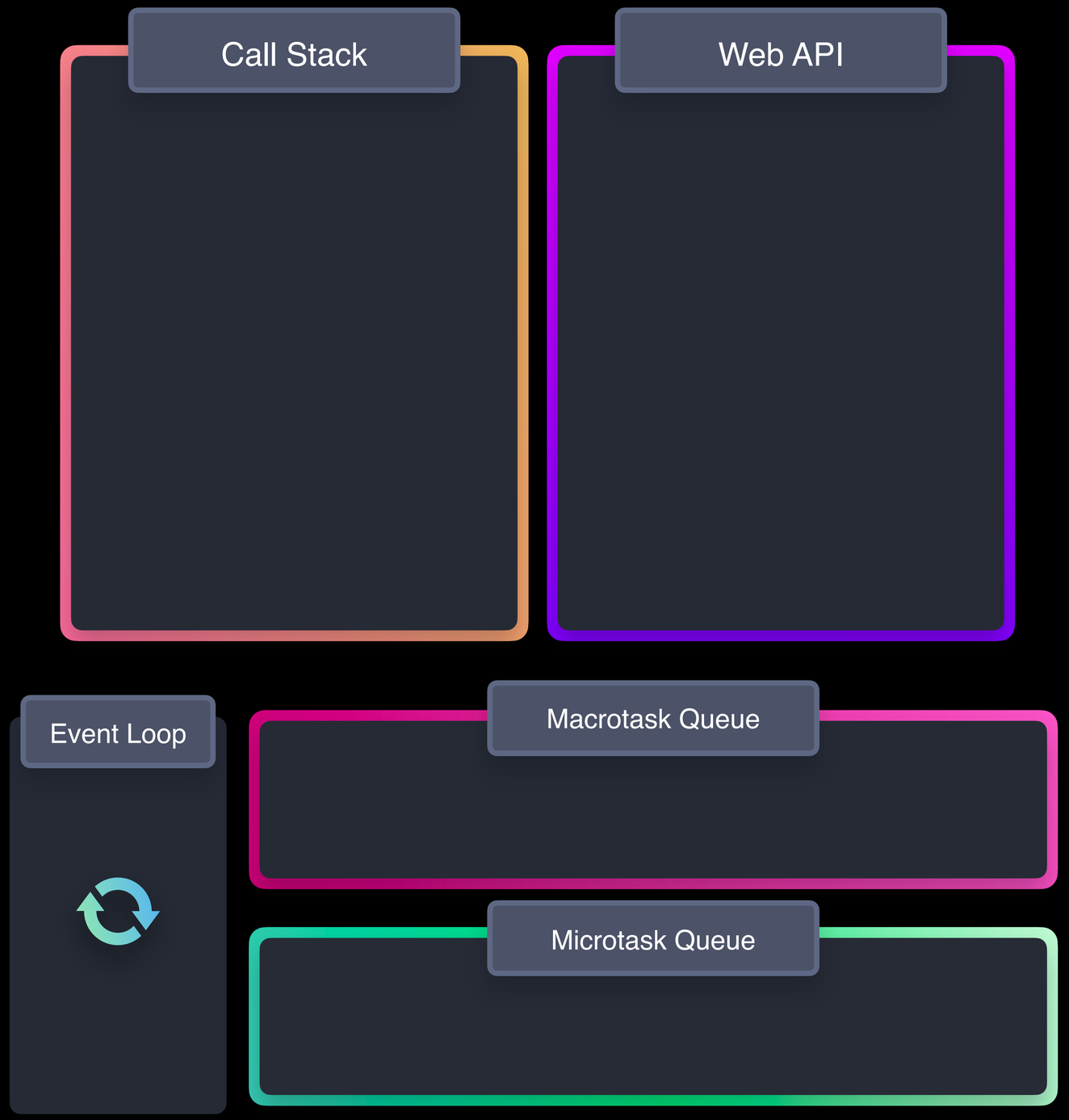
```
console.log(1);

function myFunction() {
  console.log(2);
}

myFunction();
```

console

```
1
2
```



A WebAPI to **schedule callback to macrotask queue**

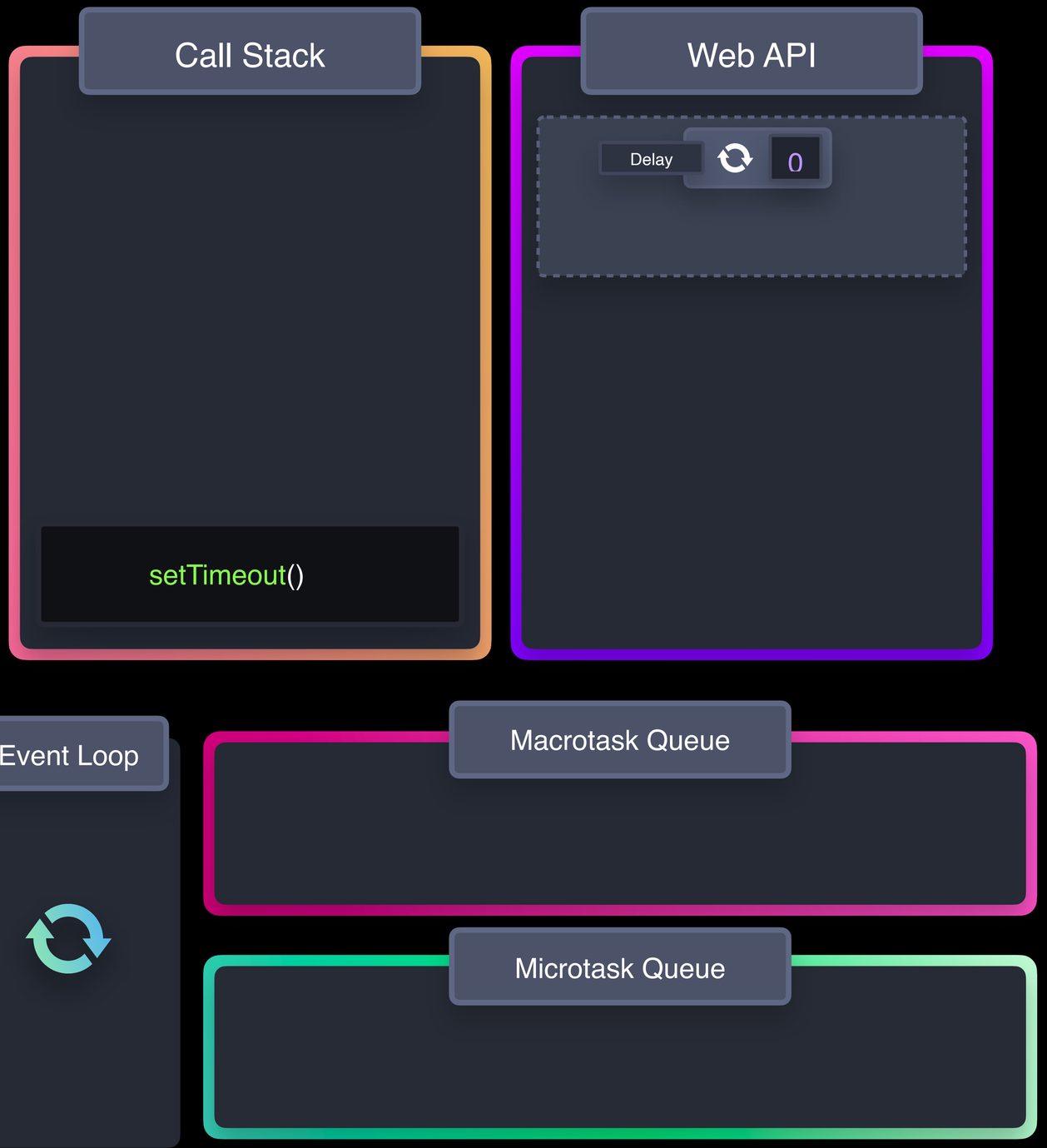
Callback to be pushed to the macrotask queue

Delay

```
setTimeout(() => console.log(1), 100);
```

```
1  setTimeout(() => console.log(1), 0);
```

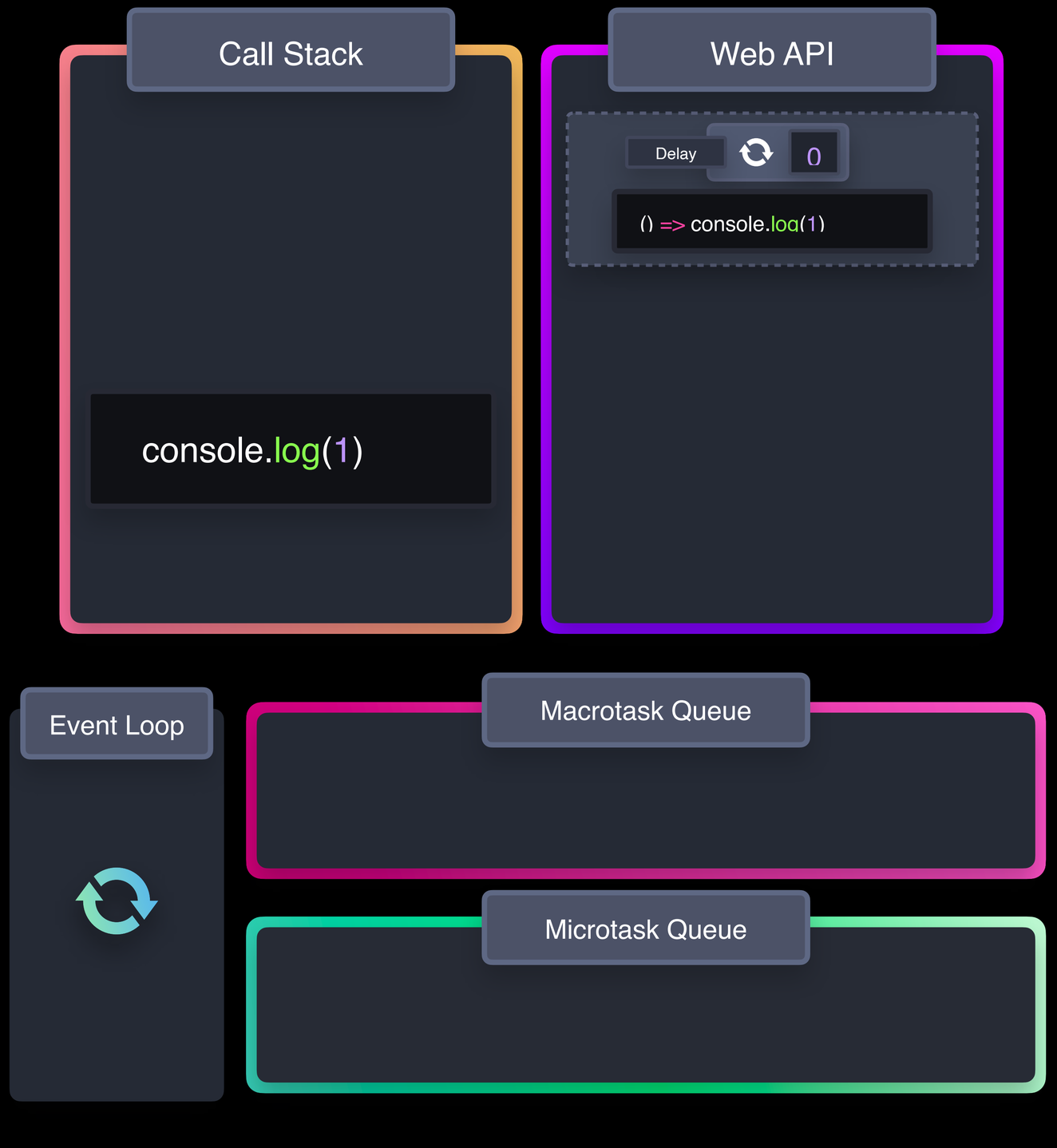
console



```
1  setTimeout(() => console.log(1), 0);
```

console

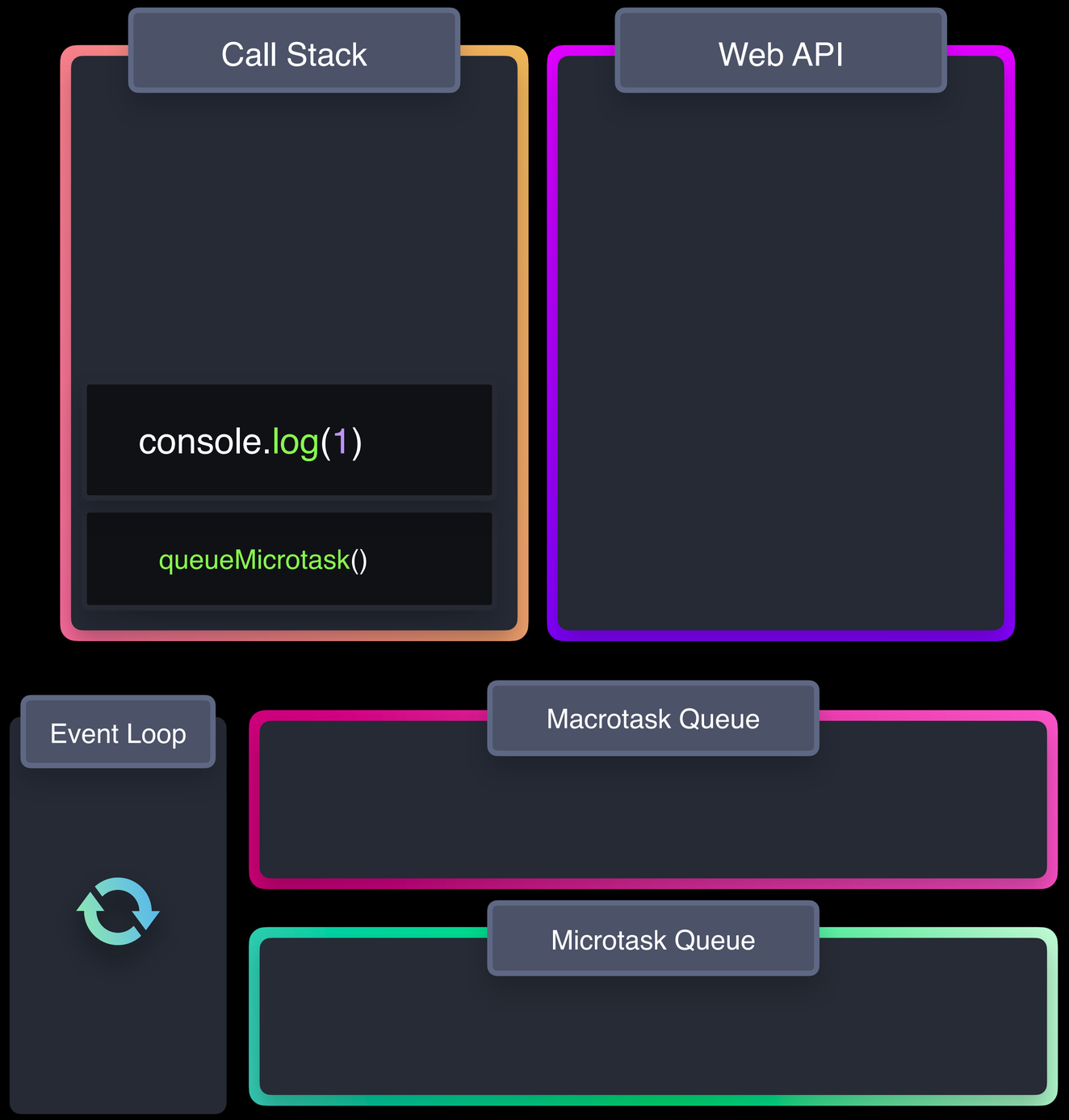
1

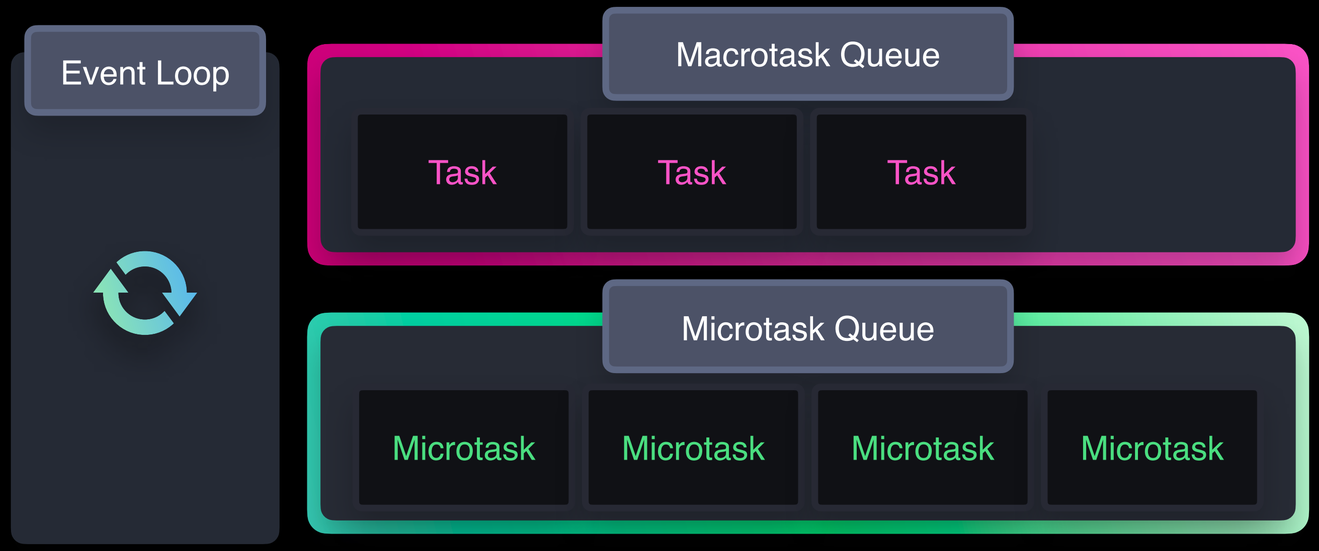


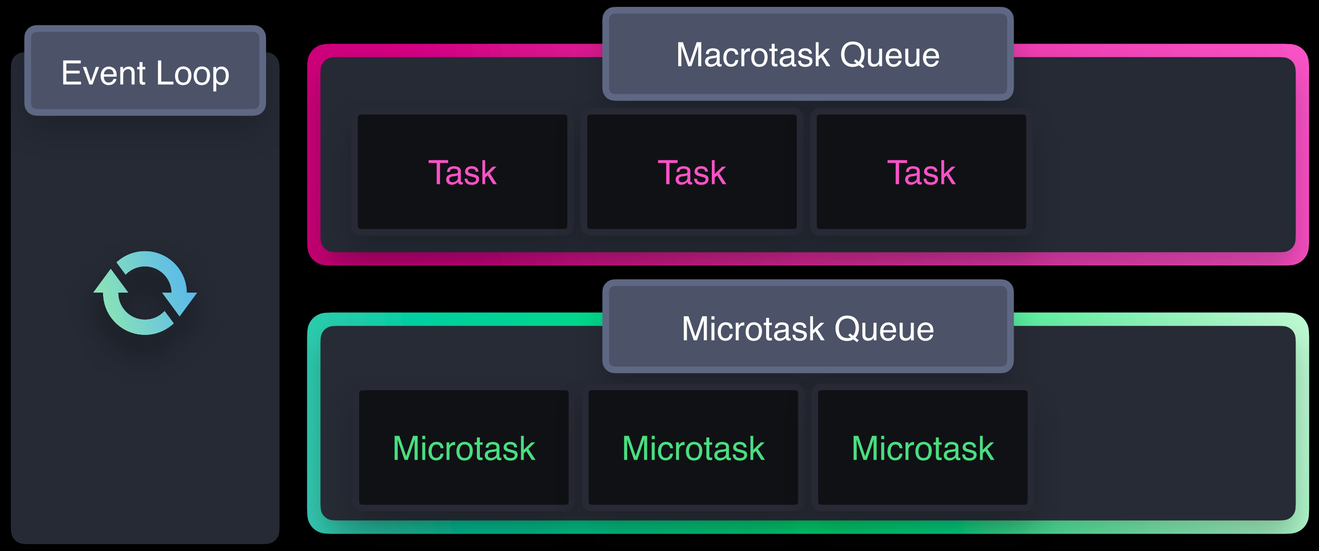
```
1  queueMicrotask(() => console.log(1));
```

console

1




Event Loop
Macrotask Queue
Task
Task
Task
Microtask Queue
Microtask
Microtask
Microtask
Microtask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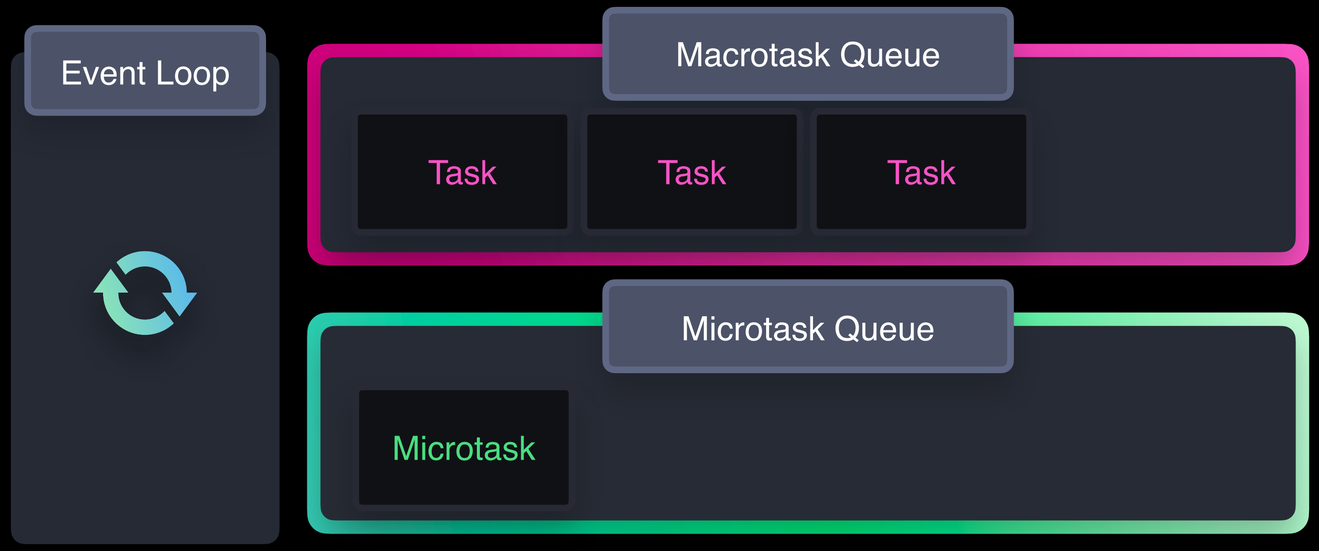
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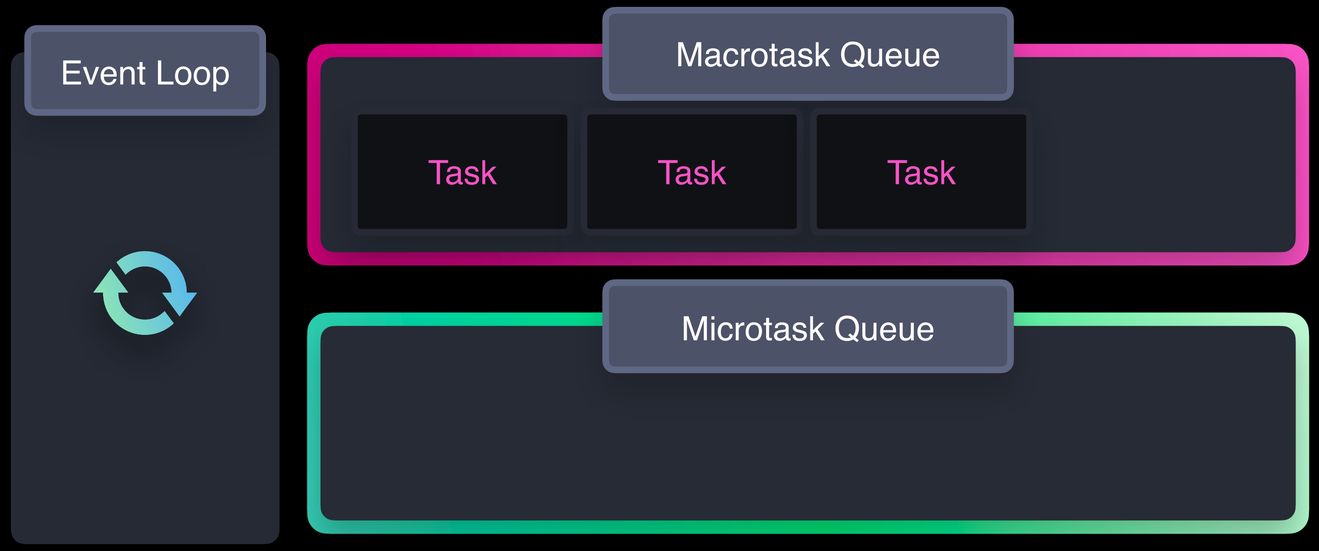
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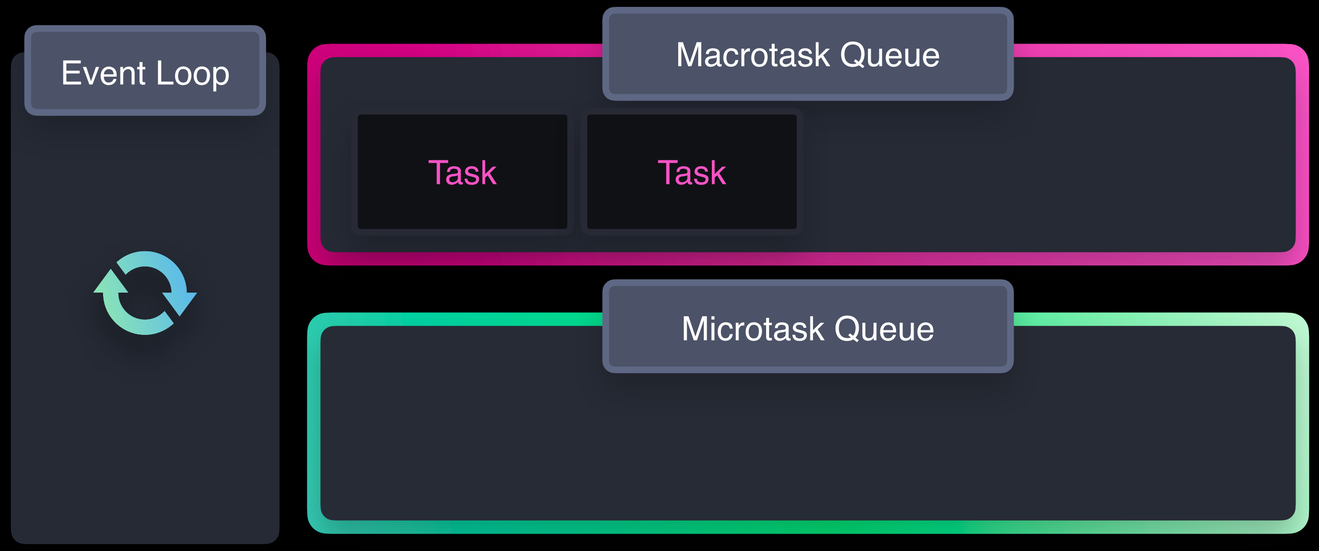
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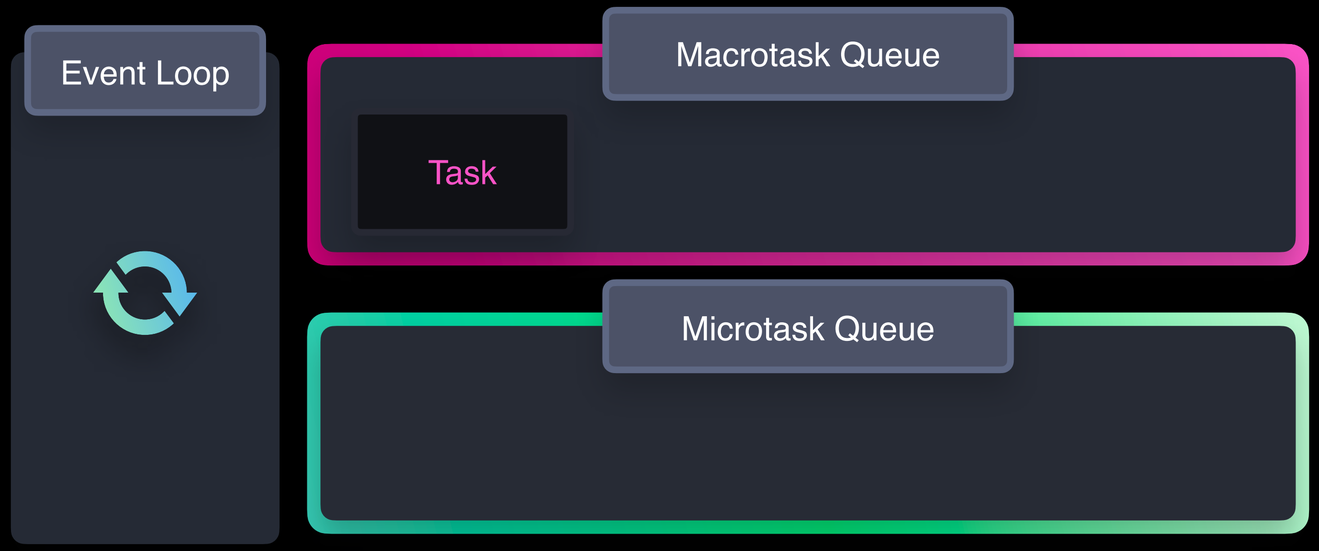
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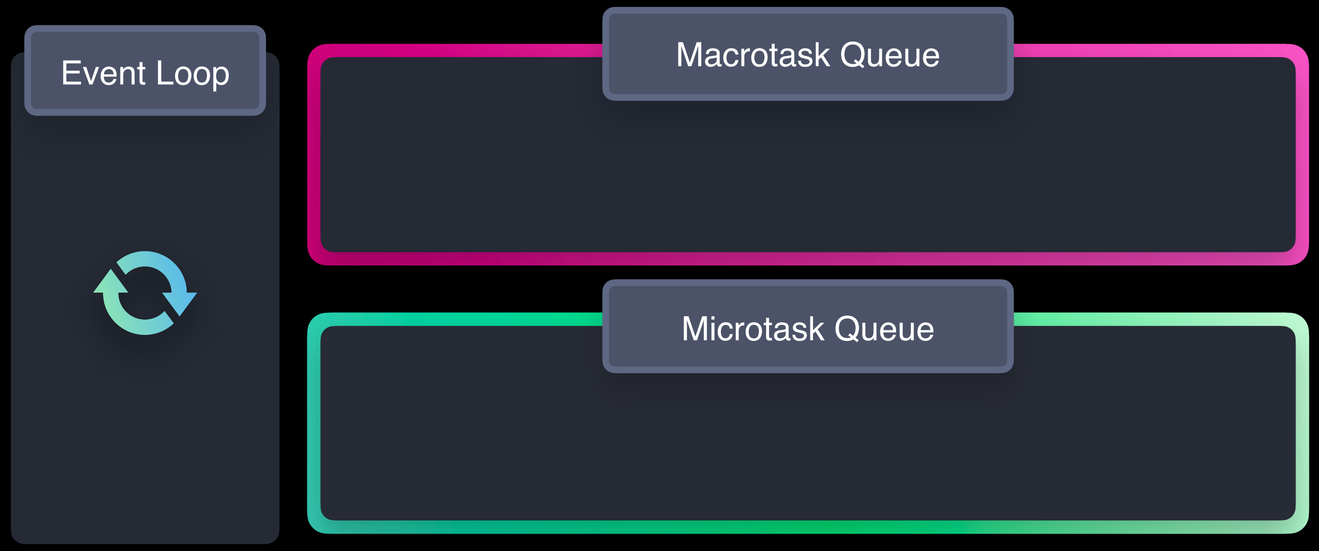
Event Loop
Macrotask Queue
Microtask Queue

```
async function asyncFunc() {
    console.log(1);
    await console.log(2);
    console.log(3);
}
```

```
.then(    () => console.log(1)    );
.catch(    () => console.log(2)    );
.finally(    () => console.log(3)    );
```

```
queueMicrotask(    () => console.log(1)    );
```

```
new MutationObserver(    () => console.log(1)    );
```

```
process.nextTick(    () => console.log(1)    );
```

Question 1

Put the logs in the correct order

```
Promise.resolve()
  .then(() => console.log(1));

queueMicrotask(() => console.log(2));

setTimeout(() => console.log(3), 0);

console.log(4);

new Promise(() => console.log(5));

(async () => console.log(6))()
```

1

2

3

4

5

6

Question 1

Put the logs in the correct order

```
1   Promise.resolve()
2     .then(() => console.log(1));
3
4   queueMicrotask(() => console.log(2));
5
6   setTimeout(() => console.log(3), 0);
7
8   console.log(4);
9
10  new Promise(() => console.log(5));
11
12  (async () => console.log(6))()
```

4

5

6

1

2

3

```
1  Promise.resolve()
2    .then(() => console.log(1));
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console

Call Stack

Web API

Event Loop

Macrotask Queue

Microtask Queue

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Call Stack

Web API

Event Loop

Macrotask Queue

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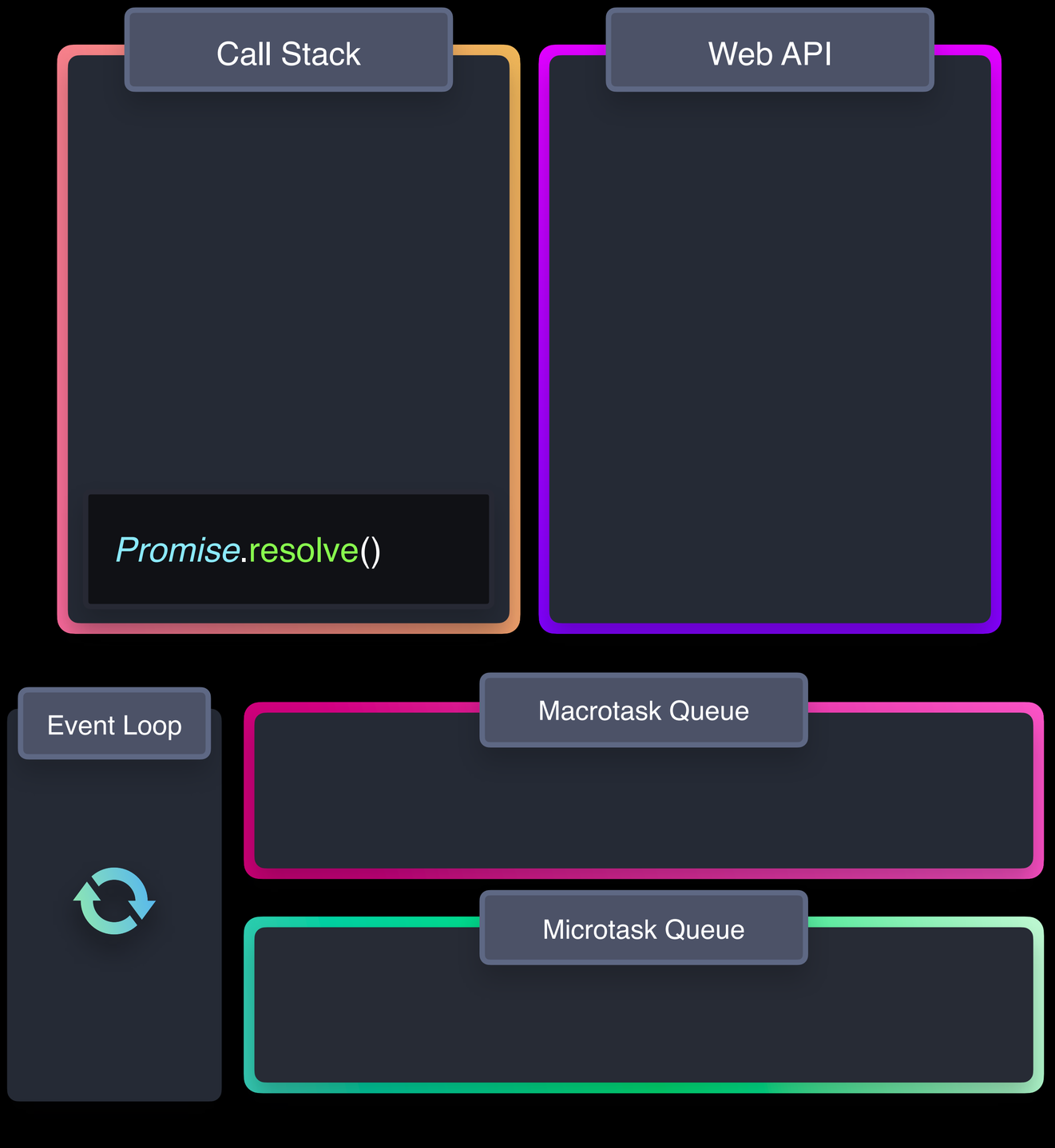

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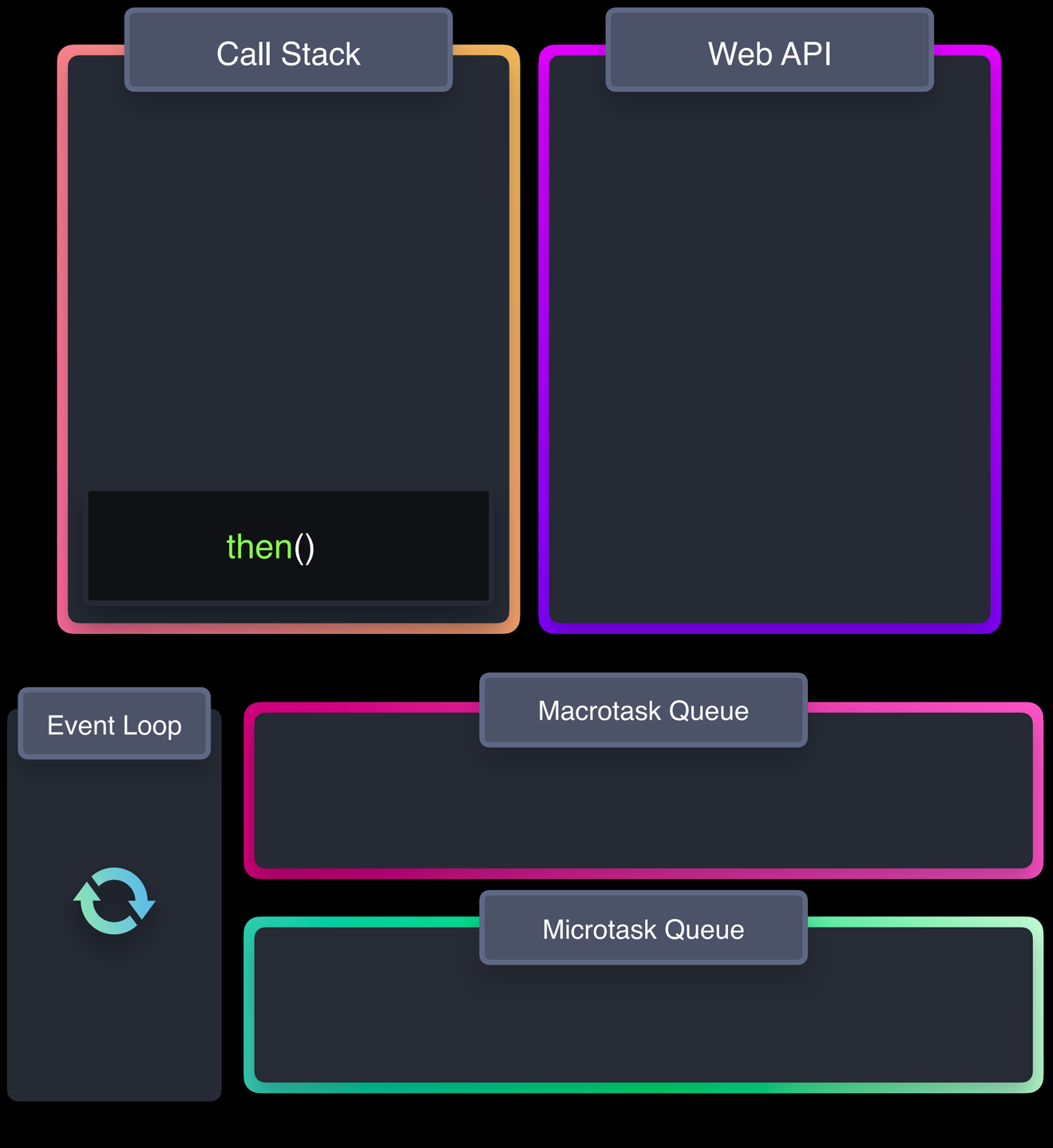

```
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2    .then(() => console.log(1));
3
4  queueMicrotask(() => console.log(2));
5
6  setTimeout(() => console.log(3), 0);
7
8  console.log(4);
9
10 new Promise(() => console.log(5));
11
12 (async () => console.log(6))()
```

console

Call Stack

queueMicrotask()

Web API

Event Loop

Macrotask Queue

Microtask Queue

() => console.log(1)

```
1  Promise.resolve()
2    .then(() => console.log(1));
3
4  queueMicrotask(() => console.log(2));
5
6  setTimeout(() => console.log(3), 0);
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8  console.log(4);
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10 new Promise(() => console.log(5));
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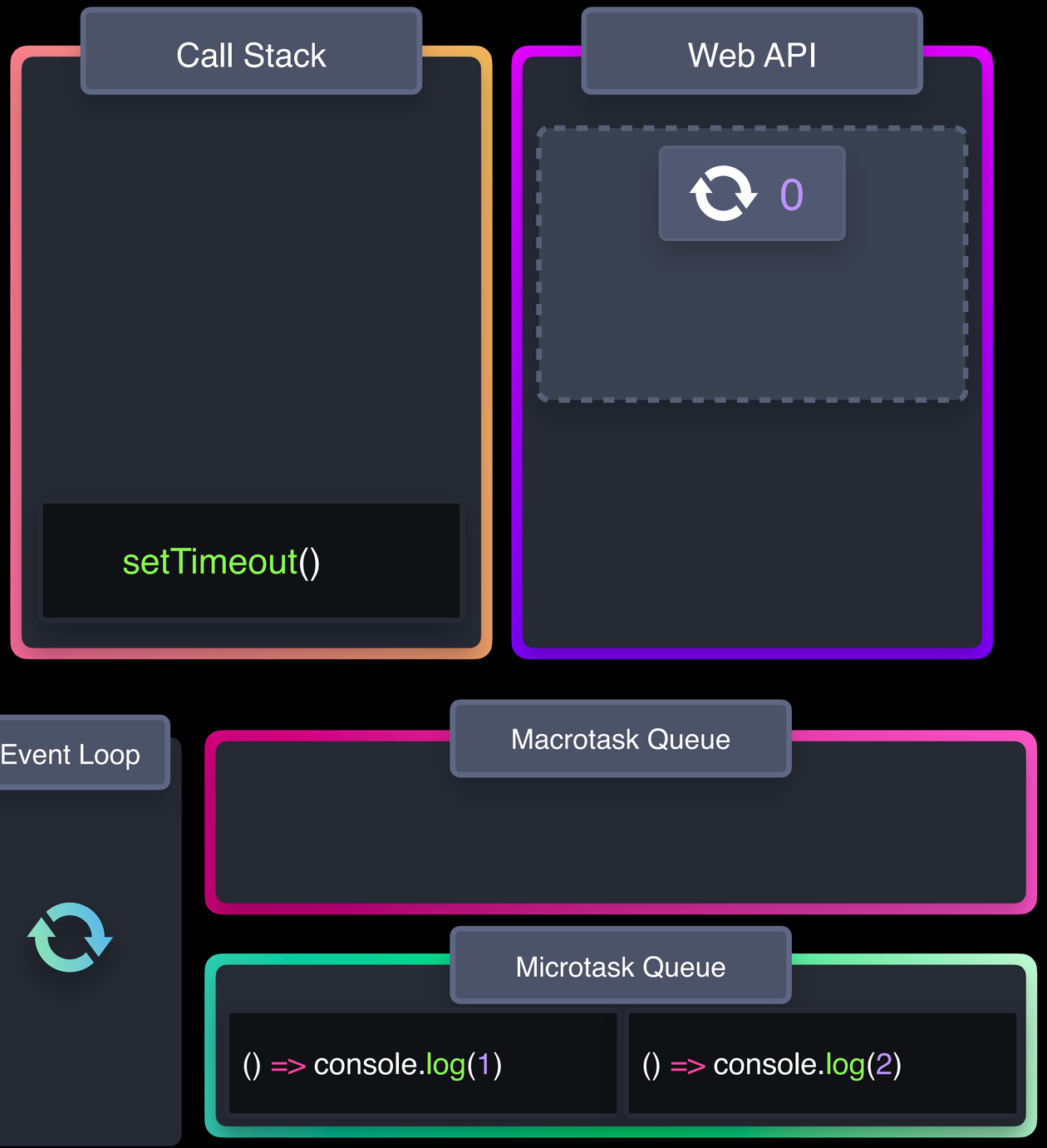
```

console



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4  queueMicrotask(() => console.log(2));
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12 (async () => console.log(6))()
```

console

4

```
1  Promise.resolve()
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3
4  queueMicrotask(() => console.log(2));
5
6  setTimeout(() => console.log(3), 0);
7
8  console.log(4);
9
10 new Promise(() => console.log(5));
11
12 (async () => console.log(6))()
```

console

4

5

Call Stack

console.log(5)

new *Promise*(
() => console.log(5)
)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(1)

() => console.log(2)

```
1  Promise.resolve()
2    .then(() => console.log(1));
3
4  queueMicrotask(() => console.log(2));
5
6  setTimeout(() => console.log(3), 0);
7
8  console.log(4);
9
10 new Promise(() => console.log(5));
11
12 (async () => console.log(6))()
```

console

4
5
6

Call Stack

console.log(6)

async () =>
console.log(6)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(1)

() => console.log(2)

```
Promise.resolve()
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queueMicrotask(() => console.log(2));

setTimeout(() => console.log(3), 0);

console.log(4);

new Promise(() => console.log(5));

(async () => console.log(6))()
```

console

4
5
6

Call Stack

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(1)

() => console.log(2)

```
1  Promise.resolve()
2    .then(() => console.log(1));
3
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```

console

4
5
6
1

Call Stack

console.log(1)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(1)

() => console.log(2)

```
1  Promise.resolve()
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10 new Promise(() => console.log(5));
11
12 (async () => console.log(6))()
```

console

4
5
6
1
2

Call Stack

console.log(2)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(2)

```
Promise.resolve()
  .then(() => console.log(1));

queueMicrotask(() => console.log(2));

setTimeout(() => console.log(3), 0);

console.log(4);

new Promise(() => console.log(5));

(async () => console.log(6))()
```

console

4
5
6
1
2
3

Call Stack

console.log(3)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

```
1  Promise.resolve()
2    .then(() => console.log(1));
3
4  queueMicrotask(() => console.log(2));
5
6  setTimeout(() => console.log(3), 0);
7
8  console.log(4);
9
10 new Promise(() => console.log(5));
11
12 (async () => console.log(6))()
```

console

4
5
6
1
2
3

Call Stack

Web API

Event Loop

Macrotask Queue

Microtask Queue

Question 2

Which of the following are not considered microtasks in JavaScript's event loop?

A	Script loading	E	UI rendering
B	setTimeout callback	F	then callback
C	mousemove event	G	new Promise executor function
D	requestAnimationFrame callback	H	fetch calls

Question 2

Which of the following are not considered microtasks in JavaScript's event loop?

- **A** Script loading
- **B** setTimeout callback
- **C** mousemove event
- **D** requestAnimationFrame callback
- **E** UI rendering
- **F** then callback
- **G** new Promise executor function
- **H** fetch calls

```
async function asyncFunc() {
    console.log(1);
    await console.log(2);
    console.log(3);
}
```

```
.then(    () => console.log(1)    );
.catch(    () => console.log(2)    );
.finally(    () => console.log(3)    );
```

```
queueMicrotask(    () => console.log(1)    );
```

```
new MutationObserver(    () => console.log(1)    );
```

```
process.nextTick(    () => console.log(1)    );
```

Question 3

Put the logs in the correct order

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
5       setTimeout(() => console.log(3), 0);
6       res();
7     });
8   };
9
10  new Promise((res) => {
11    console.log(4);
12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

1	5
2	6
3	7
4	8

Question 3

Put the logs in the correct order

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
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16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

4

5

1

2

8

7

6

3

```
1   async function asyncFunction() {
2     console.log(1);
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```

console

Call Stack

Web API

Event Loop

Macrotask Queue

Microtask Queue

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1   async function asyncFunction() {
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15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

Call Stack

```
new Promise(
  (res) => { … }
```

Web API

Event Loop

Macrotask Queue

Microtask Queue

```
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15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4

Call Stack

console.log(4);

new *Promise(*
(res) => { … }

Web API

Event Loop

Macrotask Queue

Microtask Queue

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
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```

console

4

Call Stack

(async () => { … })

new *Promise(*
(res) => { … }

Web API

Event Loop

Macrotask Queue

Microtask Queue

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1   async function asyncFunction() {
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17    res();
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```

console

4
5

Call Stack

console.log(5);

(async () => { … })

new *Promise(*
(res) => { … }

Web API

Event Loop

Macrotask Queue

Microtask Queue

```
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console

4
5

Call Stack

asyncFunction()

(async () => { … })

new *Promise(*
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Web API

Event Loop

Macrotask Queue

Microtask Queue

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console

```
4
5
1
```

Call Stack

console.log(1);

asyncFunction()

(async () => { … })

new *Promise(*
(res) => { … }

Web API

Event Loop

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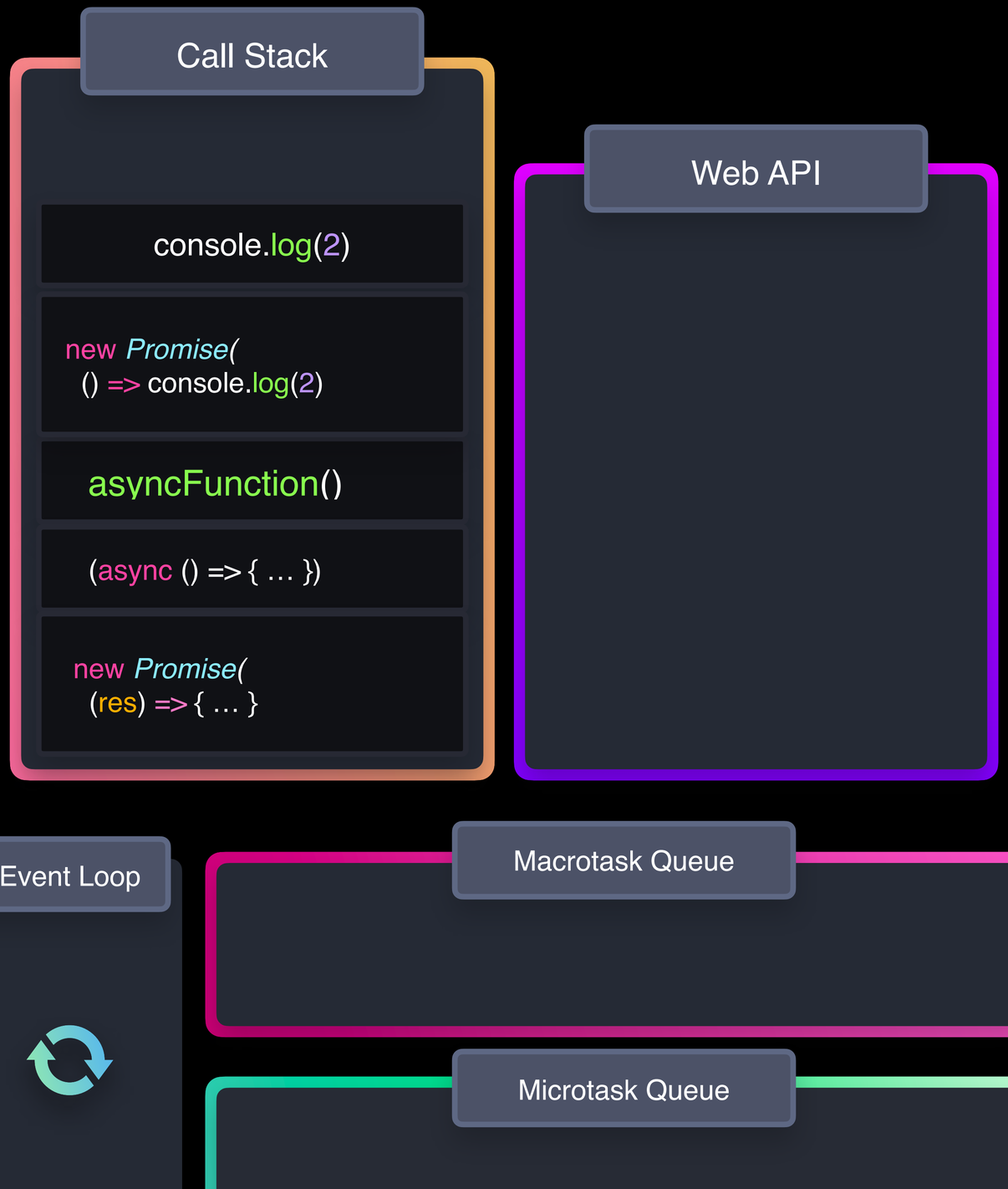
console

```
4
5
1
2
```



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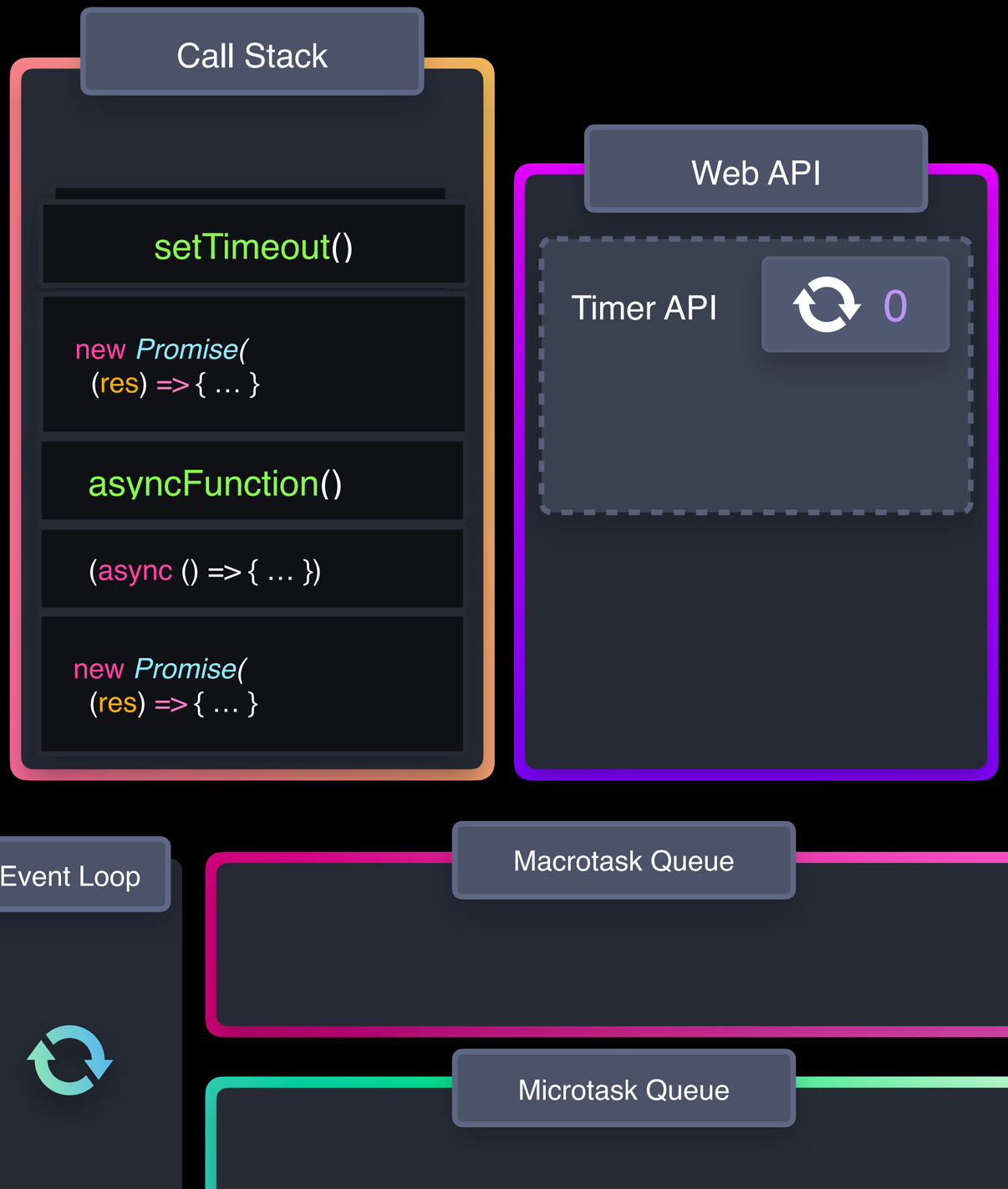
11    console.log(4);
12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

```
4
5
1
2
```



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1  async function asyncFunction() {
2    console.log(1);
3    new Promise(() => console.log(2));
4    await new Promise((res) => {
5      setTimeout(() => console.log(3), 0);
6      res();
7    });
8  };
9
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console

```
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5
1
2
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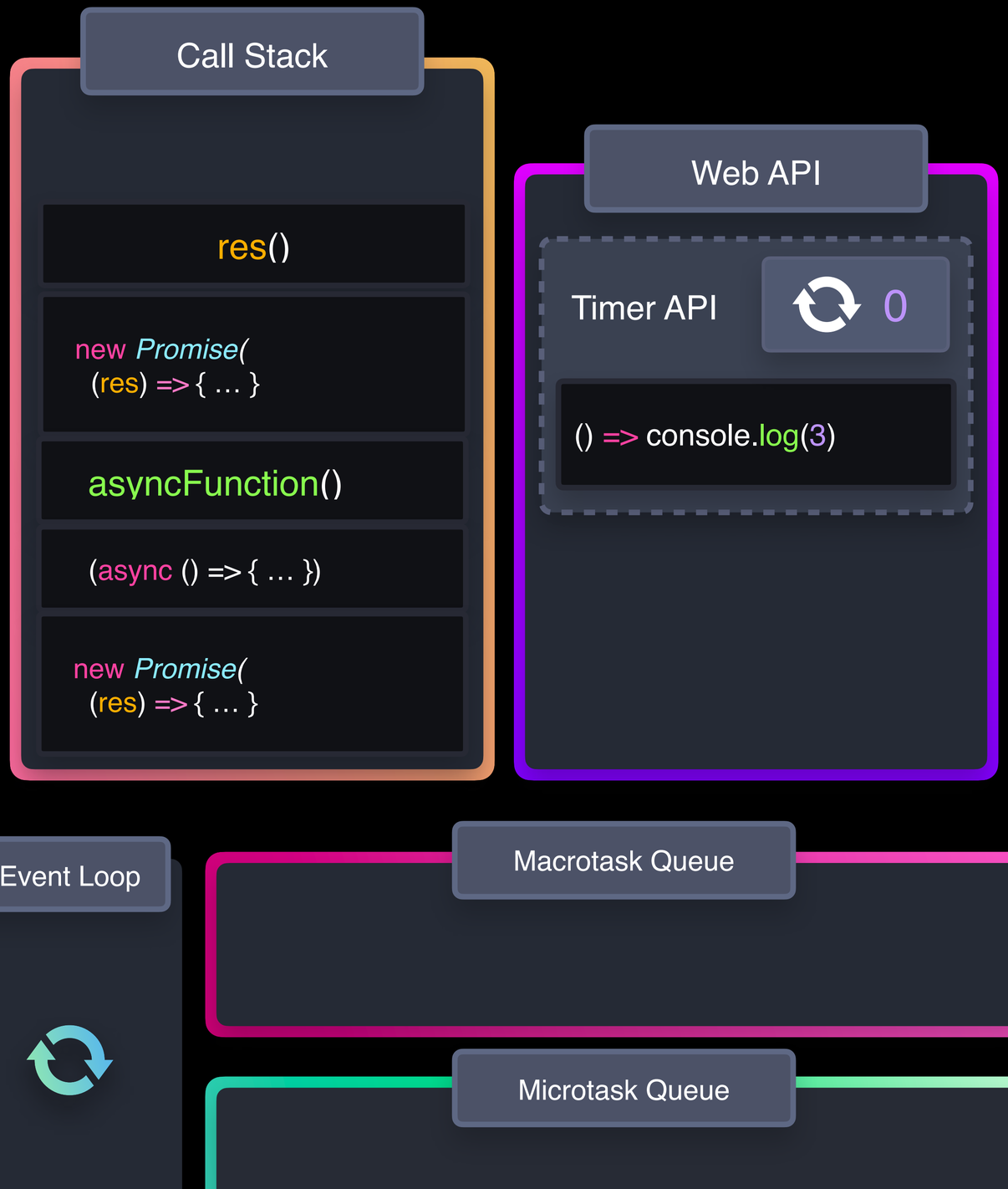

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```

console

```
4
5
1
2
```

Call Stack

asyncFunction()

(async () => { … })

new *Promise(*
(res) => { … }

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
5       setTimeout(() => console.log(3), 0);
6       res();
7     });
8   };
9
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17    res();
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console

4
5
1
2

Call Stack

(async () => { … })

new *Promise(*
(res) => { … }

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

asyncFunction()

```
1   async function asyncFunction() {
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4     await new Promise((res) => {
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16      })();
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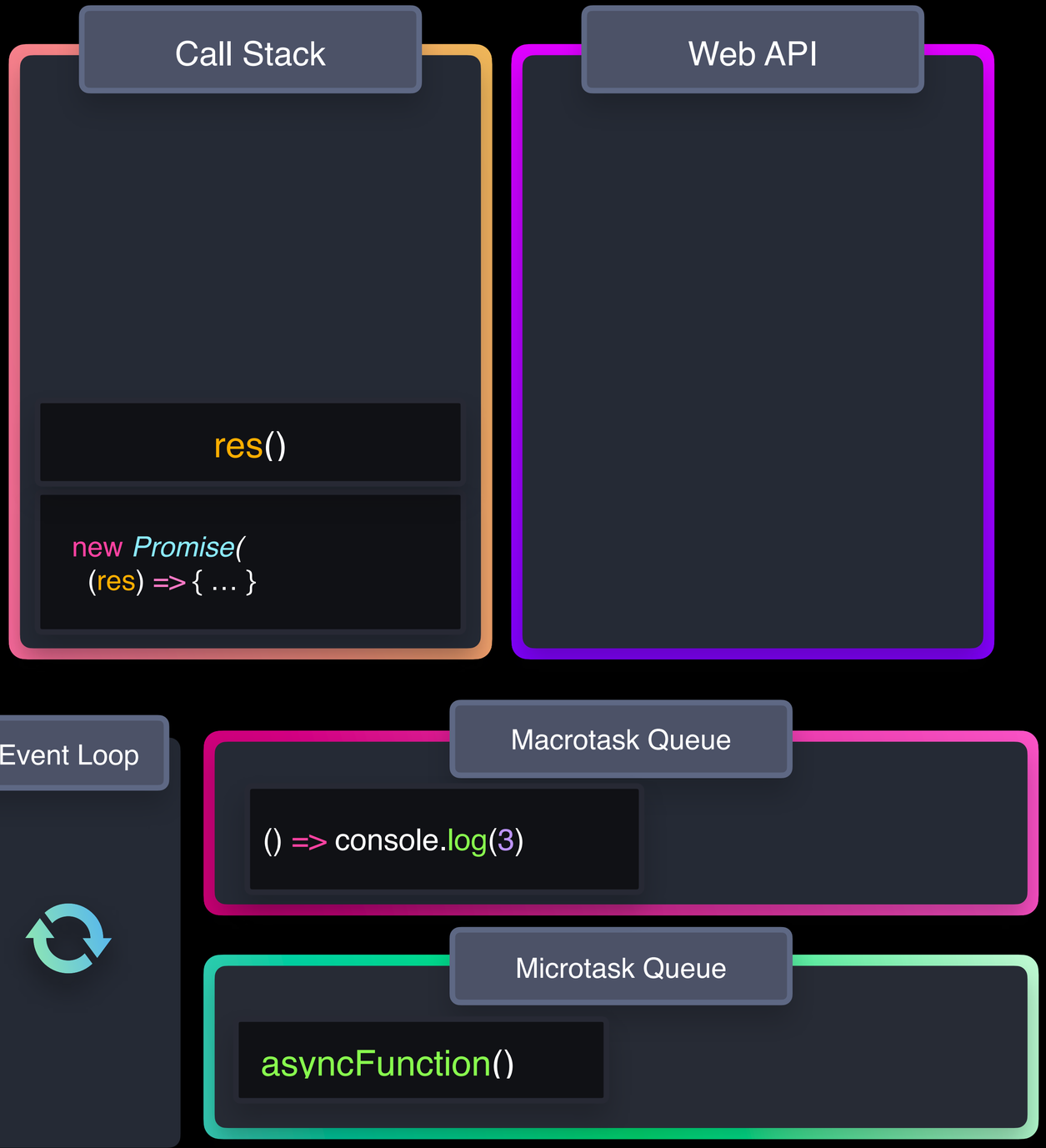
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

```
4
5
1
2
```



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6       res();
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11    console.log(4);
12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
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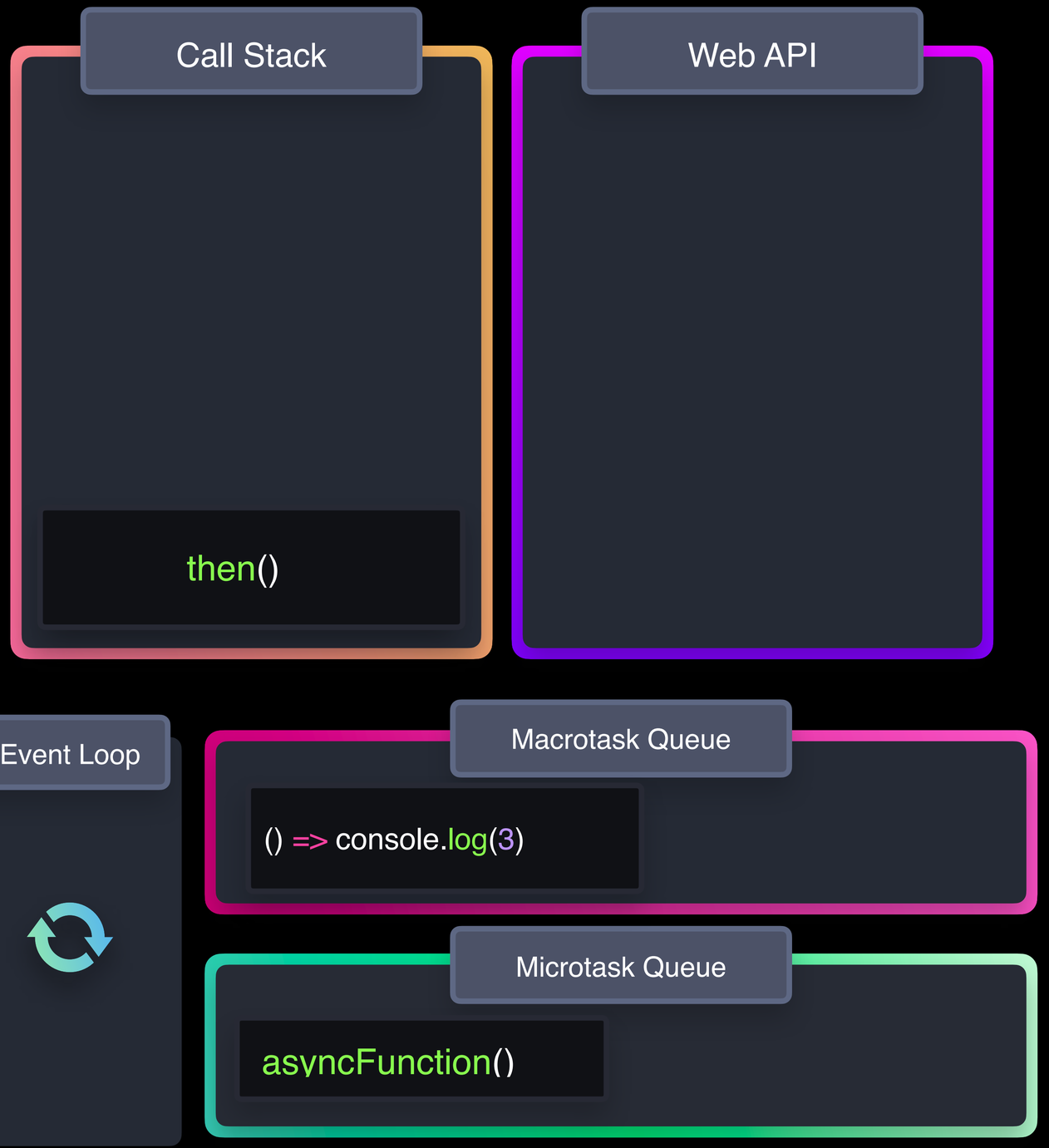
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4
5
1
2



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12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4
5
1
2
8

Call Stack

console.log(8)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

asyncFunction()

() => console.log(7)

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
5       setTimeout(() => console.log(3), 0);
6       res();
7     });
8   };
9
10  new Promise((res) => {
11    console.log(4);
12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));

20  console.log(8);
```

console

4
5
1
2
8

Call Stack

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

asyncFunction()

(async () => { … })

```
1   async function asyncFunction() {
2     console.log(1);
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4     await new Promise((res) => {
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9
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12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4
5
1
2
8
7

Call Stack

console.log(7)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

() => console.log(7)

(async () => { … })

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
5       setTimeout(() => console.log(3), 0);
6       res();
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9
10  new Promise((res) => {
11    console.log(4);
12      (async () => {
13        console.log(5);
14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4
5
1
2
8
7
6

Call Stack

console.log(6)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

(async () => { … })

```
1   async function asyncFunction() {
2     console.log(1);
3     new Promise(() => console.log(2));
4     await new Promise((res) => {
5       setTimeout(() => console.log(3), 0);
6       res();
7     });
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14        await asyncFunction();
15        console.log(6);
16      })();
17    res();
18  }).then(() => console.log(7));
19
20  console.log(8);
```

console

4
5
1
2
8
7
6
3

Call Stack

console.log(3)

Web API

Event Loop

Macrotask Queue

() => console.log(3)

Microtask Queue

Question 4

Choose the correct logs

```
1   (async () => {
2     const asyncFunc = async () => "asyncFunc";
3
4     const promise = new Promise(res => {
5       console.log("promise")
6     }).then(() => console.log("then"));
7
8     console.log("async body");
9
10    queueMicrotask(() => {
11      console.log("queueMicrotask")
12    });
13
14    const results = await Promise.all([
15          asyncFunc(), promise
16    ]);
17
18    return results;
19  })();
20
21  console.log("script")
```

A	promise	async body	script	queueMicrotask	
B	promise	async body	script	then	queueMicrotask
C	script	promise	async body	then	queueMicrotask
D	script	async body	promise	then	queueMicrotask
E	promise	script	async body	queueMicrotask	then

Question 4

Choose the correct logs

```
1   (async () => {
2     const asyncFunc = async () => "asyncFunc";
3
4     const promise = new Promise(res => {
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14    const results = await Promise.all([
15          asyncFunc(), promise
16    ]);
17
18    return results;
19  })();
20
21  console.log("script")
```

A promise | async body | script | queueMicrotask

B promise | async body | script | then | queueMicrotask

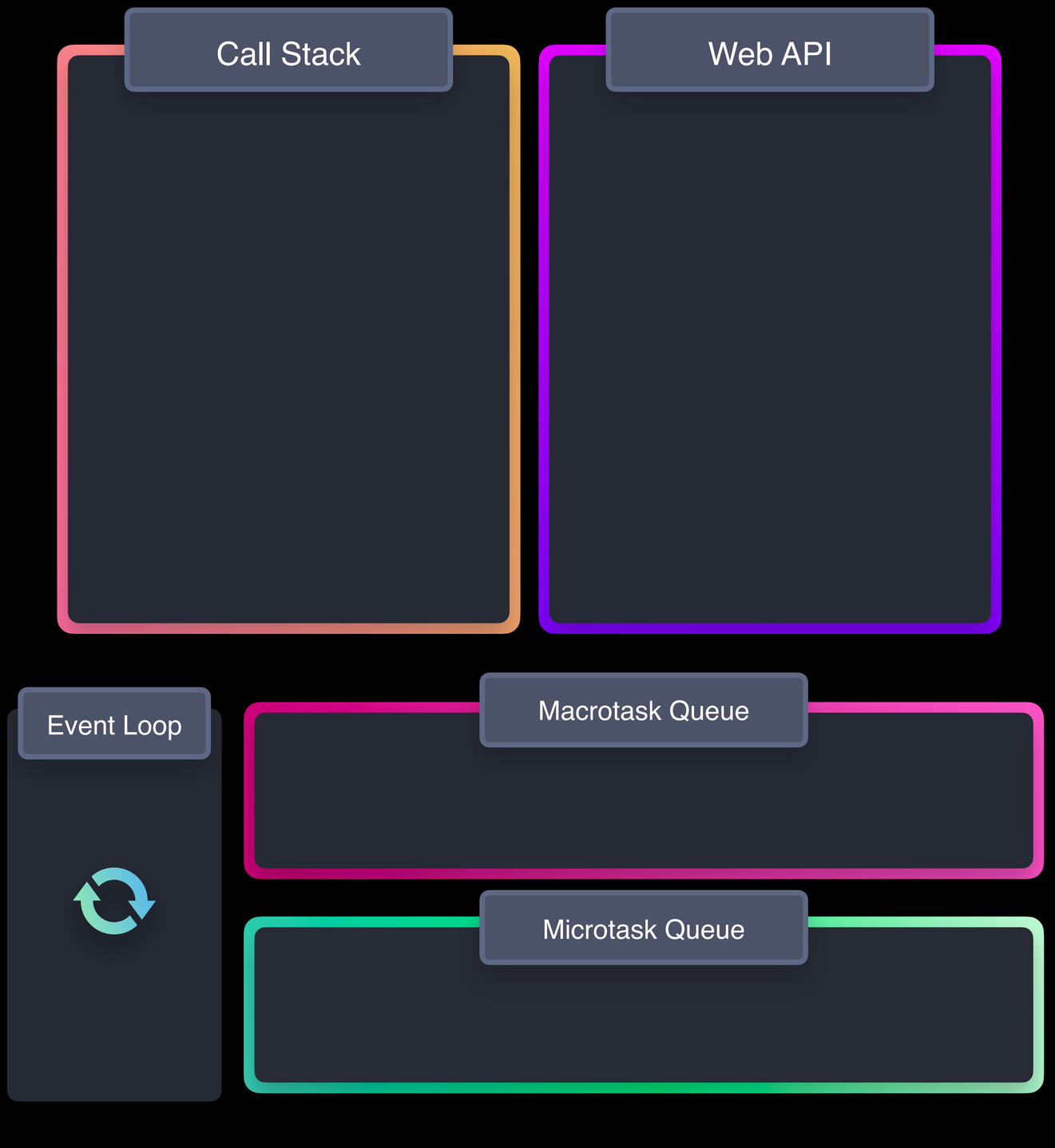
C script | promise | async body | then | queueMicrotask

D script | async body | promise | then | queueMicrotask

E promise | script | async body | queueMicrotask | then

```javascript
(async () => {
  const asyncFunc = async () => "asyncFunc";

  const promise = new Promise(res => {
    console.log("promise")
  }).then(() => console.log("then"));

  console.log("async body");

  queueMicrotask(() => {
    console.log("queueMicrotask")
  });

  const results =
          await Promise.all([asyncFunc(), promise]);

  return results;
})();

console.log("script")
```

console



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console.log("script")
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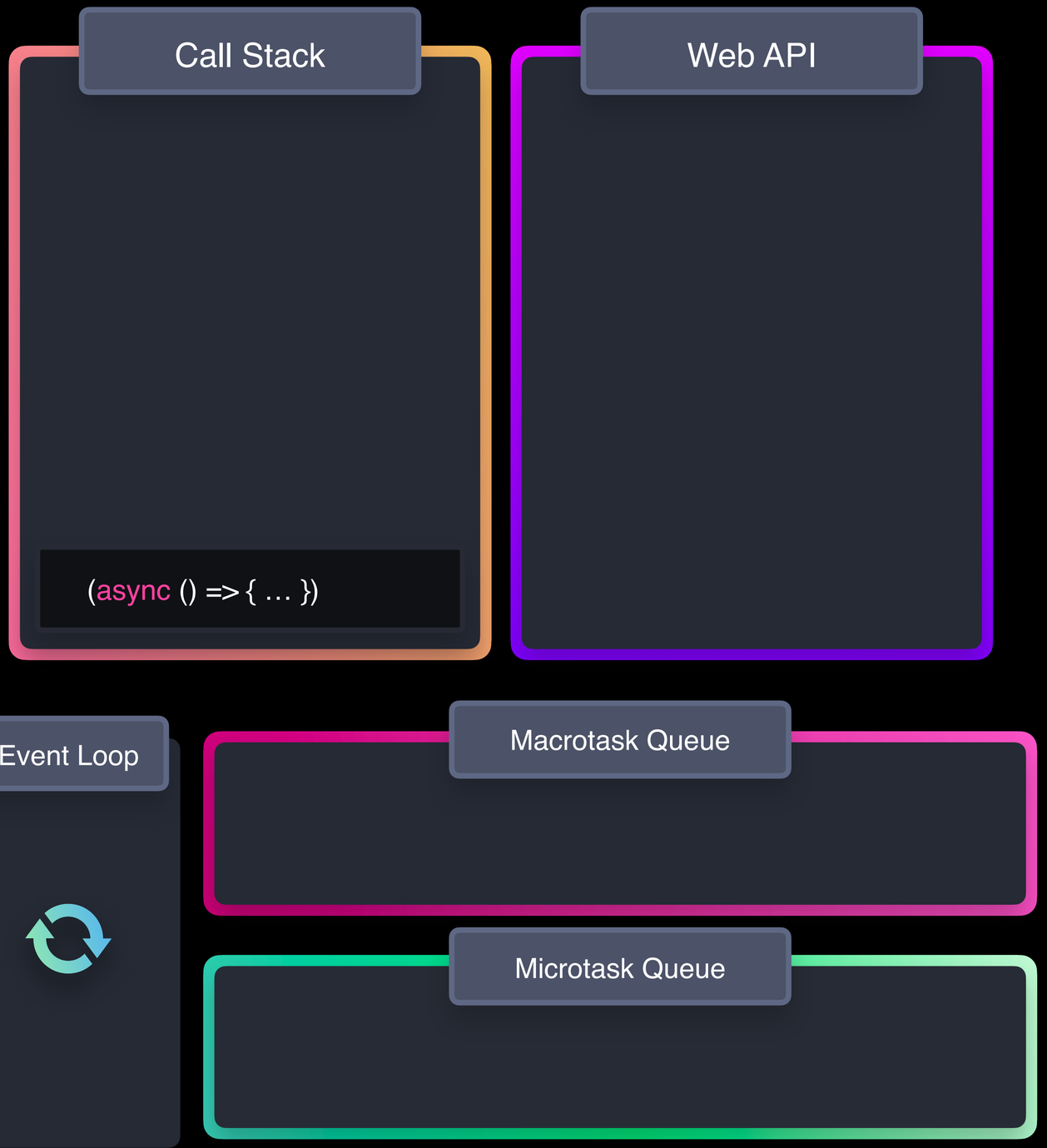
console



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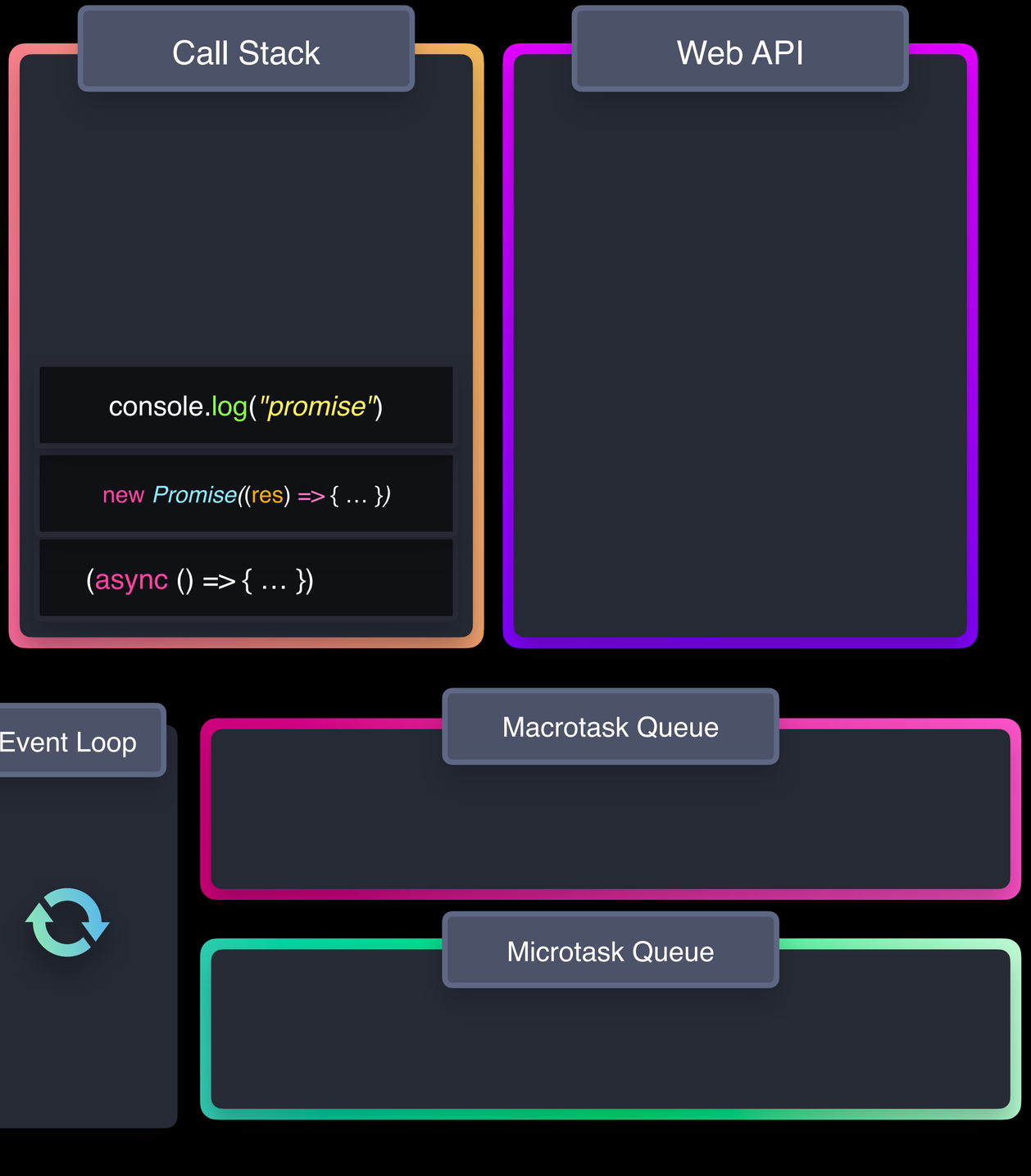
20 console.log("script")
```

console

"promise"



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console.log("script")
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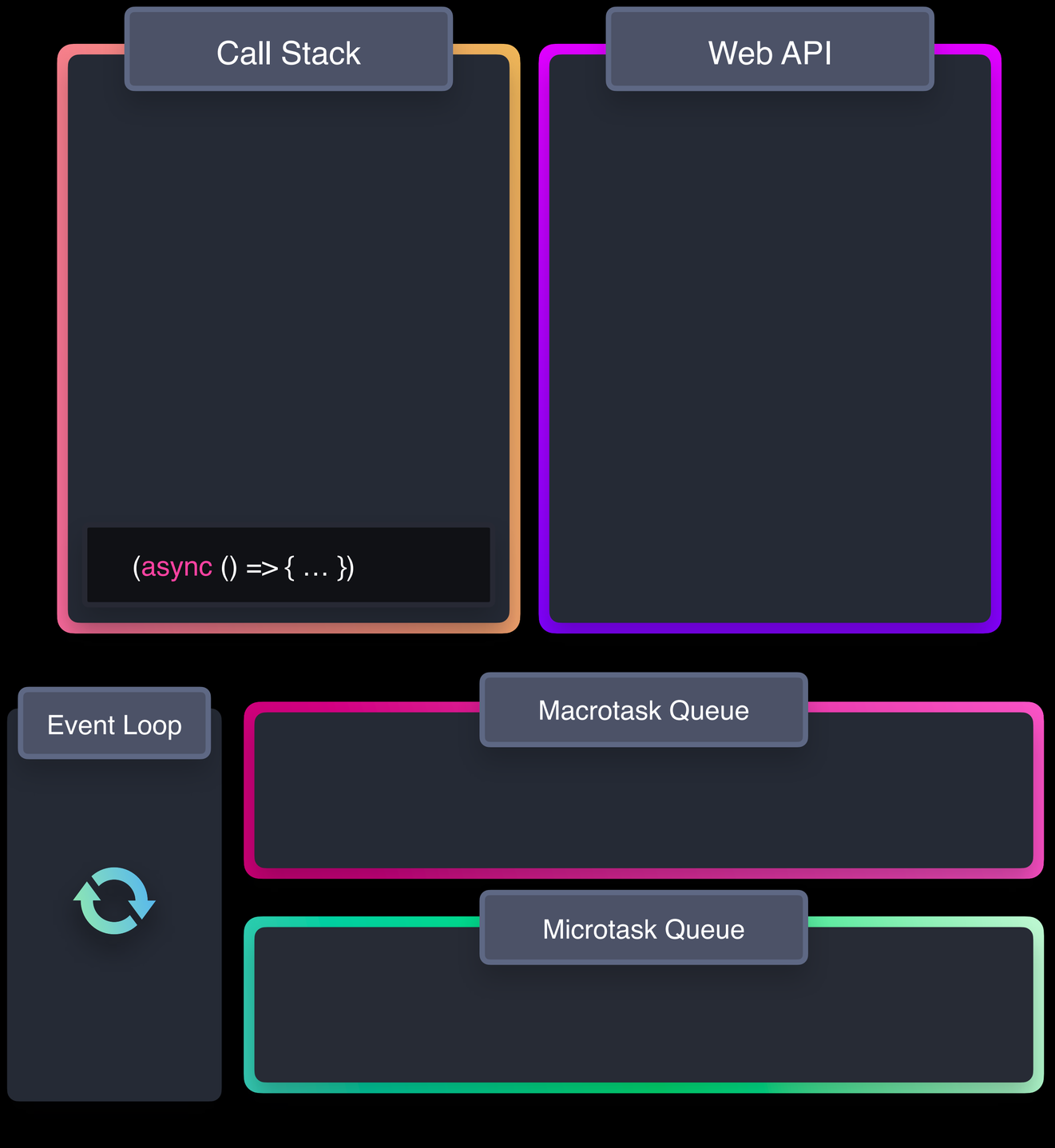
console

"promise"



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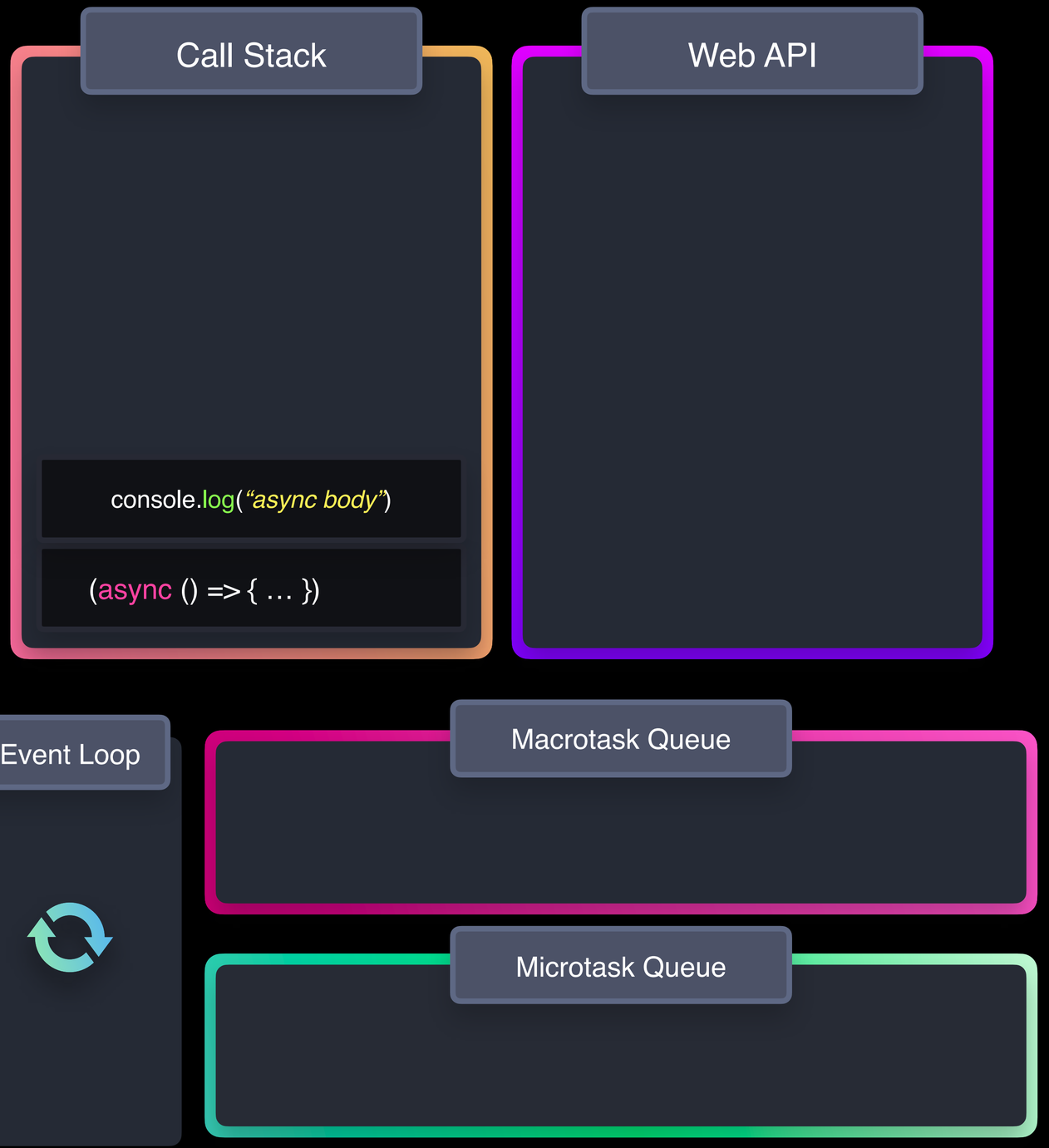
console

"promise"

"async body"



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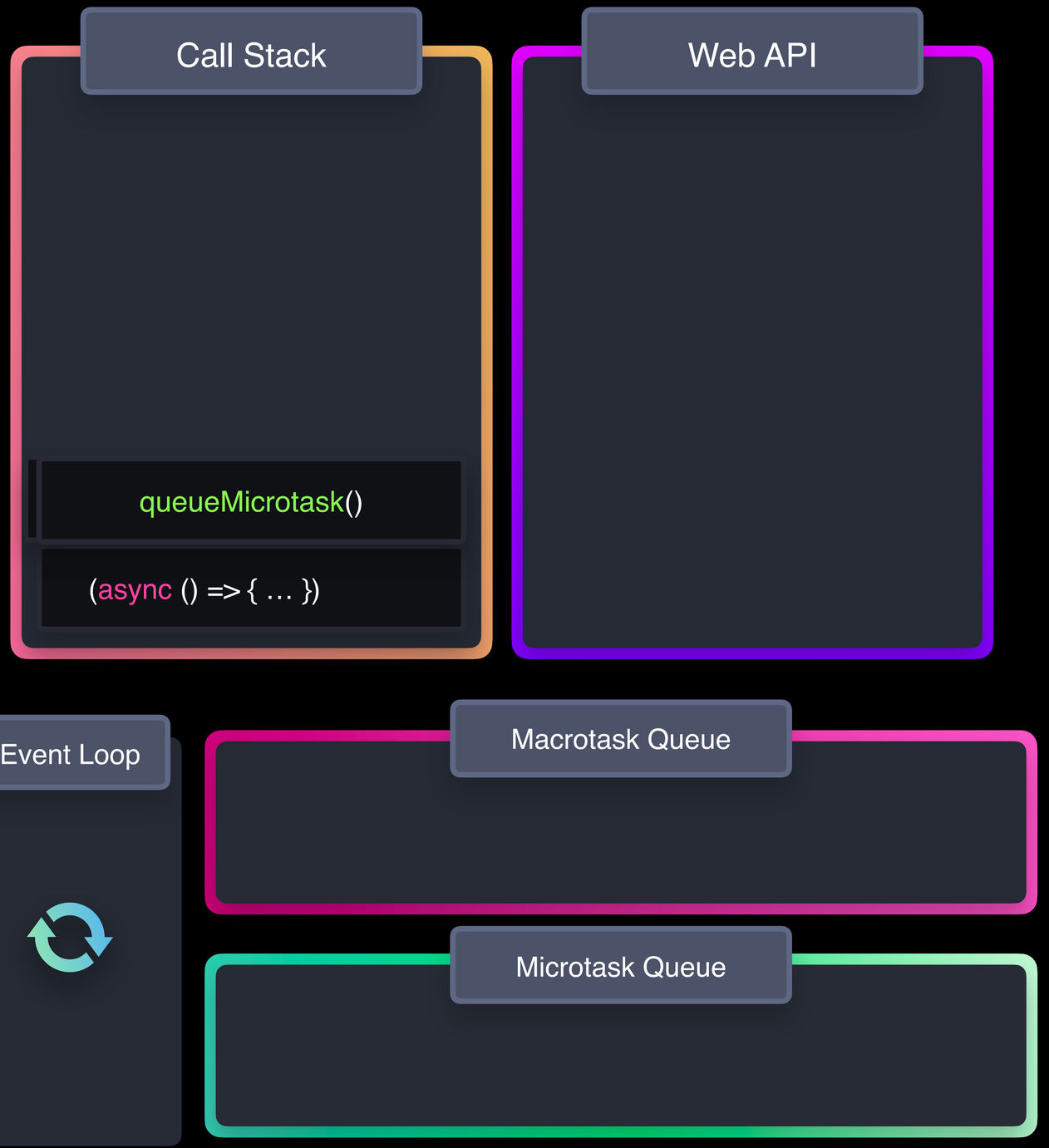
console

"promise"

"async body"



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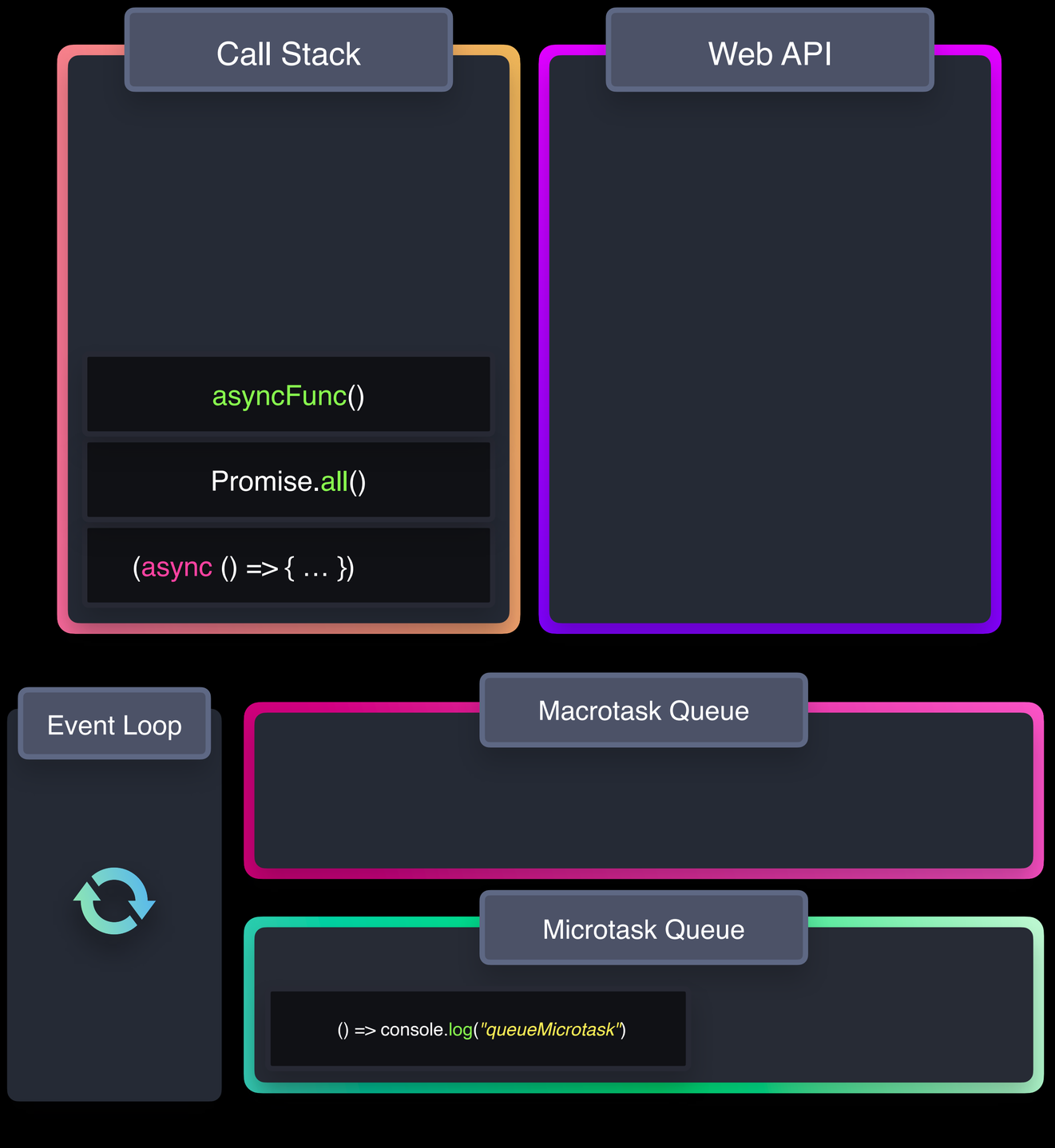
"async body"



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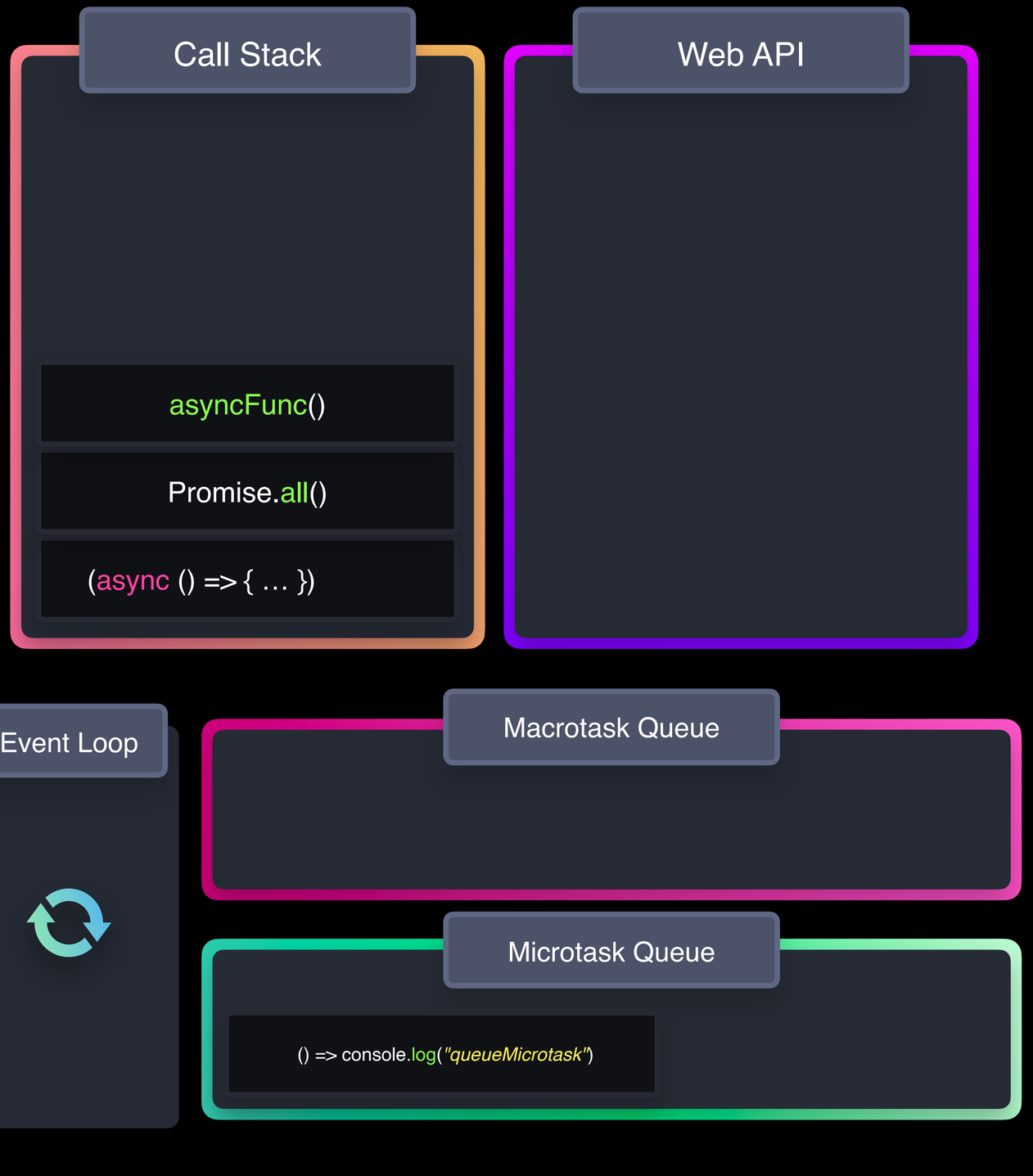

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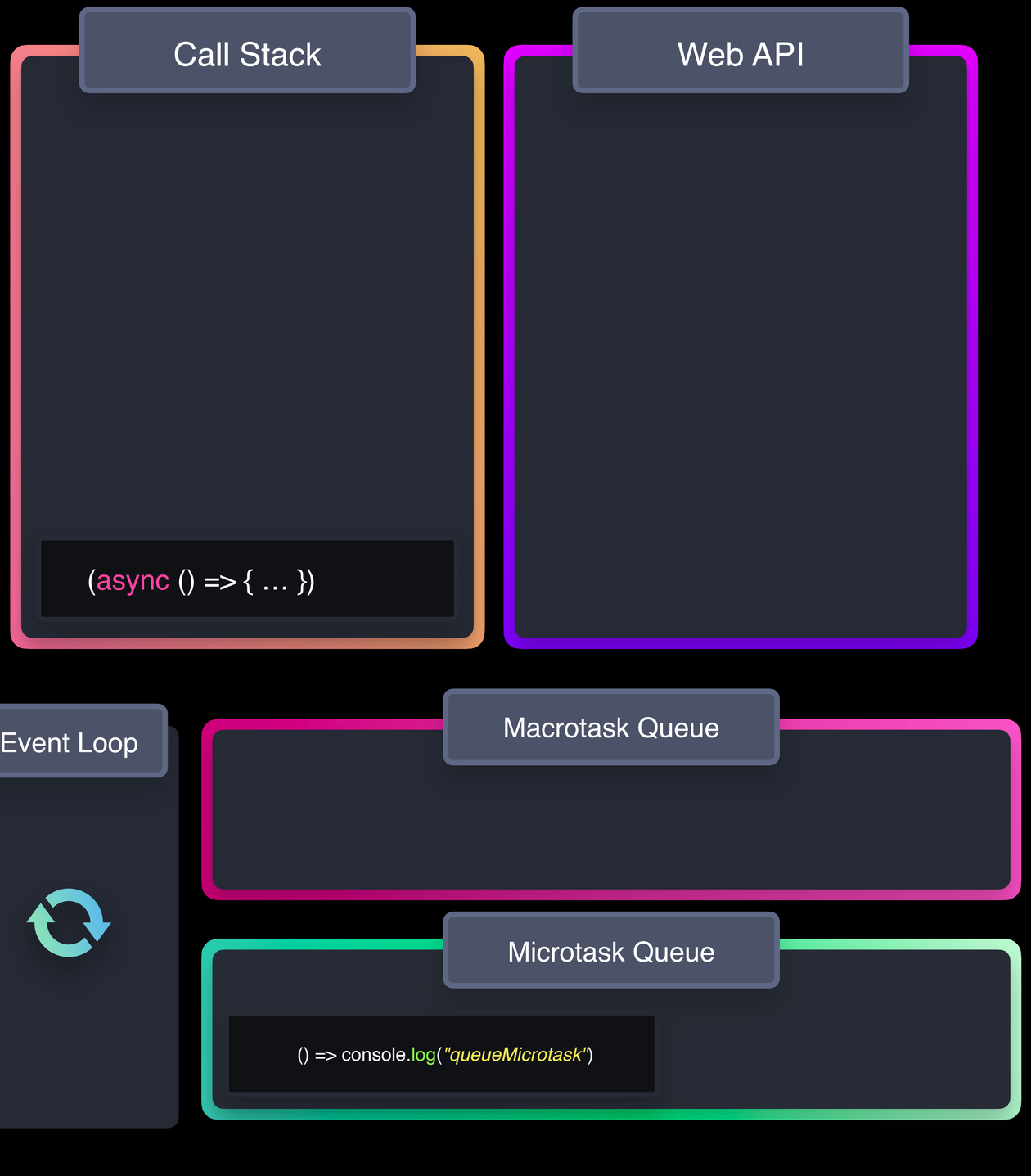

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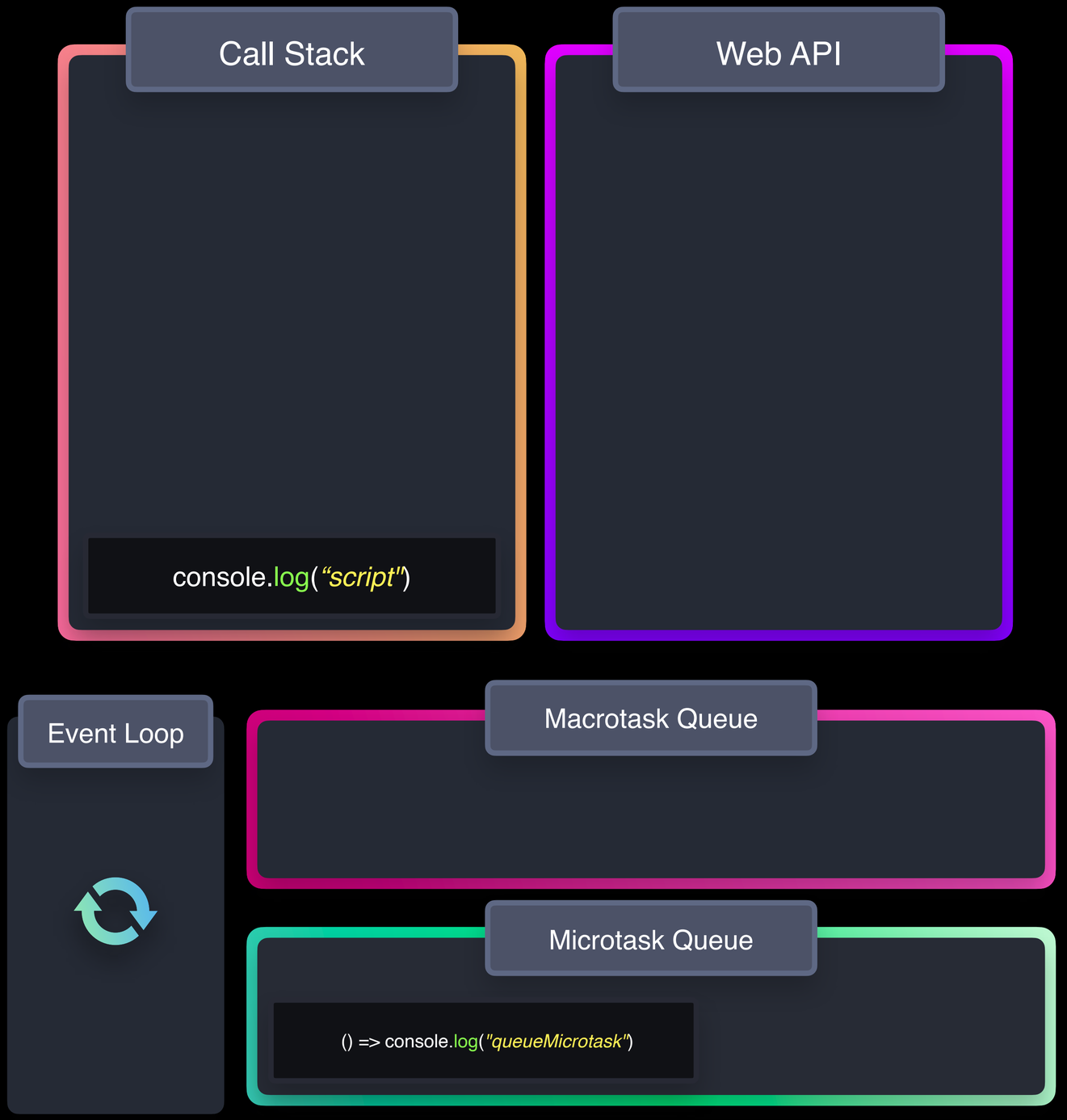

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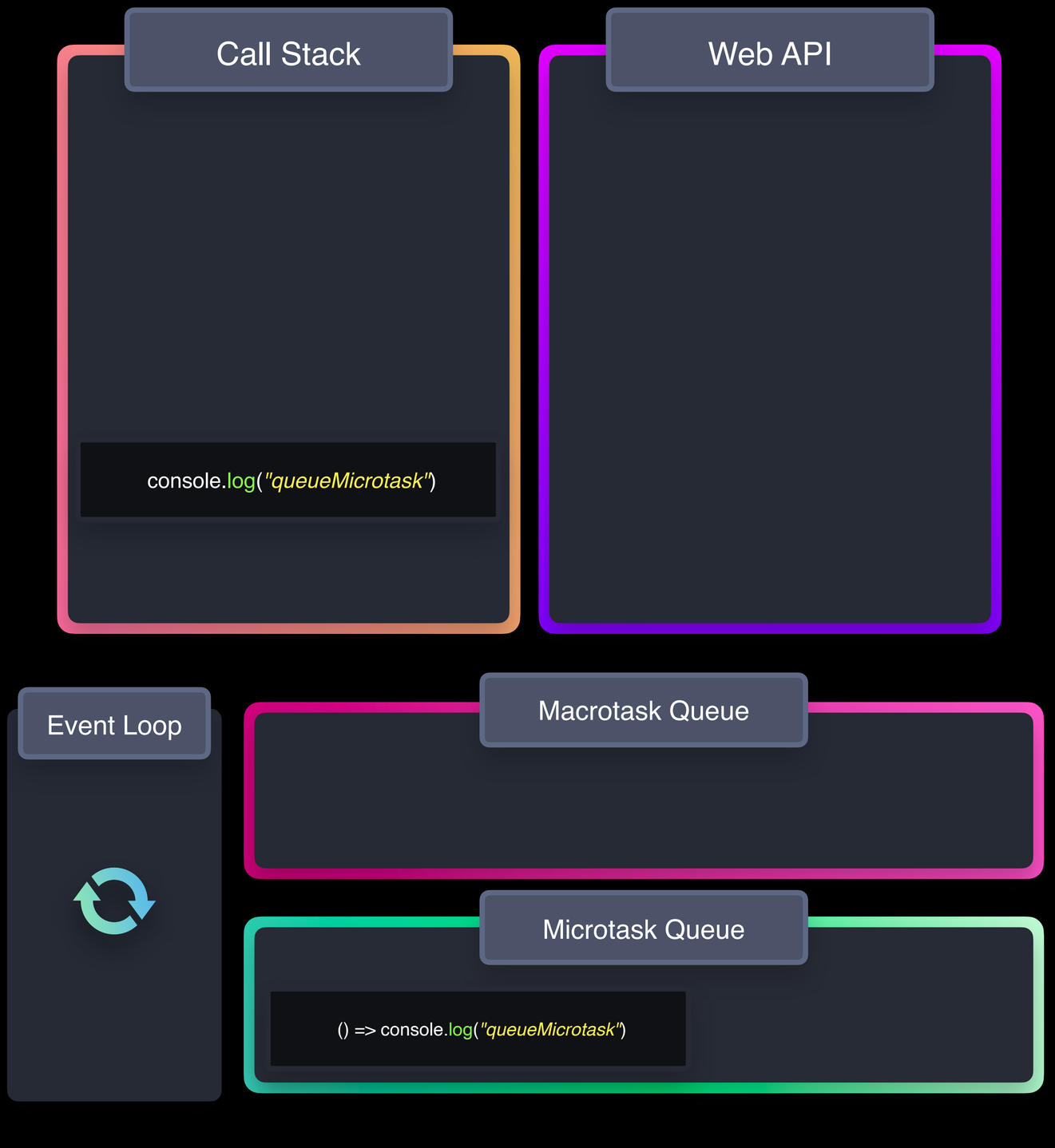
console

"promise"

"async body"

"script"

"queueMicrotask"



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console

"promise"

"async body"

"script"

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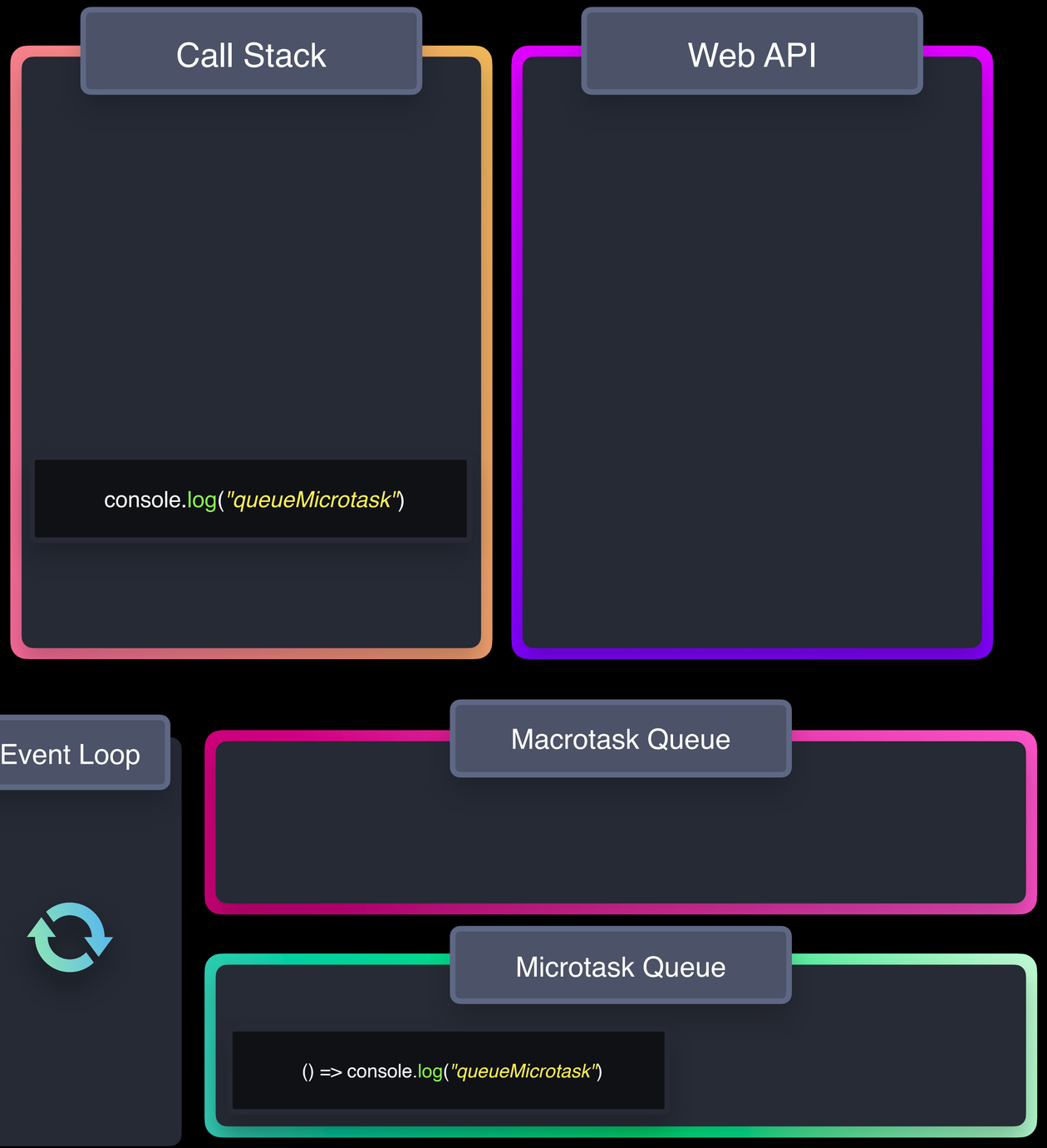


Scope & Closures

```
1  const fruit = "lemon";
2
3  {
4     const fruit = "strawberry";
5  }
6
7  function myFunc() {
8    const fruit = "orange";
9  }
```

Global Scope

Block Scope

Function Scope

```
1   function myFunc() {
2       console.log(fruit)
3
4       return function() {
5           console.log(fruit)
6
7           return function() {
8               const fruit = "orange";
9               console.log(fruit)
10          }
11      }
12  }
13
14  console.log(fruit)
```

ReferenceError

ReferenceError

ReferenceError

```
function myFunc() {
    console.log(fruit)

    return function() {
        const fruit = "orange";
        console.log(fruit)

        return function() {
            console.log(fruit)
        }
    }
}

console.log(fruit)
```

ReferenceError

ReferenceError

```
1   function myFunc() {
2       const fruit = "orange";
3       console.log(fruit)
4
5       return function() {
6           console.log(fruit)
7
8           return function() {
9               console.log(fruit)
10          }
11      }
12  }
13
14  console.log(fruit)
```

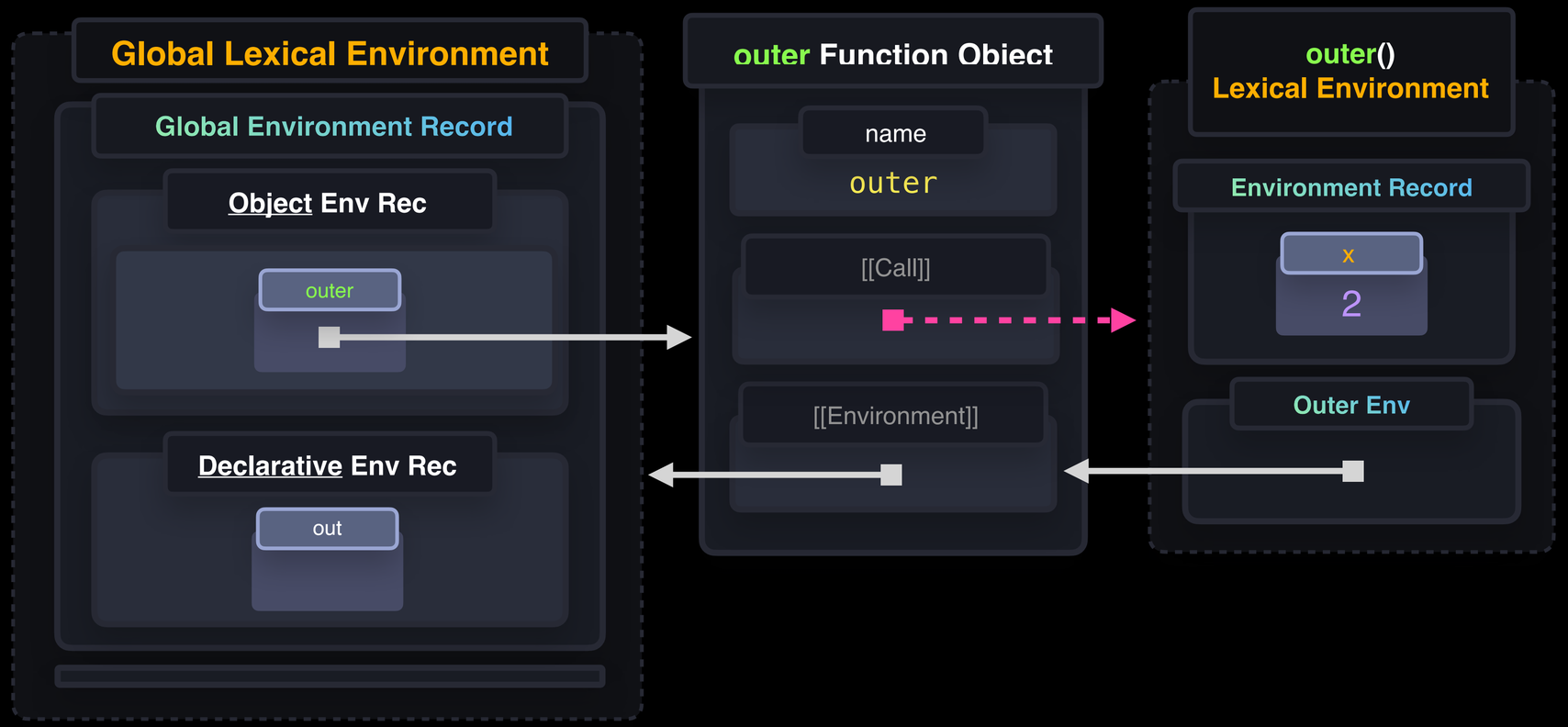
ReferenceError

```
1   const fruit = "orange";
2   function myFunc() {
3       console.log(fruit)
4
5       return function() {
6           console.log(fruit)
7
8           return function() {
9               console.log(fruit)
10          }
11      }
12  }
13
14  console.log(fruit)
```

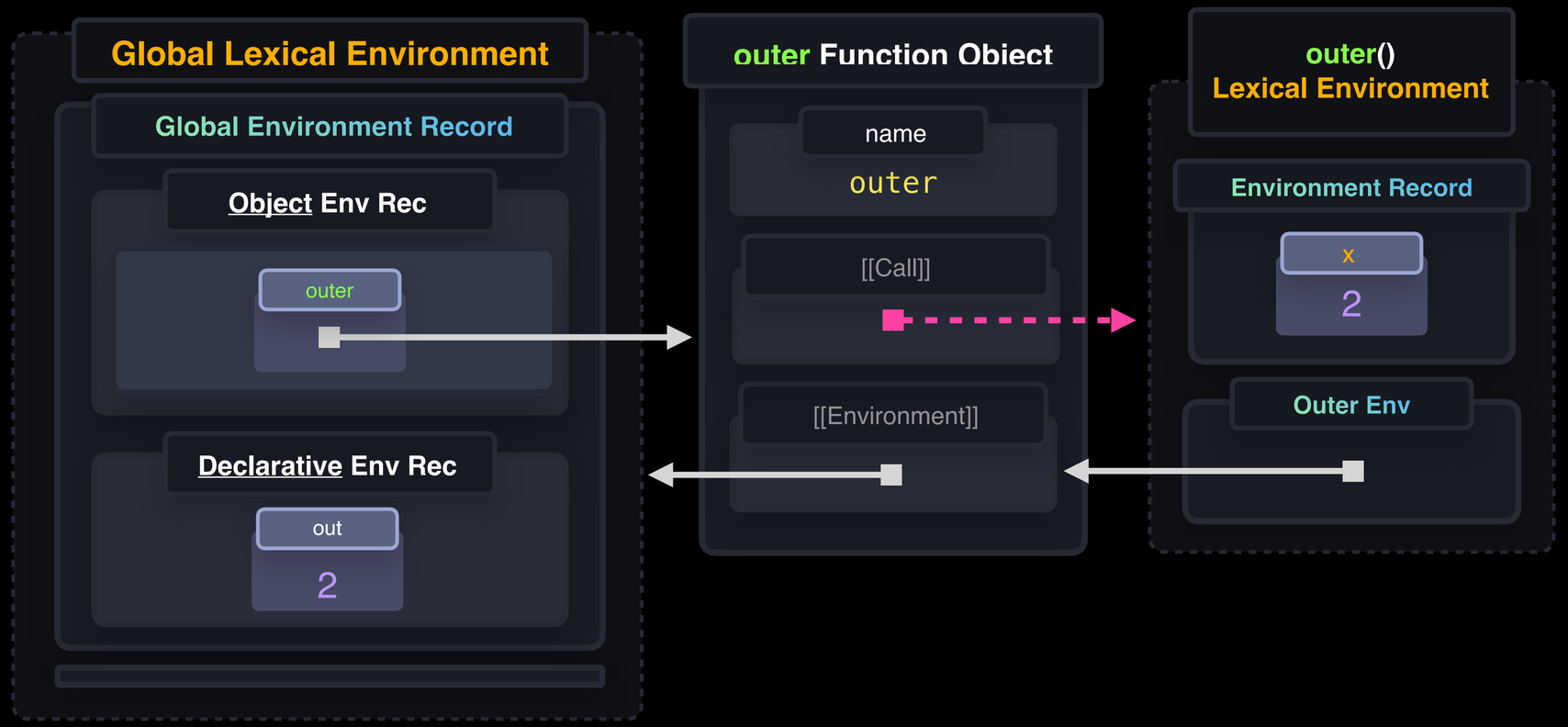
Closures

```
1  function outer(x) {
2    return function inner(y) {
3      return x + y;
4    }
5  }
6
7  const out = outer(2);
8  out(3);
```

```
1   function outer(x) {
2     return x;
3   }
4
5   const out = outer(2);
```



```
1   function outer(x) {
2     return x;
3   }
4
5   const out = outer(2);
```



```
1   function outer(x) {
2     return function inner(y) {
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4     }
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6
7   const out = outer(2);
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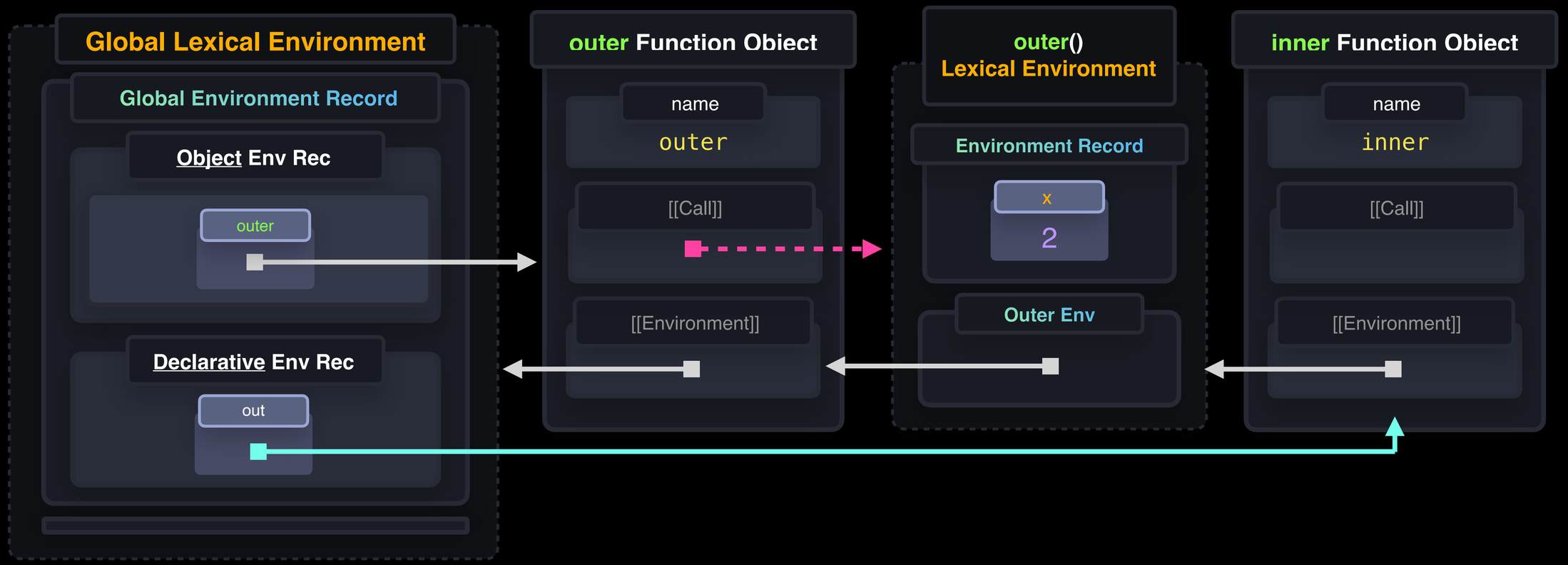
```



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8   out(3);
```
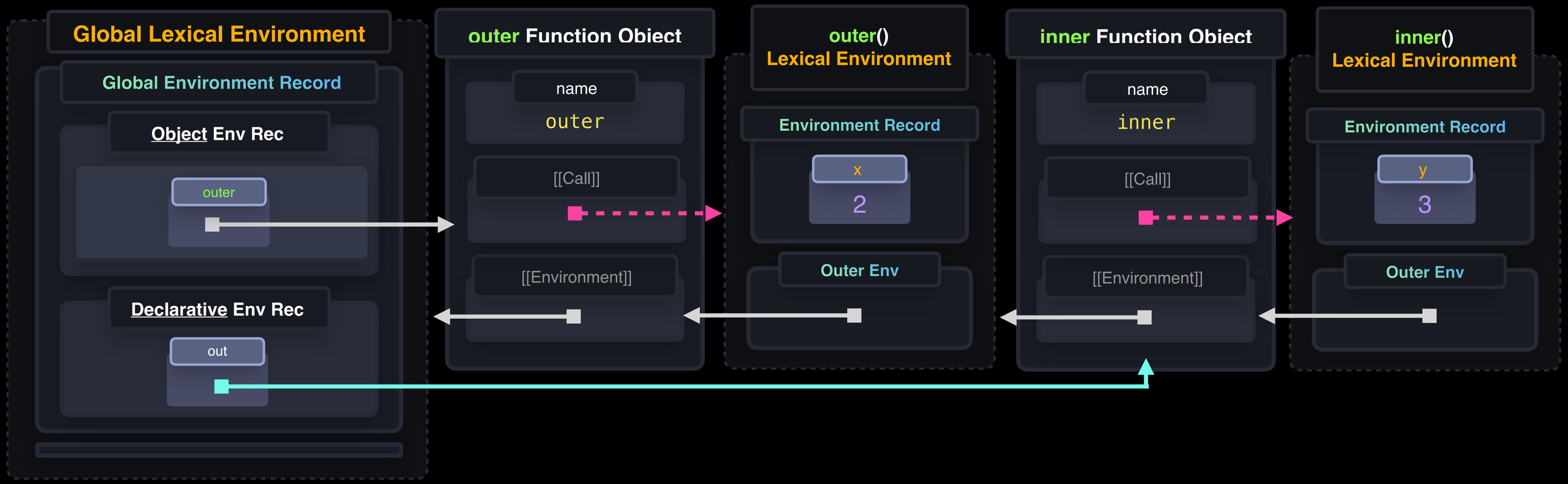



Question 5

What gets logged?

```
1  const outerFunc = () => {
2    let count = 0;
3    return () => ++count;
4  };
5
6  const counter = outerFunc();
7  console.log(counter());
8  console.log(counter());
```

A 0 1

B 1 2

C 1 1

D 0 0

Question 5

What gets logged?

```
1  const outerFunc = () => {
2    let count = 0;
3    return () => ++count;
4  };
5
6  const counter = outerFunc();
7  console.log(counter());
8  console.log(counter());
```

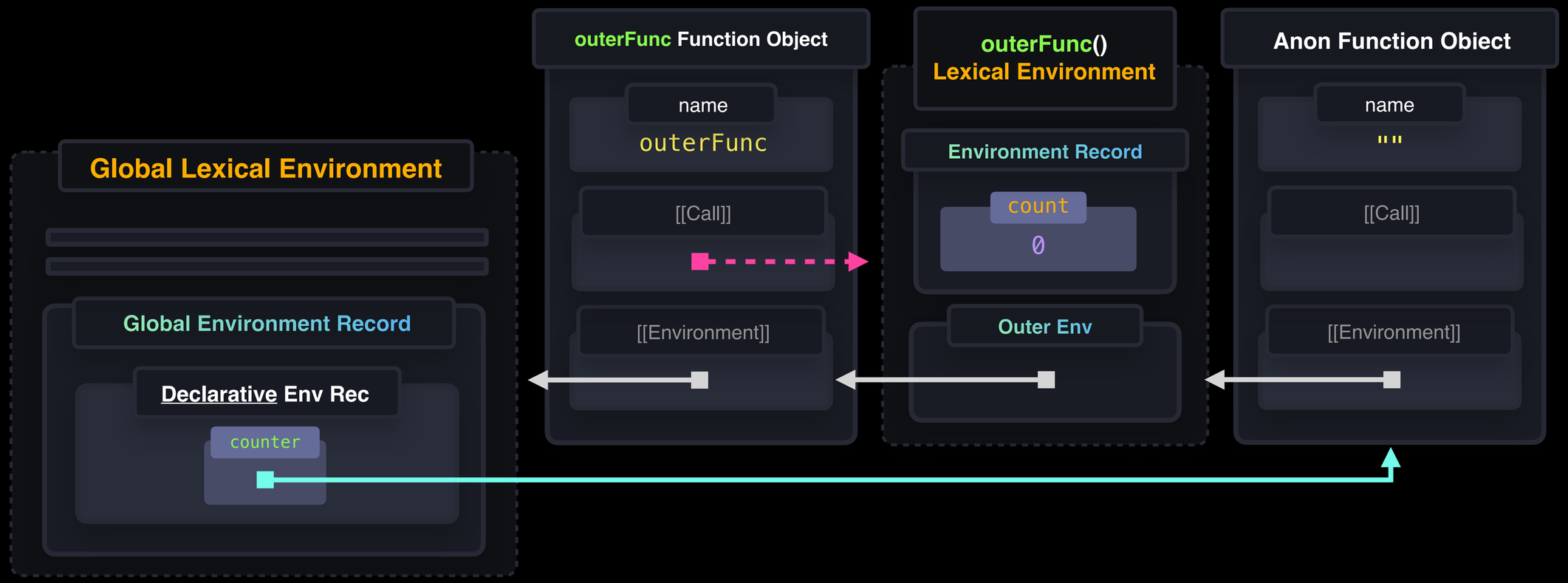
A 0 1

B 1 2

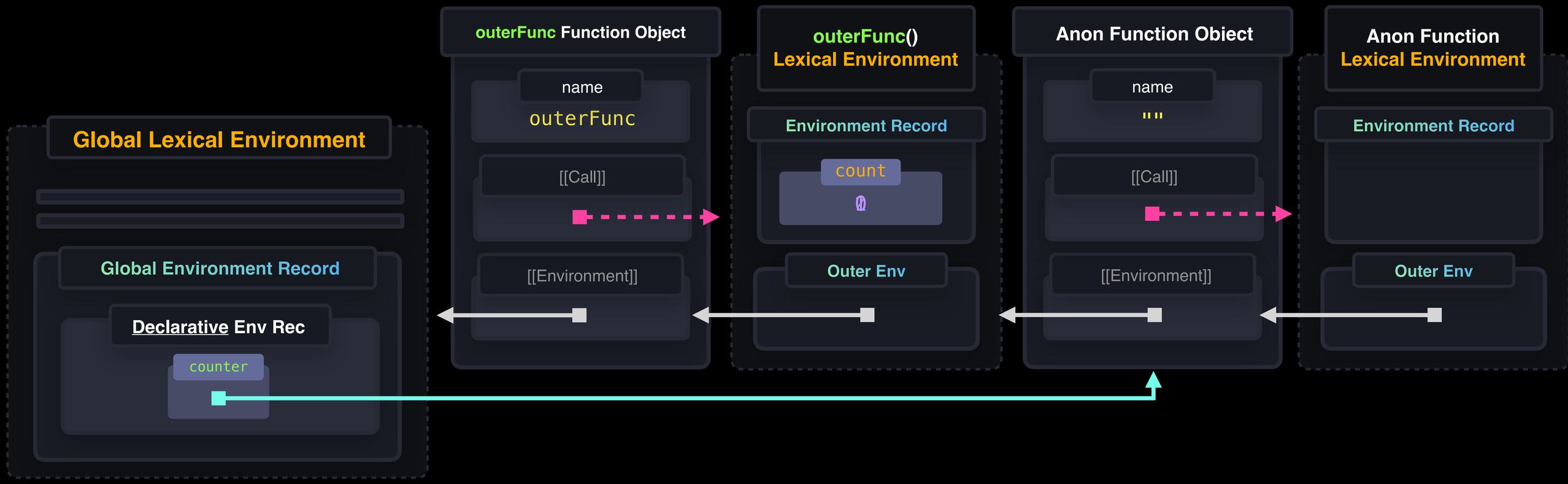
C 1 1

D 0 0

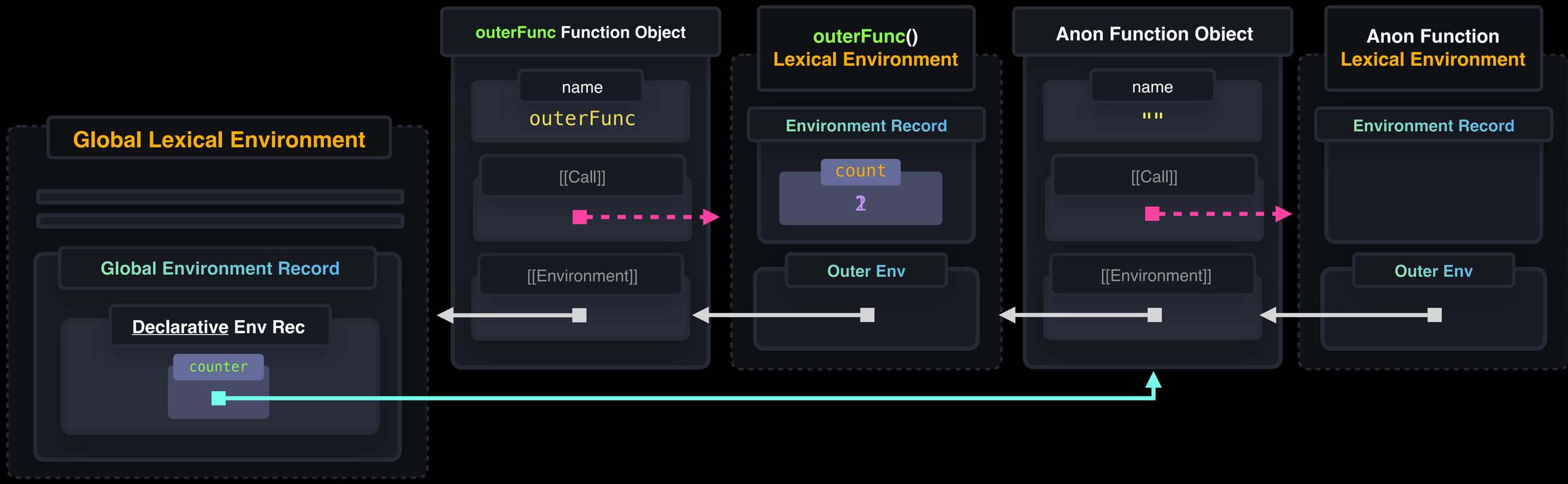
```
1  const outerFunc = () => {
2    let count = 0;
3    return () => ++count;
4  };
5
6  const counter = outerFunc();
7  console.log(counter());
8  console.log(counter());
```



```
1   const outerFunc = () => {
2     let count = 0;
3     return () => ++count;
4   };
5
6   const counter = outerFunc();
7   console.log(counter());
8   console.log(counter());
```



```
1   const outerFunc = () => {
2     let count = 0;
3     return () => ++count;
4   };
5
6   const counter = outerFunc();
7   console.log(counter());
8   console.log(counter());
```



Question 6

What gets logged?

```
function createCounter() {
  let globalCount = 0;

  function incrementCount() {
      let incrementedValue = ++globalCount;
      return incrementedValue;
    }

  return { incrementCount }
};

const counter = createCounter();
console.log(counter.incrementCount());
console.log(counter.incrementCount());
console.log(createCounter().incrementCount());
```

A 0 1 0

B 1 1 1

C 0 1 2

D 1 2 1

E 1 2 3

Question 6

What gets logged?

```
1  function createCounter() {
2    let globalCount = 0;
3
4    function incrementCount() {
5        let incrementedValue = ++globalCount;
6        return incrementedValue;
7      }
8
9    return { incrementCount }
10 };
11
12 const counter = createCounter();
13 console.log(counter.incrementCount());
14 console.log(counter.incrementCount());
15 console.log(createCounter().incrementCount());
```

A 0 1 0

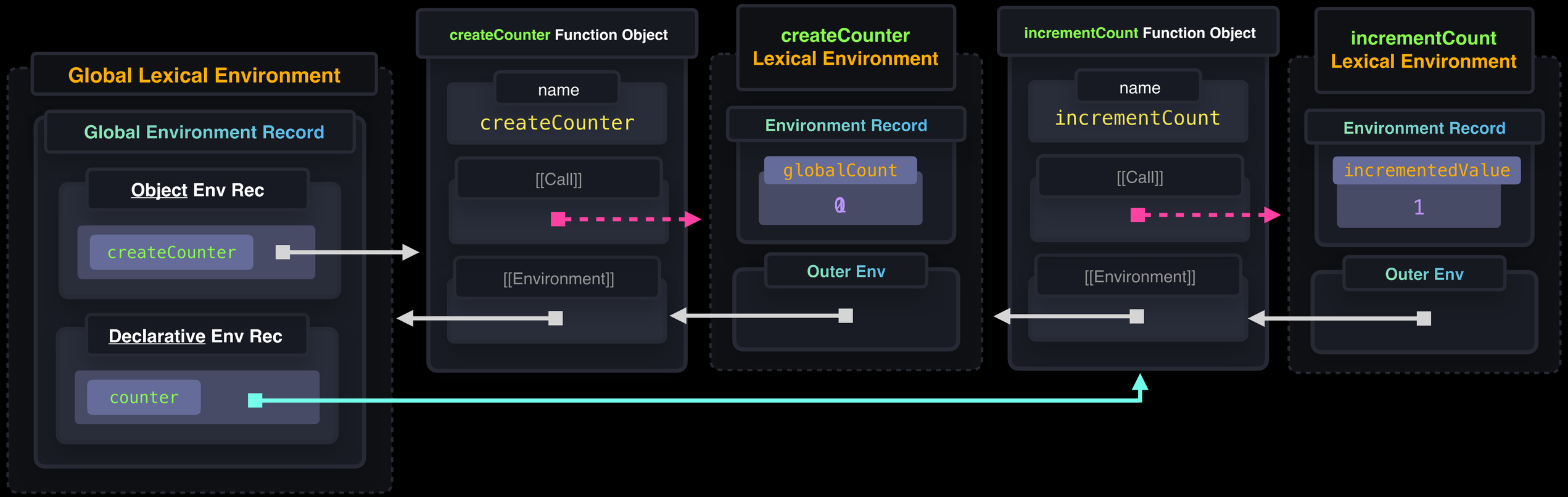
B 1 1 1

C 0 1 2

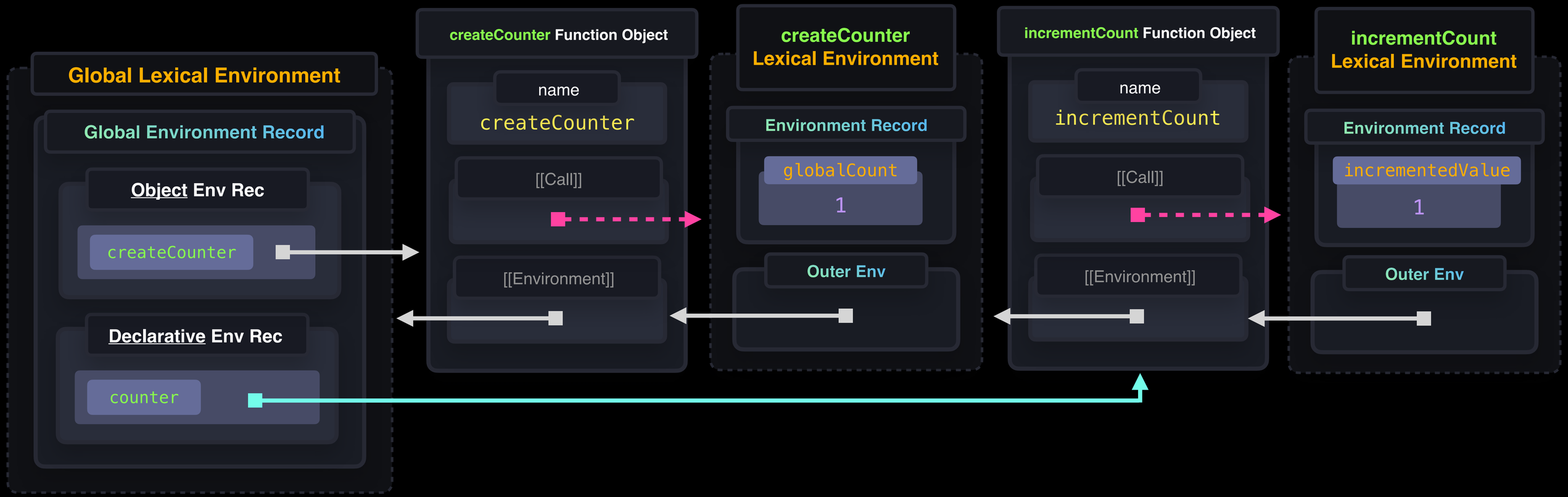
D 1 2 1

E 1 2 3

```
1  function createCounter() {
2    let globalCount = 0;
3
4    function incrementCount() {
5        let incrementedValue = ++globalCount;
6        return incrementedValue;
7      }
8
9    return { incrementCount }
10 };
11 const counter = createCounter();
12 console.log(counter.incrementCount());
13 console.log(counter.incrementCount());
14 console.log(createCounter().incrementCount());
```

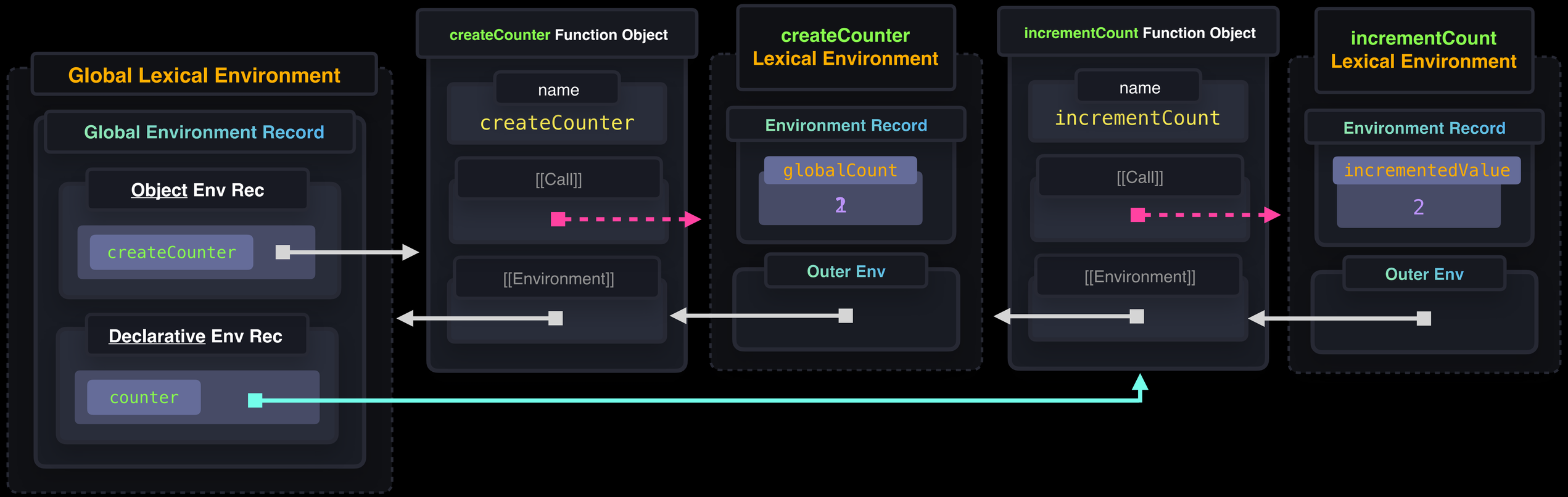


```
1  function createCounter() {
2    let globalCount = 0;
3
4    function incrementCount() {
5        let incrementedValue = ++globalCount;
6        return incrementedValue;
7      }
8
9    return { incrementCount }
10 };
11 const counter = createCounter();
12 console.log(counter.incrementCount());
13 console.log(counter.incrementCount());
14 console.log(createCounter().incrementCount());
```

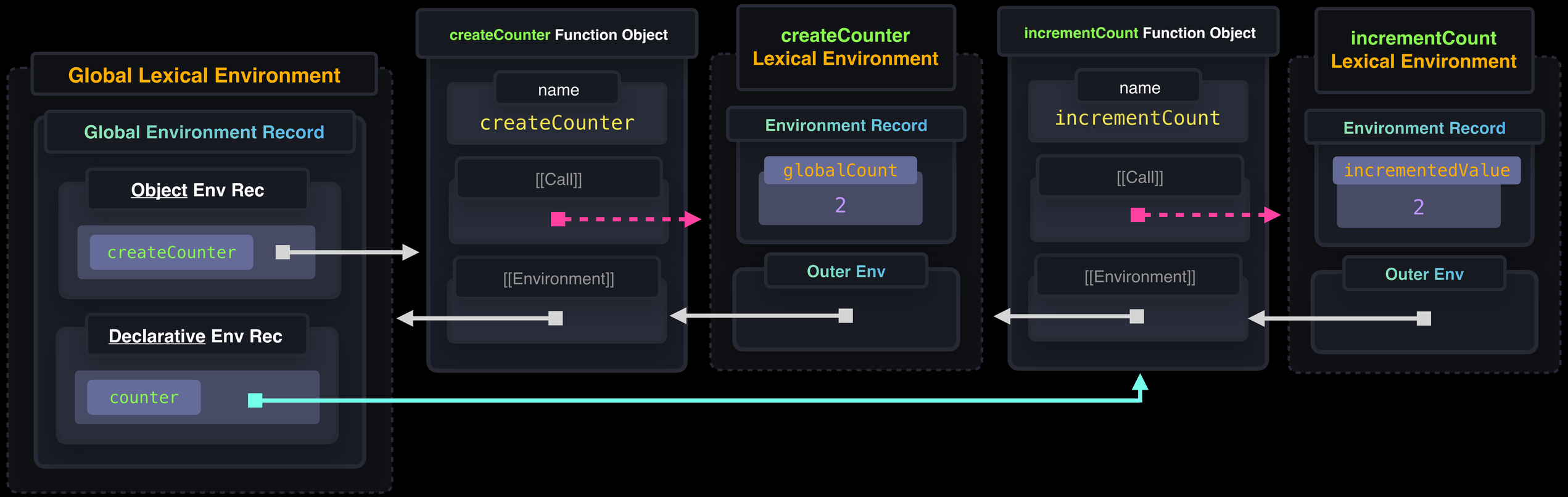


```
1  function createCounter() {
2    let globalCount = 0;
3
4    function incrementCount() {
5        let incrementedValue = ++globalCount;
6        return incrementedValue;
7      }
8
9    return { incrementCount }
10 };
```

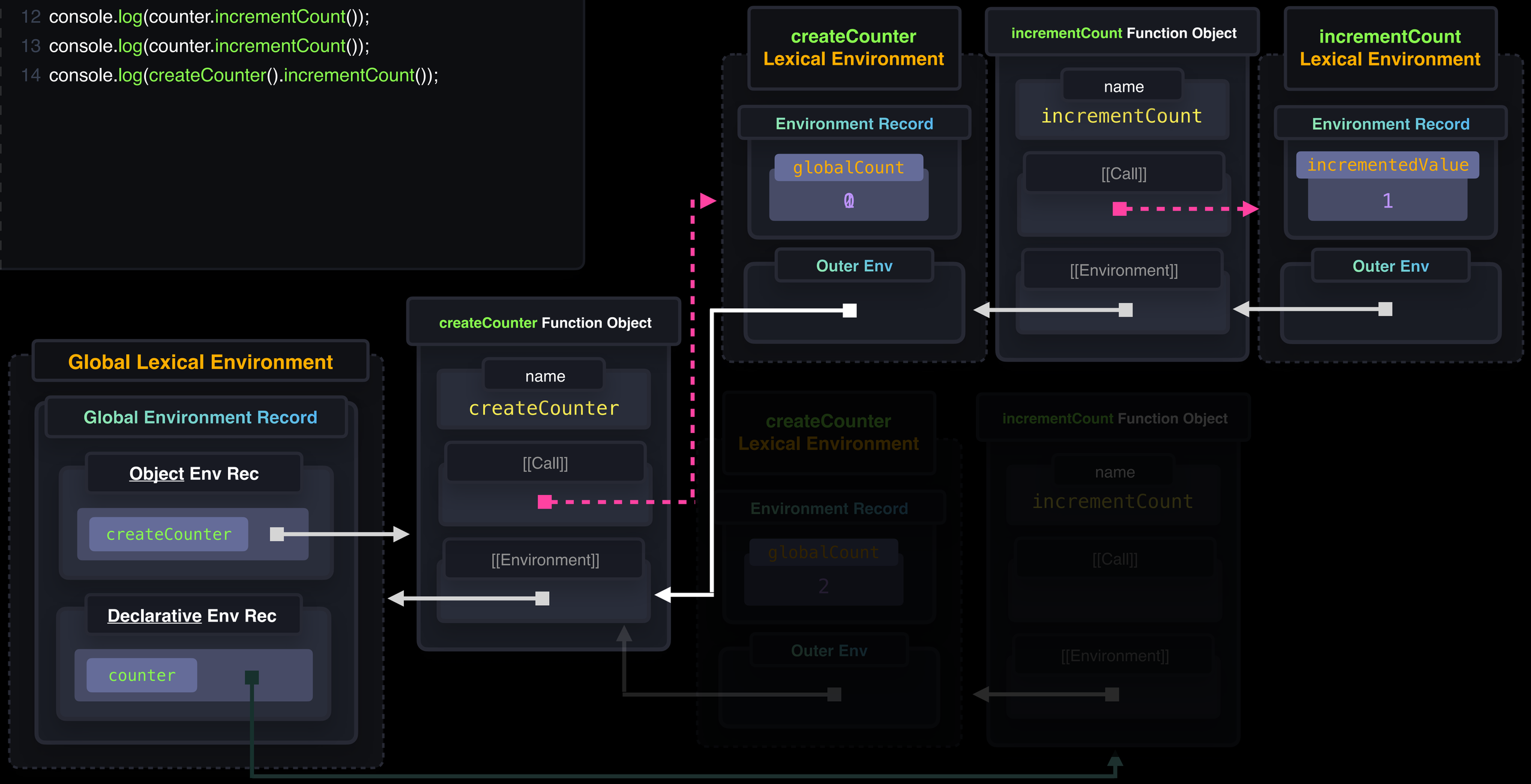
```
11 const counter = createCounter();
12 console.log(counter.incrementCount());
13 console.log(counter.incrementCount());
14 console.log(createCounter().incrementCount());
```



```
1  function createCounter() {
2    let globalCount = 0;
3
4    function incrementCount() {
5        let incrementedValue = ++globalCount;
6        return incrementedValue;
7      }
8
9    return { incrementCount }
10 };
11 const counter = createCounter();
12 console.log(counter.incrementCount());
13 console.log(counter.incrementCount());
14 console.log(createCounter().incrementCount());
```



```
11 const counter = createCounter();
12 console.log(counter.incrementCount());
13 console.log(counter.incrementCount());
14 console.log(createCounter().incrementCount());
```



Question 7

Is the comparison true or false?

```
function createUserManager() {
  let user = null;

  return function(name) {
   "use strict"
      user = { name, createdAt: Date.now() };
      return user;
    }
};

const createUser = createUserManager();
createUser("John Doe") === createUser("John Doe");
```

A True

B False

Question 7

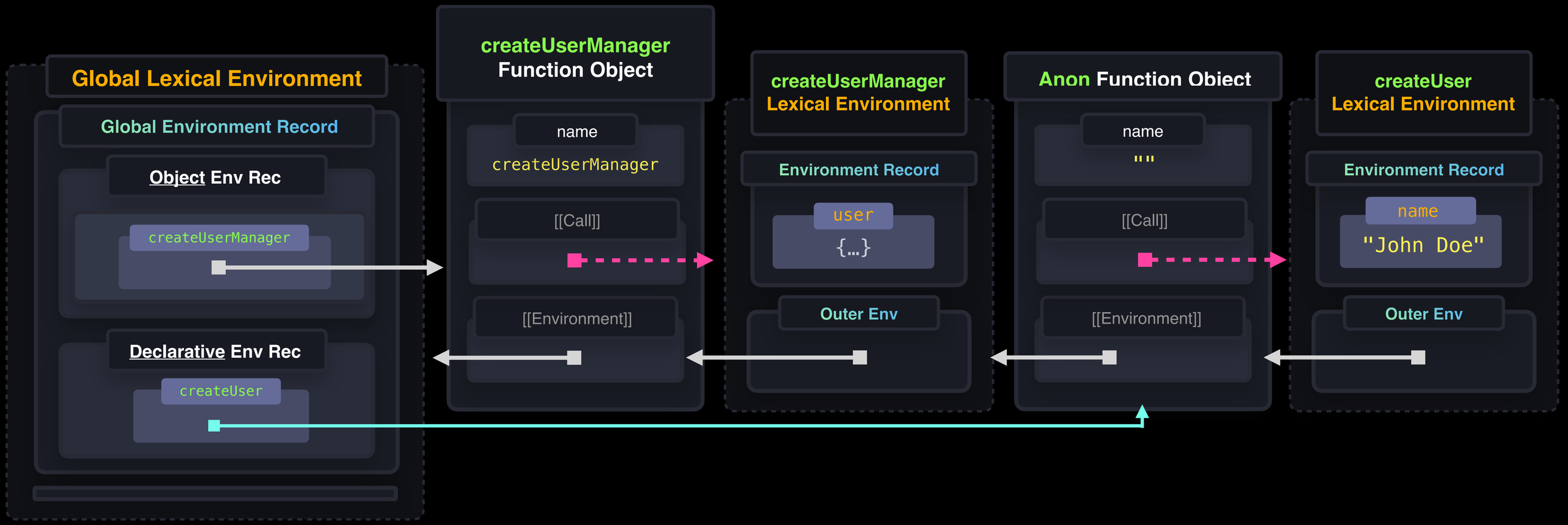
Is the comparison true or false?

```
1   function createUserManager() {
2     let user = null;
3
4     return function(name) {
5       "use strict"
6         user = { name, createdAt: Date.now() };
7         return user;
8       }
9   };
10
11  const createUser = createUserManager();
12  createUser("John Doe") === createUser("John Doe");
```

A True

B False

```
7        return user;
8      }
9    };
10
11   const createUser = createUserManager();
12   createUser("John Doe") === createUser("John Doe");
```



Question 8

What gets logged?

```
function createCounter(initialCount) {
  let count = initialCount;

  return function() {
   "use strict";
      count += 1;
      return count;
    }
};

const counter = createCounter(10);
counter();
counter();
console.log(counter());
```

A 1

B 11

C 13

D NaN

E ReferenceError

Question 8

What gets logged?

```
function createCounter(initialCount) {
  let count = initialCount;

  return function() {
   "use strict";
      count += 1;
      return count;
    }
};

const counter = createCounter(10);
counter();
counter();
console.log(counter());
```

A 1

B 11

C 13

D NaN

E ReferenceError

```
function createCounter(initialCount) {
  let count = initialCount;

  return function() {
    "use strict";
      count += 1;
      return count;
    }
};

const counter = createCounter(10);
counter();
counter();
console.log(counter());
```

Question 9

Which statements are correct?

A Hoisting is the process of moving functions and variables to the top of the file

B Variables declared with let and const are hoisted

C Variables declared with the var keyword are uninitialized

D Hoisting occurs during the execution phase

E import declarations are hoisted

Question 9

Which statements are correct?

A Hoisting is the process of moving functions and variables to the top of the file

B Variables declared with let and const are hoisted

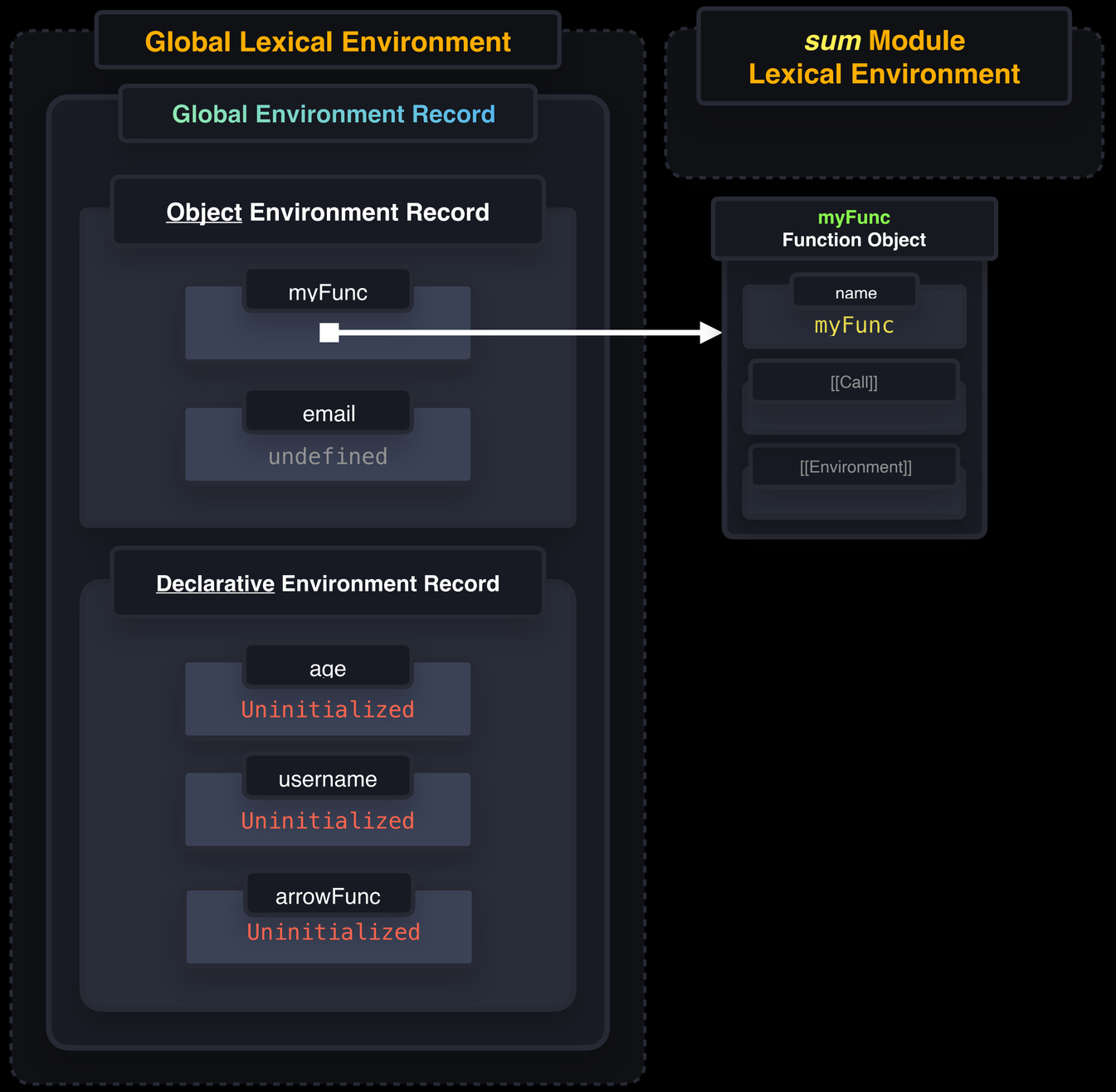
C Variables declared with the var keyword are uninitialized

D Hoisting occurs during the execution phase

E import declarations are hoisted

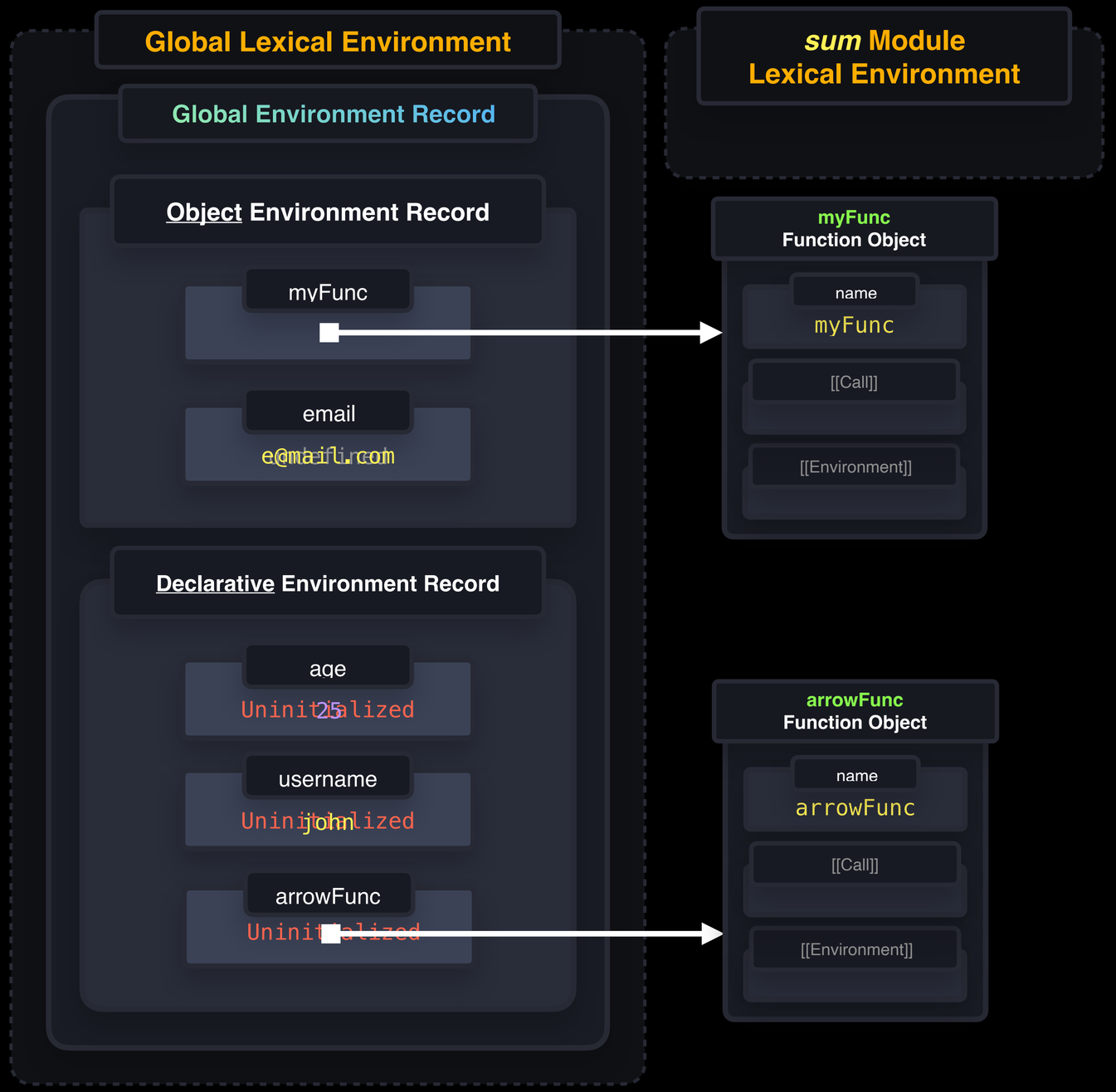
Creation Phase

```
1  import sum from "./sum";
2
3  const age = 25;
4  let username = "john";
5  var email = "e@mail.com";
6
7  function myFunc() {};
8  const arrowFunc = () => {};
```



Execution Phase

```
1  import sum from "./sum";
2
3  const age = 25;
4  let username = "john";
5  var email = "e@mail.com";
6
7  function myFunc() {};
8  const arrowFunc = () => {};
```



Question 10

What's the output if we run this code and orange is our favorite fruit?

```
const input = prompt("What fruit do you like?")
const css = "color: #FFFFFF;"

switch(input) {
  case "orange":
    const css = "color: #FFA500;"
    console.log("%cOrange!", css);
    break;
  case"lemon":
    const css = "color: #FFFF00;"
    console.log("%cYellow!", css);
    break;
  default:
    console.log("No color for you");
}
```

A Orange!

B %cOrange!

C No color for you

D SyntaxError

E Orange! (white text)

Question 10

What's the output if we run this code and orange is our favorite fruit?

```
const input = prompt("What fruit do you like?")
const css = "color: #FFFFFF;"

switch(input) {
  case "orange":
    const css = "color: #FFA500;"
    console.log("%cOrange!", css);
    break;
  case"lemon":
    const css = "color: #FFFF00;"
    console.log("%cYellow!", css);
    break;
  default:
    console.log("No color for you");
}
```

A Orange!

B %cOrange!

C No color for you

D SyntaxError

E Orange! (white text)

```
1  const input = prompt("What fruit do you like?”);
2  const css = "color: #FFFFFF;"
3
4  switch(input) {
5    case "orange":         {
6      const css = "color: #FFA500;"
7      console.log("%cOrange!", css);
8      break;
9      }
10     case "lemon":      {
11       const css = "color: #FFFF00;"
12       console.log("%cYellow!", css);
13       break;
14     }
15   default:
16     console.log("No color for you");
17 }
```

this Keyword

Global context

The value of the this keyword is the global object

```
1  console.log(this)        // window
```

Regular Functions

The value of the this keyword is the object on which the function is **invoked**.

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis
}

logThis()       // window
obj.logThis()         // obj
```

Arrow Functions

The value of the this keyword in an arrow function is determined by the **lexical environment in which the arrow function was defined.**

```
1  const logThis = () => {
2    console.log(this)
3  }
4
5  const obj = {
6    logThis
7  }
8
9  logThis()        // window
10 obj.logThis()          // window
```

Classes

The value of the this keyword in constructor functions or classes is the **value of the newly created instance.**

```
1   class User {
2     getThis() {
3       return this
4     }
5   }
6
7   let user1 = new User();
8   let user2 = new User();
9
10  user1.getThis();          // user1
11  user2.getThis();          // user2
```

Strict mode

The value of the this keyword is undefined by default

```
1  "use strict"
2
3  function logThis() {
4    console.log(this)
5  }
6
7  const obj = {
8    logThis,
9    logThis2() {
10     return logThis()
11   }
12 }
13
14
15 logThis()       // undefined
16 obj.logThis()          // obj
17 obj.logThis2()         // undefined
```

Event Handlers

The value of the this keyword in event handlers using a regular function is the **element that received the event**

```
button.addEventListener(
  "click",
  function() {
    console.log(this)
  }
)

button.click();
// <button>…</button>
```

.call()

Calls a function with a given this value

.bind()

Creates a new function with a specified this value and optional initial arguments.

.apply()

Calls a function with a given this value and arguments provided as an array

```
1   function greet(text = "Welcome") {
2     console.log(`${text}, ${this.username}`)
3   }
4
5   greet.call({ username: "John" });
6   // Welcome, John
7
8   greet.bind({ username: "John" })();
9   // Welcome, John
10
11  greet.apply(
12      { username: "John" },
13      ["Hi there"]
14  )
15  // Hi there, John
```

Question 11

What gets logged?

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis,
  logThis2() {
    return logThis()
  },
  logThis3() {
    return obj.logThis();
  }
}

obj.logThis();
obj.logThis2();
obj.logThis3();
```

A	obj	window	obj
B	obj	obj	obj
C	window	obj	obj
D	window	window	obj
E	window	window	window

Question 11

What gets logged?

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis,
  logThis2() {
    return logThis()
  },
  logThis3() {
    return obj.logThis();
  }
}

obj.logThis();
obj.logThis2();
obj.logThis3();
```

A	obj	window	obj
B	obj	obj	obj
C	window	obj	obj
D	window	window	obj
E	window	window	window

```
1   function logThis() {
2     console.log(this)
3   }
4
5   const obj = {
6     logThis,
7     logThis2() {
8       return logThis()
9     },
10    logThis3() {
11      return obj.logThis()
12    }
13  }
14
15  obj.logThis();                    // obj
16  obj.logThis2();                   // window
17  obj.logThis3();                   // obj
```

```
1   function logThis() {
2     console.log(this)
3   }
4
5   const obj = {
6     logThis,
7     logThis2() {
8       return logThis()
9     },
10    logThis3() {
11      return obj.logThis()
12    }
13  }
14
15  obj.logThis();                    // obj
16  obj.logThis2();                   // window
17  obj.logThis3();                   // obj
```

```
1   function logThis() {
2     console.log(this)
3   }
4
5   const obj = {
6     logThis,
7     logThis2() {
8       return logThis()
9     },
10    logThis3() {
11      return obj.logThis()
12    }
13  }
14
15  obj.logThis();                    // obj
16  obj.logThis2();                     // window
17  obj.logThis3();                   // obj
```

Question 12

What will the this keyword refer to for each invocation

```
1   const objA = {
2       foo() {
3         console.log(this)
4       },
5       bar: () => console.log(this),
6   }
7
8   const objB  = {
9     foo: objA.foo,
10    bar: () => objA.bar(),
11    baz() { objA.foo() }
12  }
13
14  objB.foo();
15  objB.bar();
16  objB.baz();
```

A objA objA objA

B objB objB objB

C objA window objA

D objB window objB

E objB window objA

Question 12

What will the this keyword refer to for each invocation

```
1   const objA = {
2       foo() {
3         console.log(this)
4       },
5       bar: () => console.log(this),
6   }
7
8   const objB  = {
9     foo: objA.foo,
10    bar: () => objA.bar(),
11    baz() { objA.foo() }
12  }
13
14  objB.foo();
15  objB.bar();
16  objB.baz();
```

A objA objA objA

B objB objB objB

C objA window objA

D objB window objB

E objB window objA

```
1   const objA = {
2       foo() {
3         console.log(this)
4       },
5       bar: () => console.log(this),
6   }
7
8   const objB  = {
9     foo: objA.foo,
10    bar: () => objA.bar(),
11    baz() { objA.foo() }
12  }
13
14  objB.foo();          // objB
15  objB.bar();          // window
16  objB.baz();          // objA
```

```
1   const objA = {
2       foo() {
3         console.log(this)
4       },
5       bar: () => console.log(this),
6   }
7
8   const objB  = {
9     foo: objA.foo,
10    bar: () => objA.bar(),
11    baz() { objA.foo() }
12  }
13
14  objB.foo();          // objB
15  objB.bar();          // window
16  objB.baz();          // objA
```

```
1   const objA = {
2       foo() {
3         console.log(this)
4       },
5       bar: () => console.log(this),
6   }
7
8   const objB  = {
9     foo: objA.foo,
10    bar: () => objA.bar(),
11    baz() { objA.foo() }
12  }
13
14  objB.foo();          // objB
15  objB.bar();          // window
16  objB.baz();          // objA
```

Question 13

What gets logged?

```
function logThis() {
  console.log(this)
}

const obj1 = {
  foo: logThis,
  bar: () => logThis(),
    baz() { logThis() },
    qux() { logThis.call(this) }
}

const obj2 = { ...obj1, foo2: () => obj1.foo() }

for (const key in obj2) {
    obj2[key]()
}
```

A	window	window	window	window	window
B	obj1	window	window	obj1	obj1
C	obj2	window	window	obj2	obj1
D	obj1	obj1	obj1	obj1	obj1
E	obj1	window	obj2	obj1	obj1

Question 13

What gets logged?

```
1   function logThis() {
2     console.log(this)
3   }
4
5   const obj1 = {
6     foo: logThis,
7     bar: () => logThis(),
8       baz() { logThis() },
9       qux() { logThis.call(this) }
10  }
11
12  const obj2 = { ...obj1, foo2: () => obj1.foo() }
13
14  for (const key in obj2) {
15      obj2[key]()
16  }
```

A	window	window	window	window	window
B	obj1	window	window	obj1	obj1
C	obj2	window	window	obj2	obj1
D	obj1	obj1	obj1	obj1	obj1
E	obj1	window	obj2	obj1	obj1

```
1  function logThis() {
2    console.log(this)
3  }
4
5  const obj1 = {
6    foo: logThis,
7    bar: () => logThis(),
8      baz() { logThis() },
9      qux() { logThis.call(this) }
10 }
11
12 const obj2 = {
13   foo: logThis,
14   bar: () => logThis(),
15     baz() { logThis() },
16     qux() { logThis.call(this) },
17     foo2: () => obj1.foo()
18 }
19
20 for (const key in obj2) {
21     obj2[key]()
22 }
```

C	obj2	window	window	obj2	obj1

Question 14

What gets logged?

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis,
  logThisInArrow: () => console.log(this),
  logThisNested() {
    const nestedFunc = () => console.log(this);
    nestedFunc()
  },
}

obj.logThis();
obj.logThisInArrow();
obj.logThisNested();
```

A	obj	window	obj
B	obj	obj	obj
C	window	window	window
D	obj	window	window
E	window	obj	window

Question 14

What gets logged?

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis,
  logThisInArrow: () => console.log(this),
  logThisNested() {
    const nestedFunc = () => console.log(this);
    nestedFunc()
  },
}

obj.logThis();
obj.logThisInArrow();
obj.logThisNested();
```

A	obj	window	obj
B	obj	obj	obj
C	window	window	window
D	obj	window	window
E	window	obj	window

```
function logThis() {
  console.log(this)
}

const obj = {
  logThis,
  logThisInArrow: () => console.log(this),
  logThisNested() {
    const nestedFunc = () => console.log(this);
    nestedFunc()
  },
}

obj.logThis();                    //obj
obj.logThisInArrow();             // window
obj.logThisNested();              // obj
```

Question 15

What gets logged?

```
1   const obj = {
2     logThis() {
3       console.log(this)
4     },
5     logThis2() {
6       function logThisInner() {
7           console.log(this)
8         }
9         return logThisInner.apply(this)
10    },
11  };
12
13  const { logThis, logThis2 } = obj;
14
15  logThis();
16  logThis2();
17  obj.logThis();
18  obj.logThis2();
```

A	window	window	window	window
B	window	obj	window	obj
C	obj	window	obj	window
D	obj	obj	obj	obj
E	window	window	obj	obj

Question 15

What gets logged?

```
1  const obj = {
2    logThis() {
3      console.log(this)
4    },
5    logThis2() {
6      function logThisInner() {
7          console.log(this)
8        }
9        return logThisInner.apply(this)
10   },
11 };
12
13 const { logThis, logThis2 } = obj;
14
15 logThis();
16 logThis2();
17 obj.logThis();
18 obj.logThis2();
```

A	window	window	window	window
B	window	obj	window	obj
C	obj	window	obj	window
D	obj	obj	obj	obj
E	window	window	obj	obj

```
1   const obj = {
2     logThis() {
3       console.log(this)
4     },
5     logThis2() {
6       function logThisInner() {
7           console.log(this)
8         }
9         return logThisInner.apply(this)
10    },
11  };
12
13  const { logThis, logThis2 } = obj;
14
15  logThis();          // window
16  logThis2();           // window
17  obj.logThis();            // obj
18  obj.logThis2();             // obj
```

Classes and Prototypes

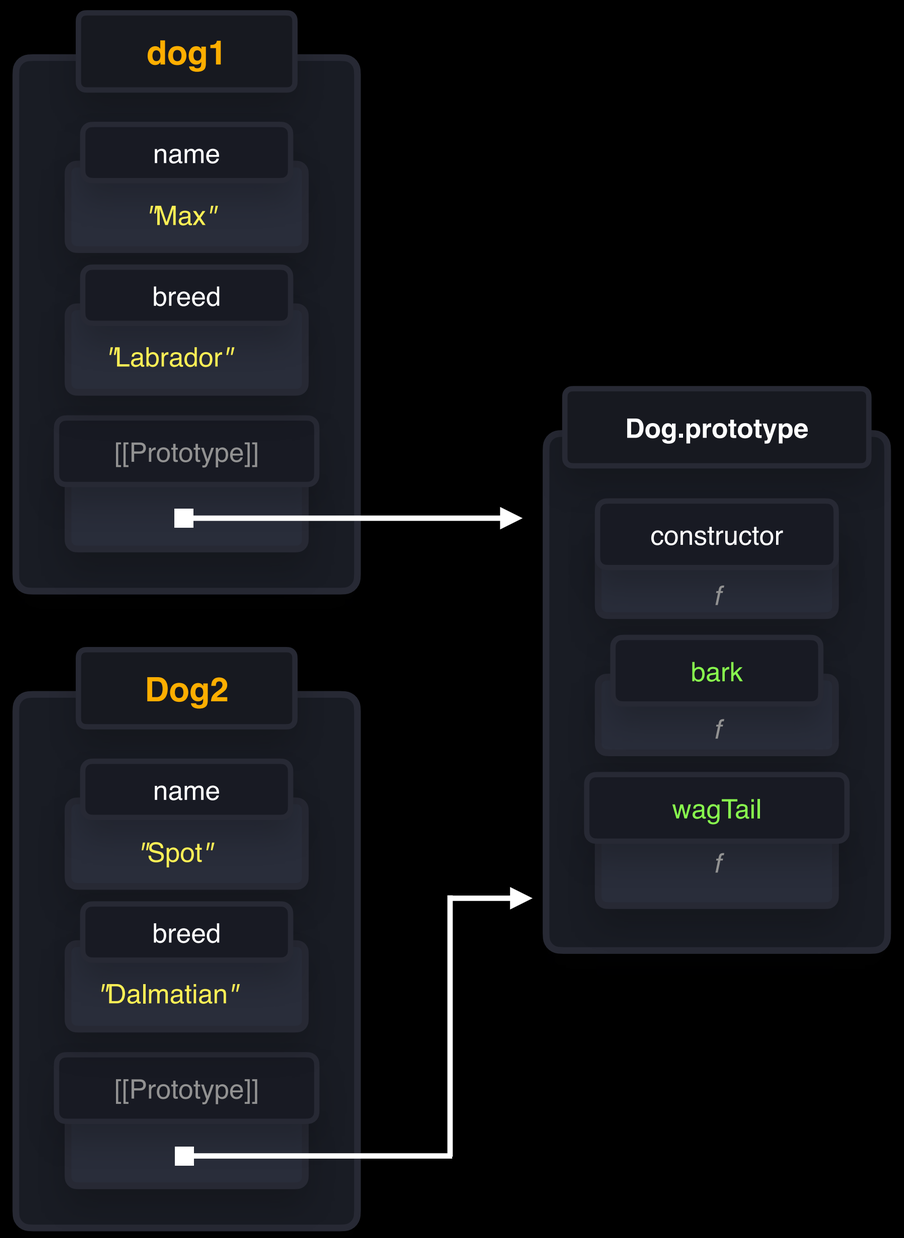
```
class Animal {
    constructor(name) {
        this.name = name;
    }
}
```

```
class Mammal extends Animal {
    constructor(name) {
      super(name);
    }

    breathe() { … }
}
```

```
class Canine extends Mammal {
    constructor(name) {
      super(name);
    }

    howl() { … }
}
```

```
class Dog extends Canine {
    constructor(name) {
      super(name);
    }

    wagTail() { … }
}
```

```
1  class Dog {
2      constructor(name, breed) {
3          this.name = name;
4          this.breed = breed;
5      }
6
7      bark() { }
8      wagTail() { }
9  }
10
11 const dog1 = new Dog("Max", "Labrador");
12 const dog2 = new Dog("Spot", "Dalmatian");
```



```
dog1.__proto__ (deprecated)
```

```
Object.getPrototypeOf(dog1)
```

Question 16

Creating a new User instance would create a new login function in memory each time

```
1   class User {
2     constructor(username) {
3       this.username = username;
4     }
5
6     login() { … }
7   }
8
9   const user1 = new User("johndoe");
10  const user2 = new User("janedoe");
```

A True

B False

Question 16

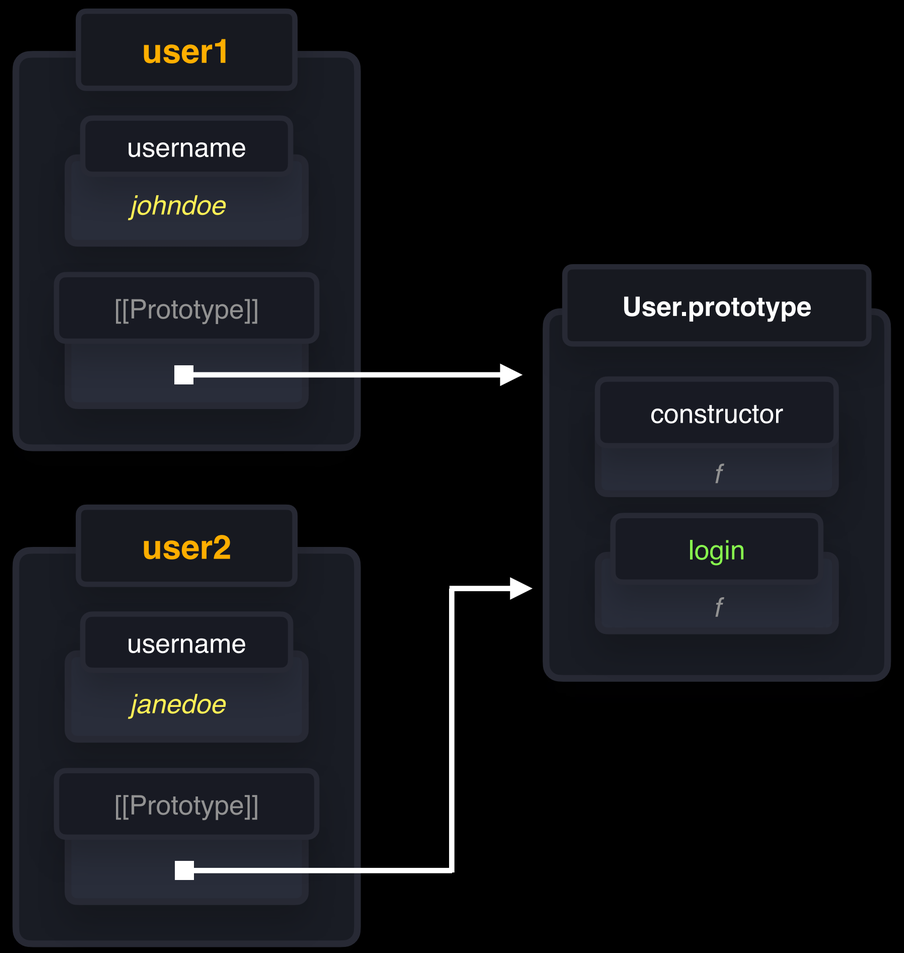
Creating a new User instance would create a new login function in memory each time

```
1   class User {
2     constructor(username) {
3       this.username = username;
4     }
5
6     login() { … }
7   }
8
9   const user1 = new User("johndoe");
10  const user2 = new User("janedoe");
```

A True

B False

```
1   class User {
2     constructor(username) {
3       this.username = username;
4     }
5
6     login() { … }
7   }
8
9   const user1 = new User("johndoe");
10  const user2 = new User("janedoe");
```



Question 17

Which of the following statements are true?

```
1  class Dog {
2      constructor(name) {
3          this.username = username;
4          this.wagTail = () => {
5            return "Wagging tail!"
6          }
7      }
8
9      bark() {
10       return "Woof!"
11     }
12 }
13
14 const dog1 = new Dog("Max");
15 const dog2 = new Dog("Spot");
```

A dog1.wagTail() === dog2.wagTail()

B dog1.wagTail === dog2.wagTail

C dog1.bark === dog2.bark

D Object.getPrototypeOf(dog1) ===
Object.getPrototypeOf(dog2)

E dog1.constructor === dog2.constructor

Question 17

Which of the following statements are true?

```
1  class Dog {
2    constructor(name) {
3      this.username = username;
4      this.wagTail = () => {
5        return "Wagging tail!"
6      }
7    }
8
9    bark() {
10     return "Woof!"
11   }
12 }
13
14 const dog1 = new Dog("Max");
15 const dog2 = new Dog("Spot");
```

A dog1.wagTail() === dog2.wagTail()

B dog1.wagTail === dog2.wagTail

C dog1.bark === dog2.bark

D Object.getPrototypeOf(dog1) ===
Object.getPrototypeOf(dog2)

E dog1.constructor === dog2.constructor

```
1   class Dog {
2       constructor(name) {
3           this.username = username;
4           this.wagTail = () => {
5             return "Wagging tail!"
6           }
7       }
8
9       bark() {
10        return "Woof!"
11      }
12  }
13
14  const dog1 = new Dog("Max");
15  const dog2 = new Dog("Spot");
```

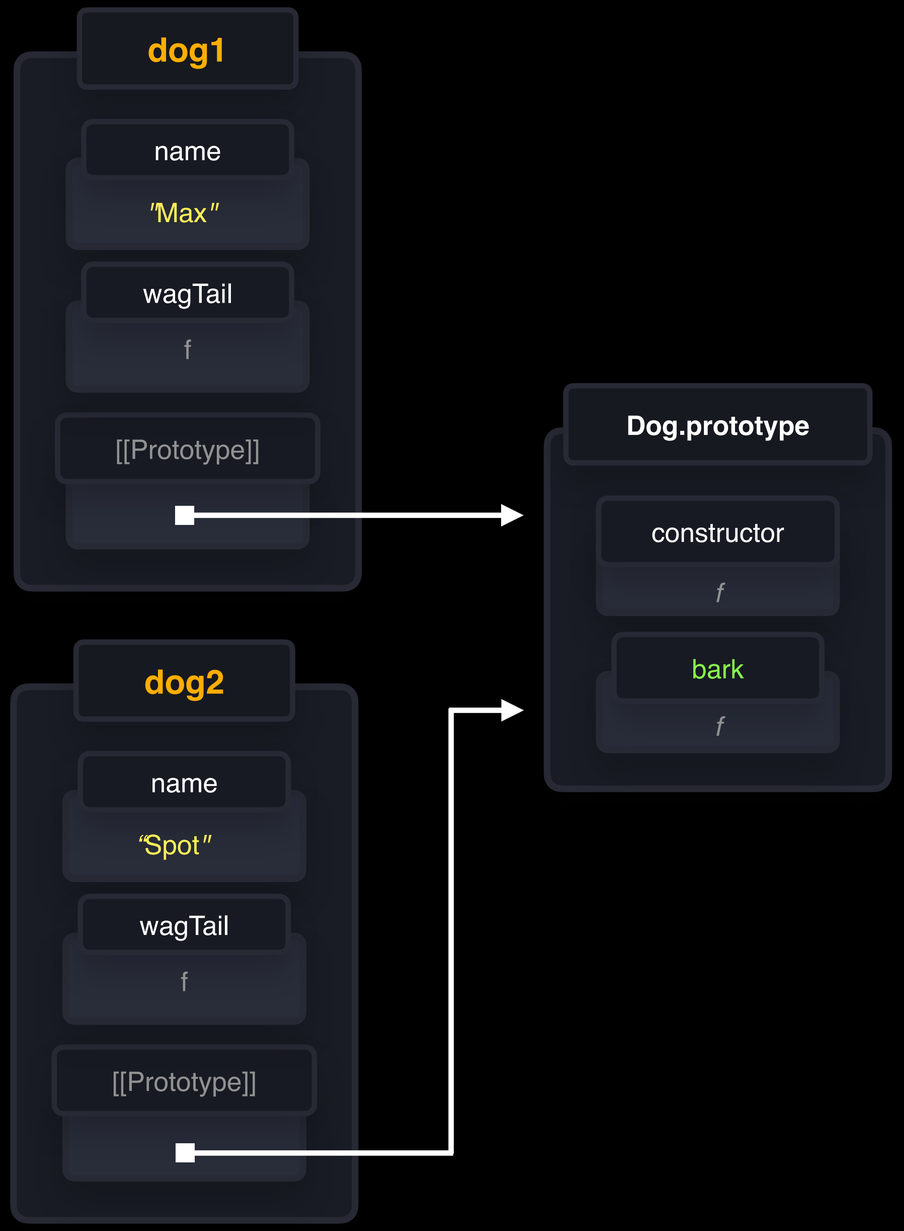
A dog1.wagTail() === dog2.wagTail()

B dog1.wagTail === dog2.wagTail

C dog1.bark === dog2.bark

D Object.getPrototypeOf(dog1) ===
Object.getPrototypeOf(dog2)

E dog1.constructor === dog2.constructor



Question 18

What gets logged?

```
class Counter {
    constructor(initialCount = 0) {
        this.count = initialCount;
    }

    increment() { return this.count++ }
}

const counterOne = new Counter(1);
counterOne.increment();
const counterTwo = Object.create(counterOne);
counterTwo.increment();

console.log(
  counterOne.count,
  counterTwo.count
)
```

A	2 2
B	2 3
C	1 1
D	3 2
E	TypeError

Question 18

What gets logged?

```
class Counter {
    constructor(initialCount = 0) {
        this.count = initialCount;
    }

    increment() { return this.count++ }
}

const counterOne = new Counter(1);
counterOne.increment();
const counterTwo = Object.create(counterOne);
counterTwo.increment();

console.log(
  counterOne.count,
  counterTwo.count
)
```

A 2 2

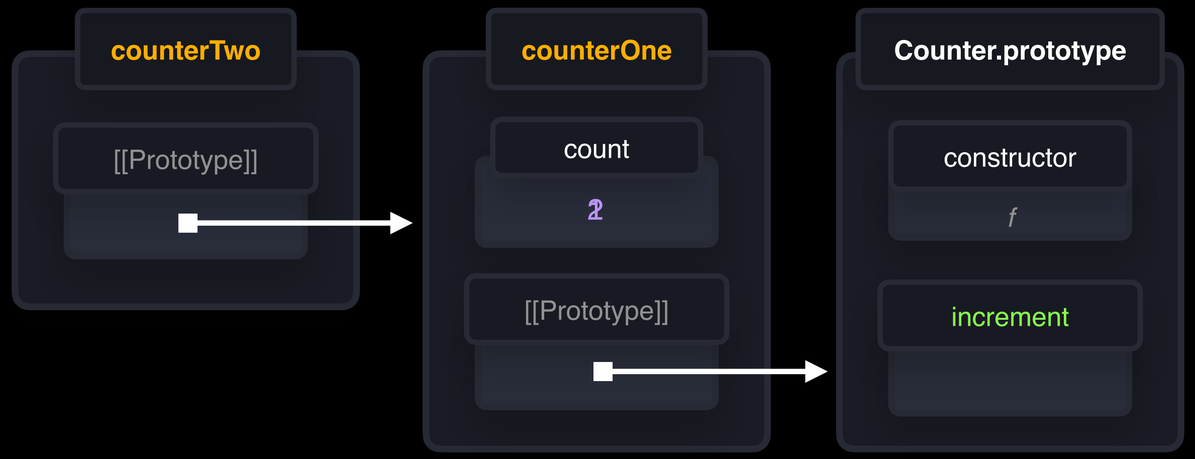
B 2 3

C 1 1

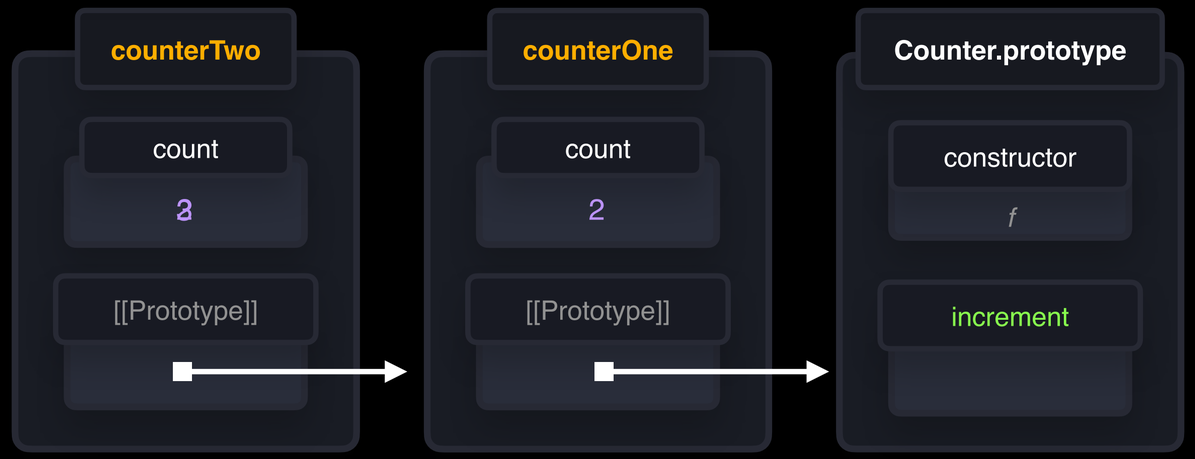
D 3 2

E TypeError

```
1   class Counter {
2       constructor(initialCount = 0) {
3           this.count = initialCount;
4       }
5
6       increment() { return this.count++ }
7   }
8
9   const counterOne = new Counter(1);
10  counterOne.increment();
11  const counterTwo = Object.create(counterOne);
12  counterTwo.increment();
```



```
1   class Counter {
2       constructor(initialCount = 0) {
3           this.count = initialCount;
4       }
5
6       increment() { return this.count++ }
7   }
8
9   const counterOne = new Counter(1);
10  counterOne.increment();
11  const counterTwo = Object.create(counterOne);
12  counterTwo.increment();
```



Question 19

What gets logged?

```
class Chameleon {
  constructor(color = “green”) {
    this.color = color;
  }

  static changeColor(newColor) {
   this.color = newColor;
    return this.color;
 }
}

const freddie = new Chameleon("green");
freddie.changeColor("orange");
```

A orange

B purple

C green

D TypeError

E *undefined*

Question 19

What gets logged?

```
class Chameleon {
  constructor(color = “green”) {
    this.color = color;
  }

  static changeColor(newColor) {
   this.color = newColor;
    return this.color;
 }
}

const freddie = new Chameleon("green");
freddie.changeColor("orange");
```

A orange

B purple

C green

D TypeError

E *undefined*

```
1   class Chameleon {
2       constructor(color = “green”) {
3           this.color = color;
4       }
5
6       static changeColor(newColor) {
7         this.color = newColor;
8           return this.color;
9     }
10  }
11
12  Chameleon.changeColor // function
13  new Chameleon().changeColor // undefined
```

Question 20

Which statements are true?

```
1  class User {
2      constructor(username) {
3          this.username = username;
4      }
5
6      login() { … }
7  }
8
9  const user = new User("johndoe");
```

A Object.getPrototypeOf(user) === User.prototype

B Object.getPrototypeOf(user) === Object.getPrototypeOf(User)

C user.prototype === User.prototype

D Object.getPrototypeOf(user) === User.constructor

Question 20

Which statements are true?

```
1  class User {
2      constructor(username) {
3          this.username = username;
4      }
5
6      login() { … }
7  }
8
9  const user = new User("johndoe");
```

A Object.getPrototypeOf(user) === User.prototype

B Object.getPrototypeOf(user) === Object.getPrototypeOf(User)

C user.prototype === User.prototype

D Object.getPrototypeOf(user) === User.constructor

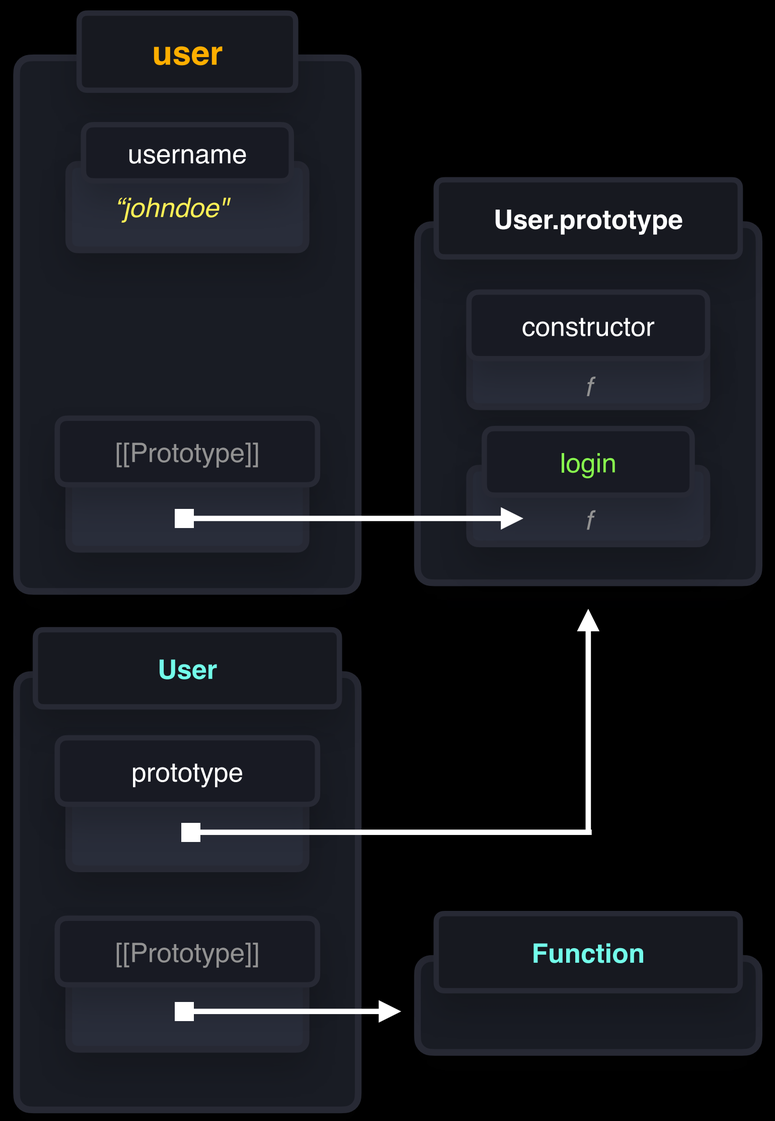
```
1  class User {
2      constructor(username) {
3          this.username = username;
4      }
5
6      login() { … }
7  }
8
9  const user = new User("johndoe");
```

A Object.getPrototypeOf(user) === User.prototype

B Object.getPrototypeOf(user) === Object.getPrototypeOf(User)

C user.prototype === User.prototype

D Object.getPrototypeOf(user) === User.constructor



Generators & Iterators

```
1   function* genFunc() {
2     yield 1;
3     yield 2;
4     yield 3;
5     return 4;
6   }
7
8   const iterator = genFunc();
9
10  iterator.next();            // { value: 1, done: false }
11
12
13
```

iterator

state	Running
next	function
return	function
throw	function

```
1   function* genFunc() {
2     yield 1;
3     yield 2;
4     yield 3;
5     return 4;
6   }
7
8   const iterator = genFunc();
9
10  iterator.next();          // { value: 1, done: false }
11  iterator.next();          // { value: 2, done: false }
12
13
```

iterator

state	Running
next	function
return	function
throw	function

```
1   function* genFunc() {
2     yield 1;
3     yield 2;
4     yield 3;
5     return 4;
6   }
7
8   const iterator = genFunc();
9
10  iterator.next();          // { value: 1, done: false }
11  iterator.next();          // { value: 2, done: false }
12  iterator.next();          // { value: 3, done: false }
13  iterator.next();          // { value: 4, done: true }
```

iterator

state	Closed
next	function
return	function
throw	function

```
1  function* generatorFunction() {
2    yield 1;
3    yield 2;
4    yield 3;
5    return 4;
6  }
7
8
9  console.log([...generatorFunction()]); // [1, 2, 3]
10
11 for (const value of generatorFunction()) {
12     console.log(value)
13 } // 1  2  3
```

Question 21

What gets logged?

```
function* count() {
  yield 1;
  yield 2;
  return 3;
}

for (const value of count()) {
    console.log(value)
}
```

A 1 2 3

B 1 2 Promise

C 3

D 1

E 1 2

Question 21

What gets logged?

```
function* count() {
  yield 1;
  yield 2;
  return 3;
}

for (const value of count()) {
    console.log(value)
}
```

A 1 2 3

B 1 2 Promise

C 3

D 1

E 1 2

```
1  function* count() {
2    yield 1;
3    yield 2;
4    return 3;
5  }
6
7  for (const value of count()) {
8      console.log(value)
9  }
```

Question 22

To create a custom iterable object in JavaScript, the object must implement the `Symbol.iterator` method that returns an iterator.

The iterator must implement what method?

A next

B iterator

C iterate

D forEach

E None

Question 22

To create a custom iterable object in JavaScript, the object must implement the `Symbol.iterator` method that returns an iterator.

The iterator must implement what method?

A next

B iterator

C iterate

D forEach

E None

```
1  const range = {
2    from: 1,
3    to: 5,
4    [Symbol.iterator]() {
5      current: this.from,
6      last: this.to,
7      return {
8        next() {
9          if (this.current <= this.last) {
10           return { done: false, value: this.current++ }
11         } else {
12           return { done: true }
13         }
14       }
15     }
16   }
17 }
18
19 console.log([...range]) // [1, 2, 3, 4, 5]
```

```
1  const range = {
2    from: 1,
3    to: 5,
4    *[Symbol.iterator]() {
5      for (let i = this.from; i <= this.to; I++) {
6        yield value;
7      }
8    }
9  }
10
11 console.log([...range]) // [1, 2, 3, 4, 5]
```

Question 23

What gets logged?

```
1  async function* range(start, end) {
2    for (let i = start; i <= end; i++) {
3      yield Promise.resolve(i);
4    }
5  }
6
7  (async () => {
8    const gen = range(1, 3);
9    for await (const item of gen) {
10     console.log(item)
11   }
12 })();
```

A Promise{1} Promise{2} Promise{3}

B 3x Promise{<pending>}

C 1 2 3

D 3x undefined

E [1, 2, 3] undefined undefined

Question 23

What gets logged?

```
1  async function* range(start, end) {
2    for (let i = start; i <= end; i++) {
3      yield Promise.resolve(i);
4    }
5  }
6
7  (async () => {
8    const gen = range(1, 3);
9    for await (const item of gen) {
10     console.log(item)
11   }
12 })();
```

A Promise{1} Promise{2} Promise{3}

B 3x Promise{<pending>}

C 1 2 3

D 3x undefined

E [1, 2, 3] undefined undefined

```javascript
1  async function* range(start, end) {
2    for (let i = start; i <= end; i++) {
3      yield Promise.resolve(i);
4      }
5  }
6
7  (async () => {
8    const gen = range(1, 3);
9    for await (const item of gen) {
10     console.log(item)
11   }
12 })();
```

Simplified but same idea

```javascript
1  async function* range() {
2    yield Promise.resolve(1);
3    yield Promise.resolve(2);
4    yield Promise.resolve(3);
5  }
6
7  (async () => {
8    for await (const item of range()) {
9      console.log(item)
10   }
11 })();
```

Question 24

What gets logged?

```
function* gen1() {
  yield 2;
  yield 3;
}

function* gen2() {
  yield 1;
  yield* gen1();
  yield 4;
}

console.log([...gen2()])
```

A [1, 2, 3, 4]

B [1, [2, 3], 4]

C SyntaxError

D [1, 4, 2, 3]

Question 24

What gets logged?

```
function* gen1() {
  yield 2;
  yield 3;
}

function* gen2() {
  yield 1;
  yield* gen1();
  yield 4;
}

console.log([...gen2()])
```

A [1, 2, 3, 4]

B [1, [2, 3], 4]

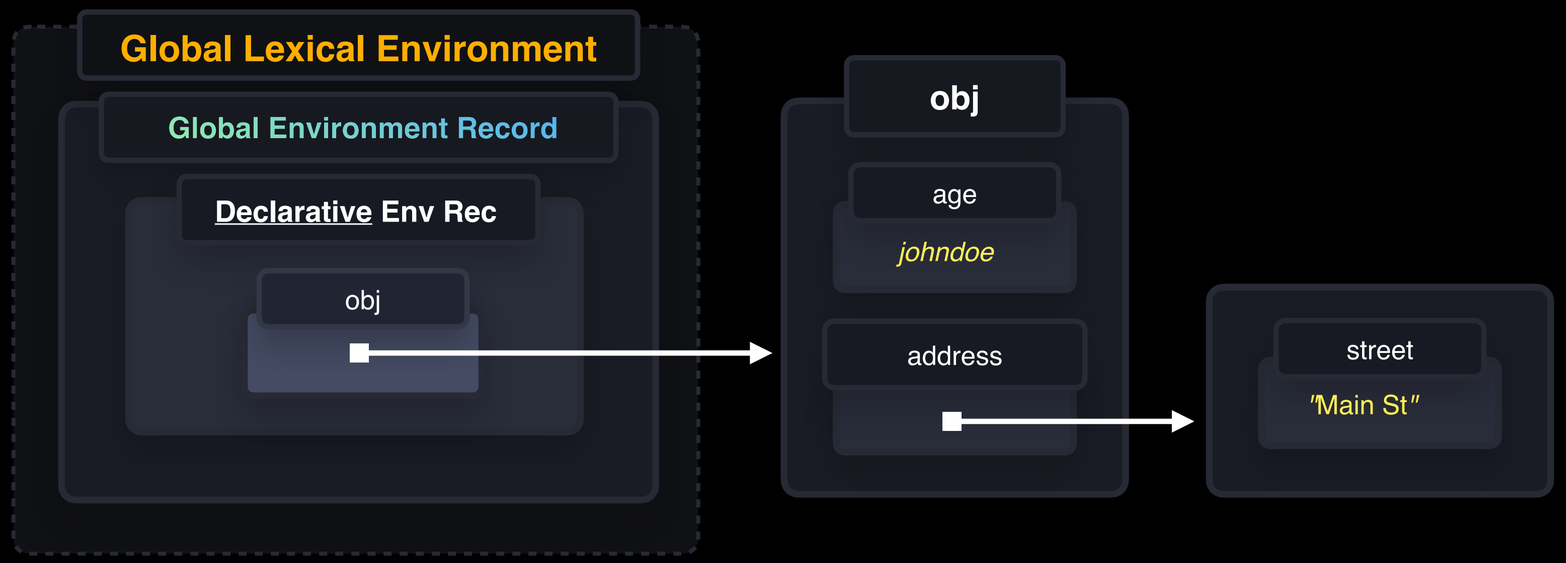
C SyntaxError

D [1, 4, 2, 3]

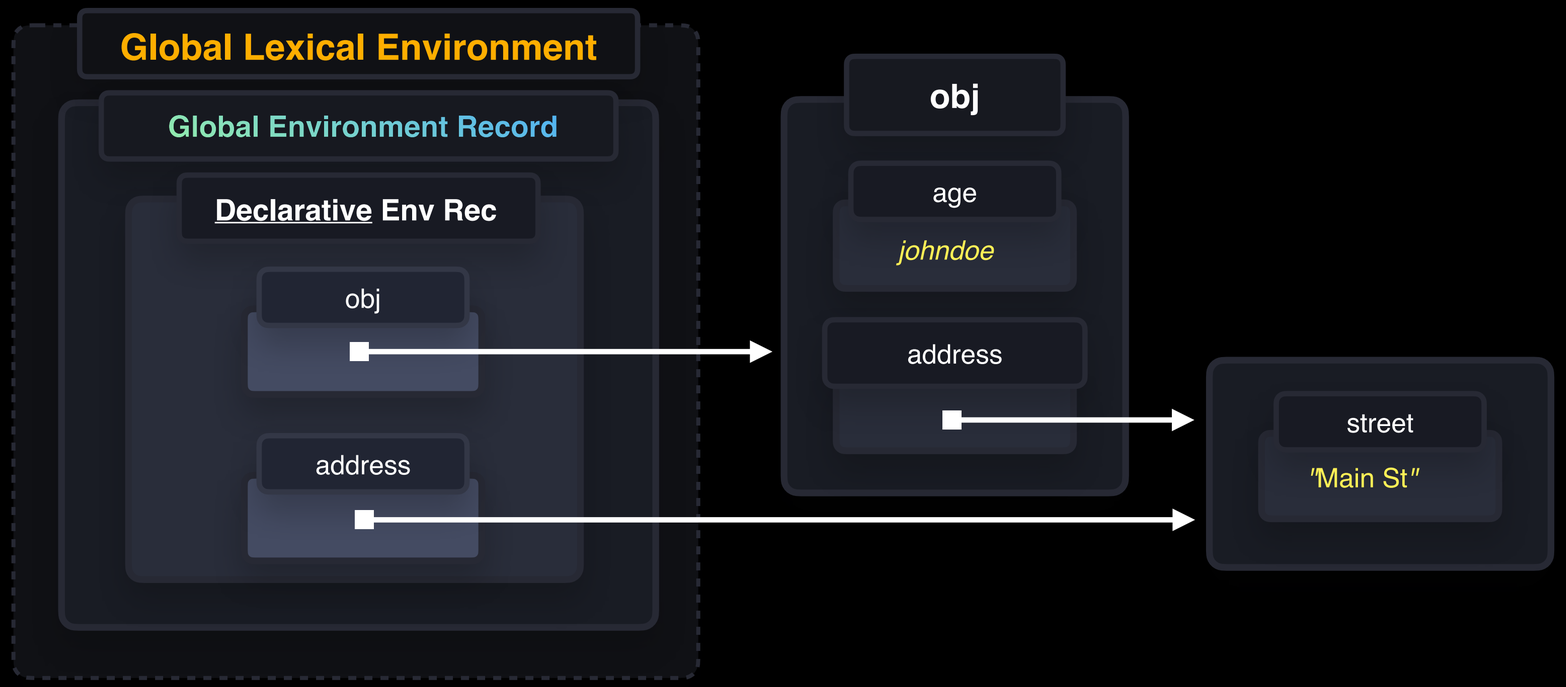
```
1   function* gen1() {
2     yield 2;
3     yield 3;
4   }
5
6   function* gen2() {
7     yield 1;
8     yield* gen1();
9     yield 4;
10  }
11
12  console.log([…gen2()])
```

Garbage Collection

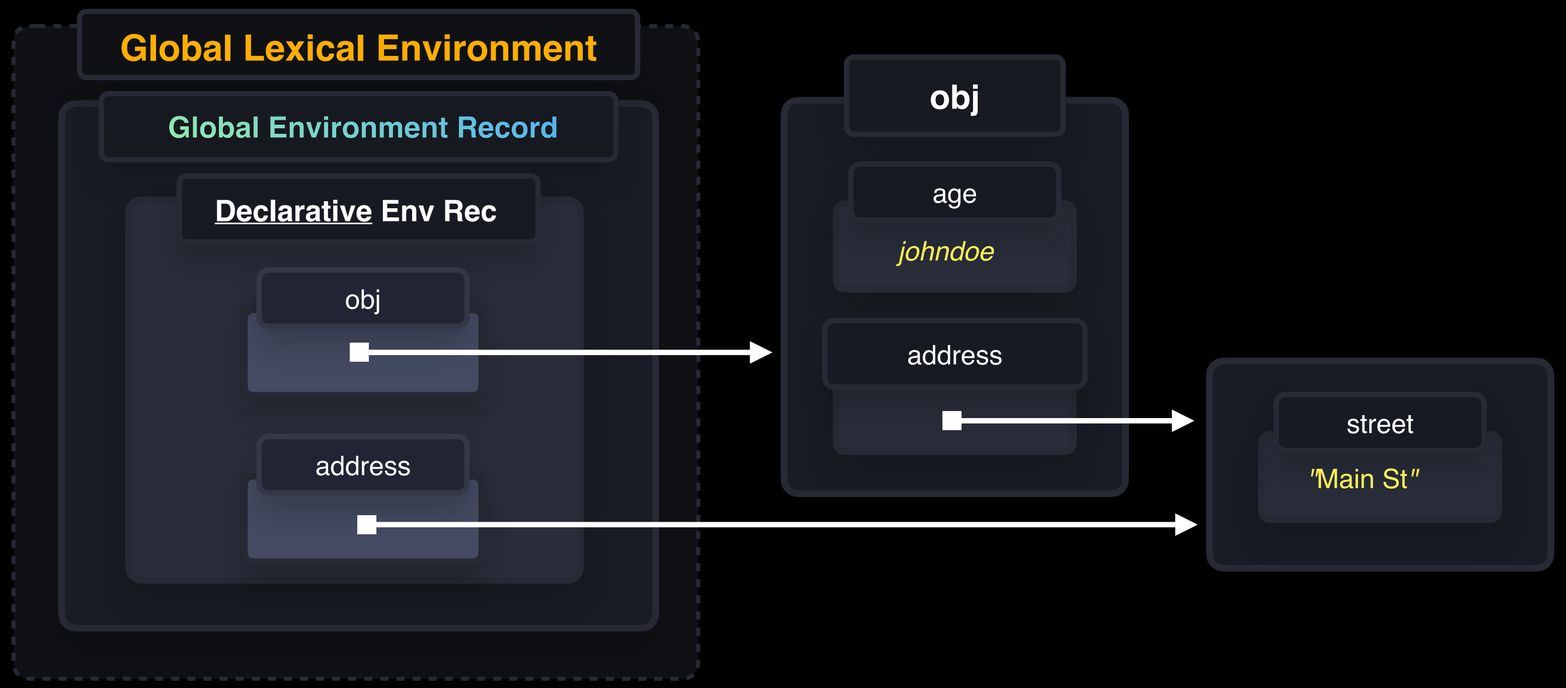
```
1  const obj = {
2    age: 25,
3    address: {
4      street: "Main St"
5    }
6  }
```



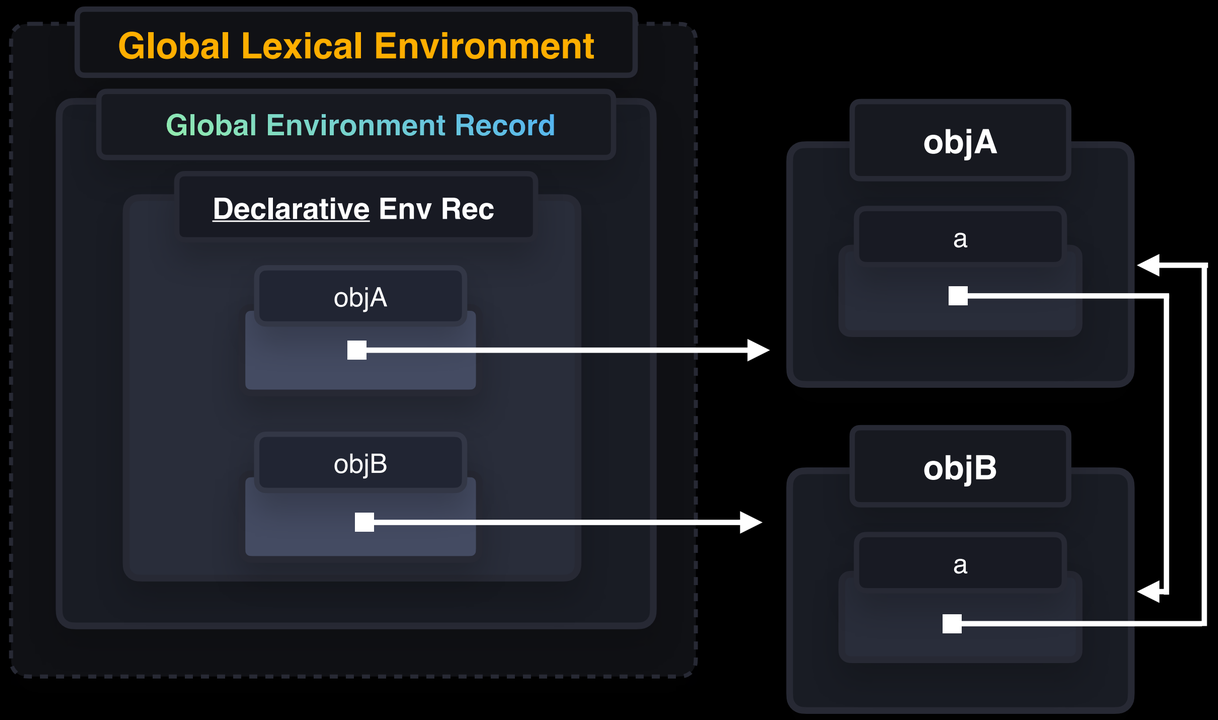
```
1  const obj = {
2    age: 25,
3    address: {
4      street: "Main St"
5    }
6  }
7
8  const address = obj.address;
```



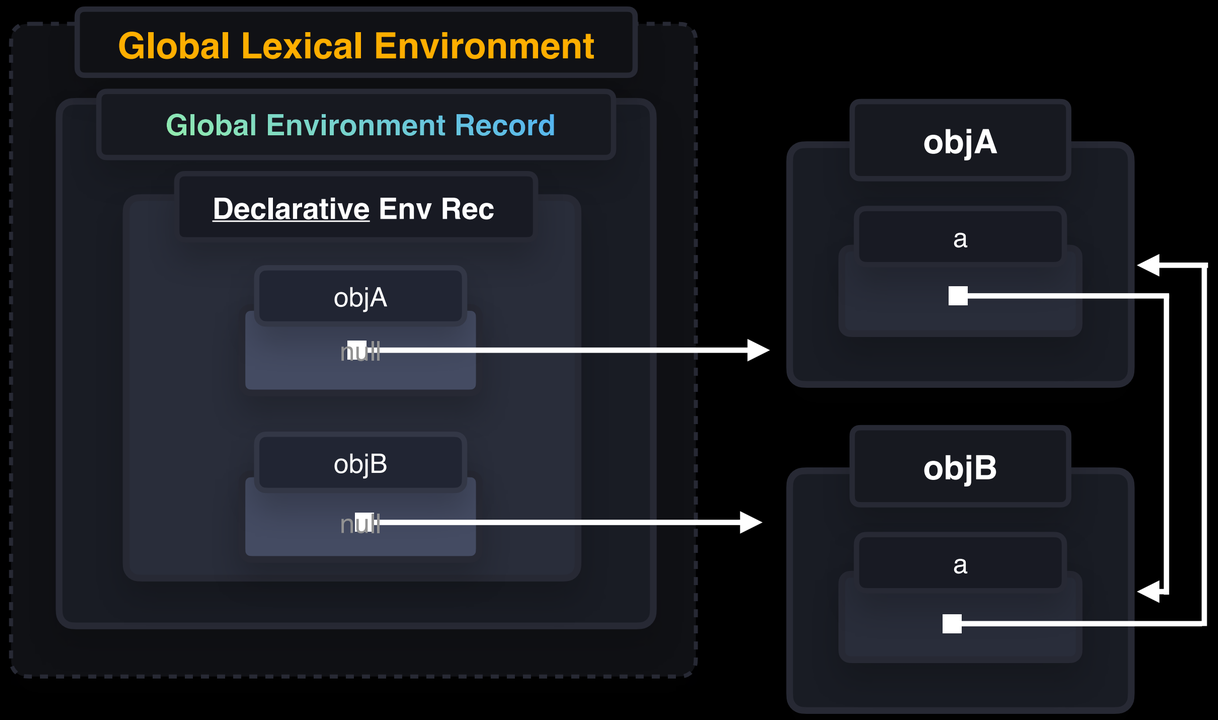
```
1   const obj = {
2     age: 25,
3     address: {
4       street: "Main St"
5     }
6   }
7
8   const address = obj.address;
9   obj = null;
10
```



```
1  const objA = { };
2  const objB = { };
3
4  objA.a = objB;
5  objB.a = objA;
6
7
8
```



```
1  const objA = { };
2  const objB = { };
3
4  objA.a = objB;
5  objB.a = objA;
6
7  objA = null;
8  objB = null;
```



Question 25

Which of the following statements are true about a WeakMap?

A	Keys are strongly referenced, values are weakly referenced
B	Keys are weakly referenced, values are strongly referenced
C	It is enumerable, allowing iteration over its elements
D	It can have primitive data types as keys
E	We can use the keys() method on a WeakMap, but not values()

Question 25

Which of the following statements are true about a WeakMap?

A Keys are strongly referenced, values are weakly referenced

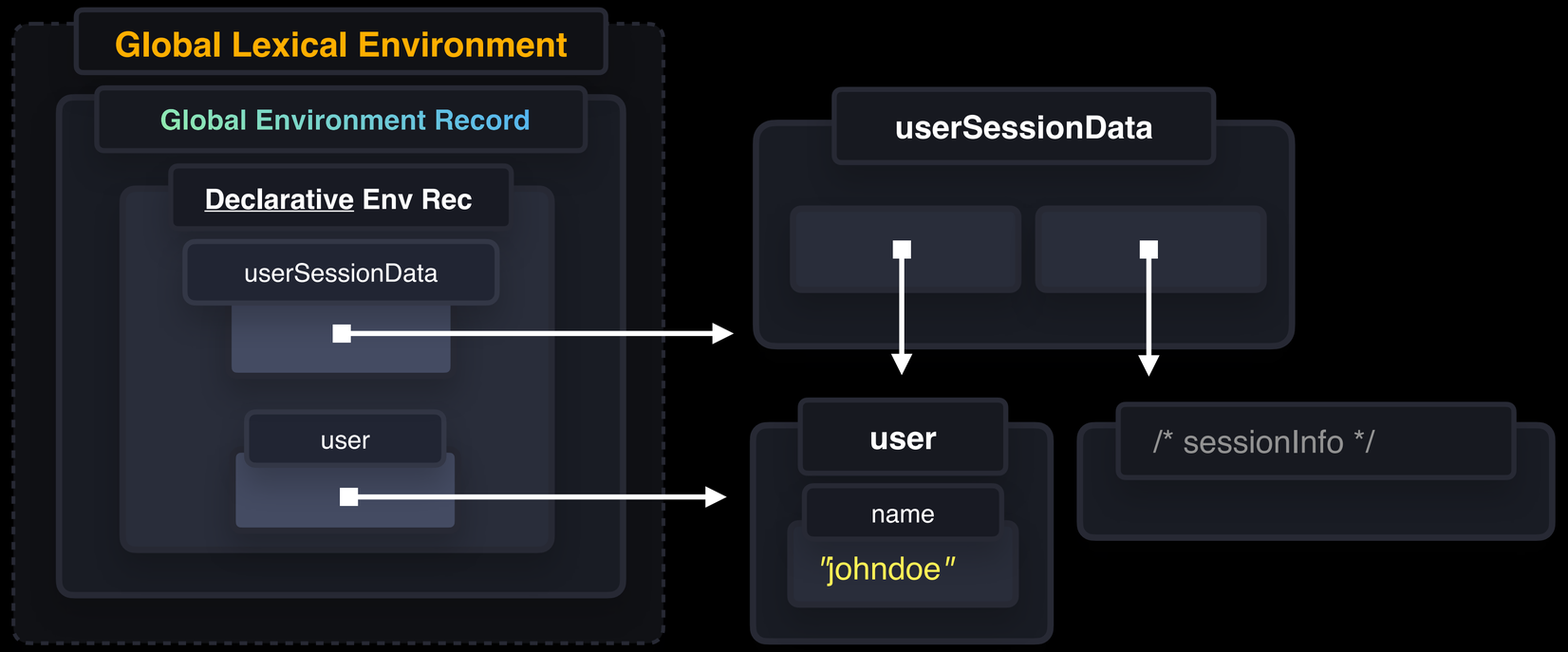
B Keys are weakly referenced, values are strongly referenced

C It is enumerable, allowing iteration over its elements

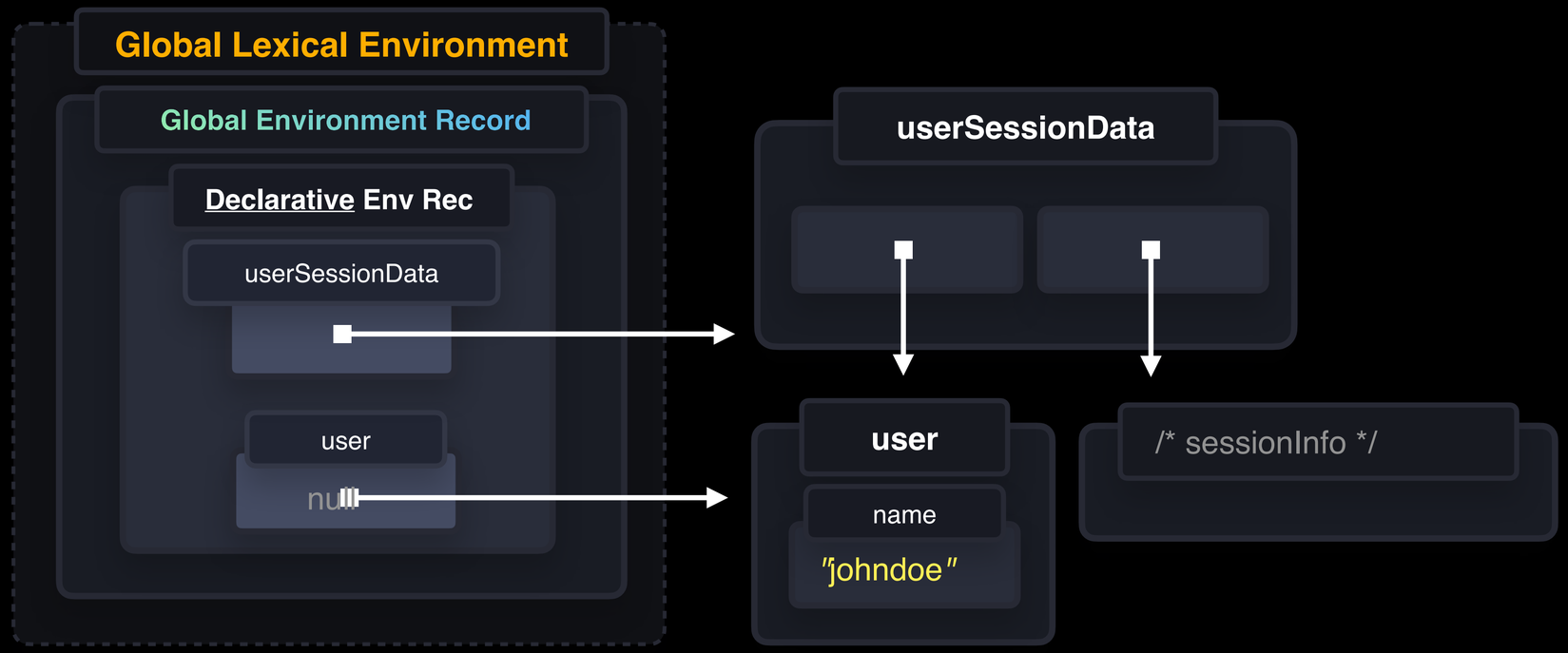
D It can have primitive data types as keys

E We can use the keys() method on a WeakMap, but not values()

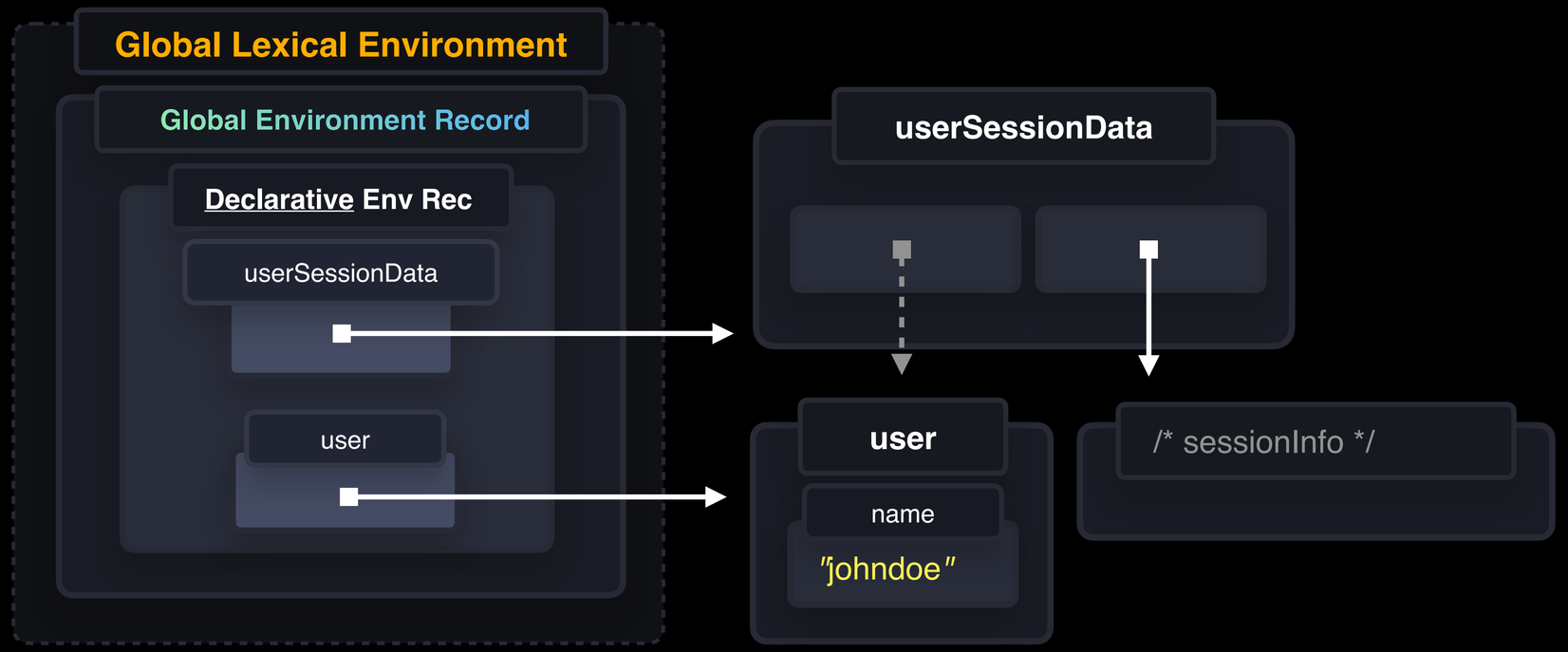
```
1  const user = { name: "johndoe" }
2  const userSessionData = new Map();
3
4  userSessionData.set(user, { /* sessionInfo */ });
```



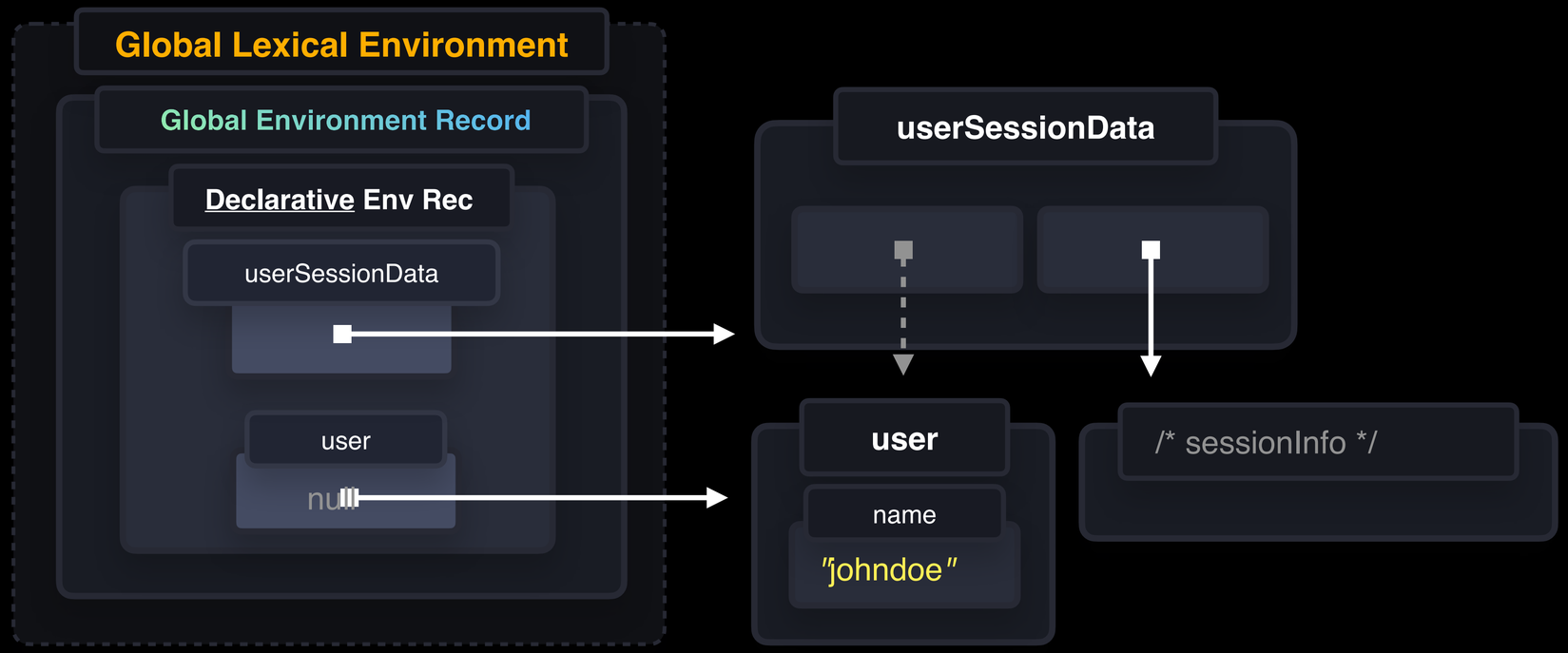
```
1  const user = { name: "johndoe" }
2  const userSessionData = new Map();
3
4  userSessionData.set(user, { /* sessionInfo */ });
5  user = null
```



```
1  const user = { name: "johndoe" }
2  const userSessionData = new WeakMap();
3
4  userSessionData.set(user, { /* sessionInfo */ });
```



```
1  const user = { name: "johndoe" }
2  const userSessionData = new WeakMap();
3
4  userSessionData.set(user, { /* sessionInfo */ });
5  user = null
```



Question 26

When will inner function be eligible for garbage collection?

```
function outer() {
  return function inner() {
    console.log("Inner function")
  }
}

const outerFunction = outer()
```

A By invoking outerFunction

B By explicitly setting outerFunction to null

C It is automatically garbage collected right after outer is called

D It depends on the JavaScript engine's garbage collection strategy

Question 26

When will inner function be eligible for garbage collection?

```
1  function outer() {
2    return function inner() {
3      console.log("Inner function")
4    }
5  }
6
7  const outerFunction = outer()
```

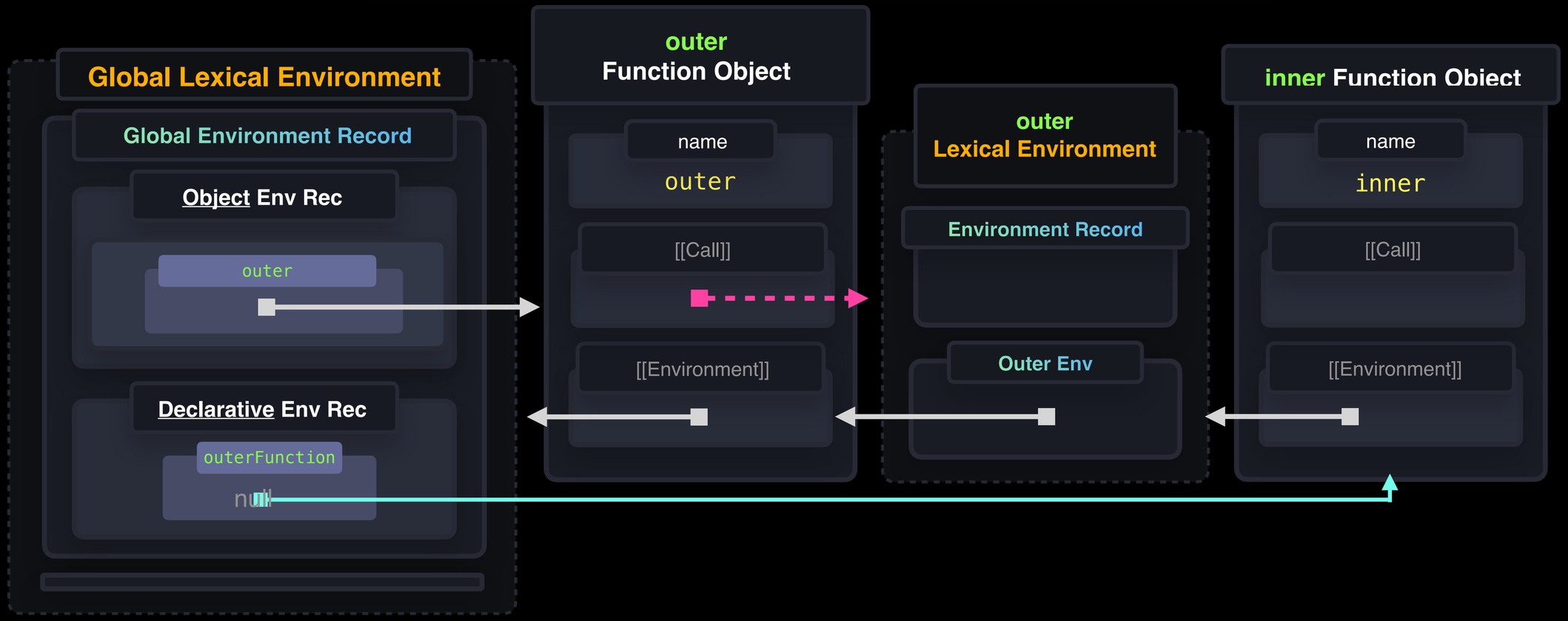
A By invoking outerFunction

B By explicitly setting outerFunction to null

C It is automatically garbage collected right after outer is called

D It depends on the JavaScript engine's garbage collection strategy

```
1  function outer() {
2    return function inner() {
3      console.log("Inner function")
4    }
5  }
6
7  const outerFunction = outer()
```



Question 27

Which statements are true regarding this code snippet?

```
1  let obj = { a: { b: 1 } };
2  let ref = obj.a;
3
4  obj = null;
```

A The object { b: 1 } will be garbage collected

B ref still references { b: 1 }, so it won't be garbage collected

C The entire obj object is retained in memory due to the reference in ref

D Setting obj to null frees all memory associated with it

Question 27

Which statements are true regarding this code snippet?

```
1  let obj = { a: { b: 1 } };
2  let ref = obj.a;
3
4  obj = null;
```

A The object { b: 1 } will be garbage collected

B ref still references { b: 1 }, so it won't be garbage collected

C The entire obj object is retained in memory due to the reference in ref

D Setting obj to null frees all memory associated with it

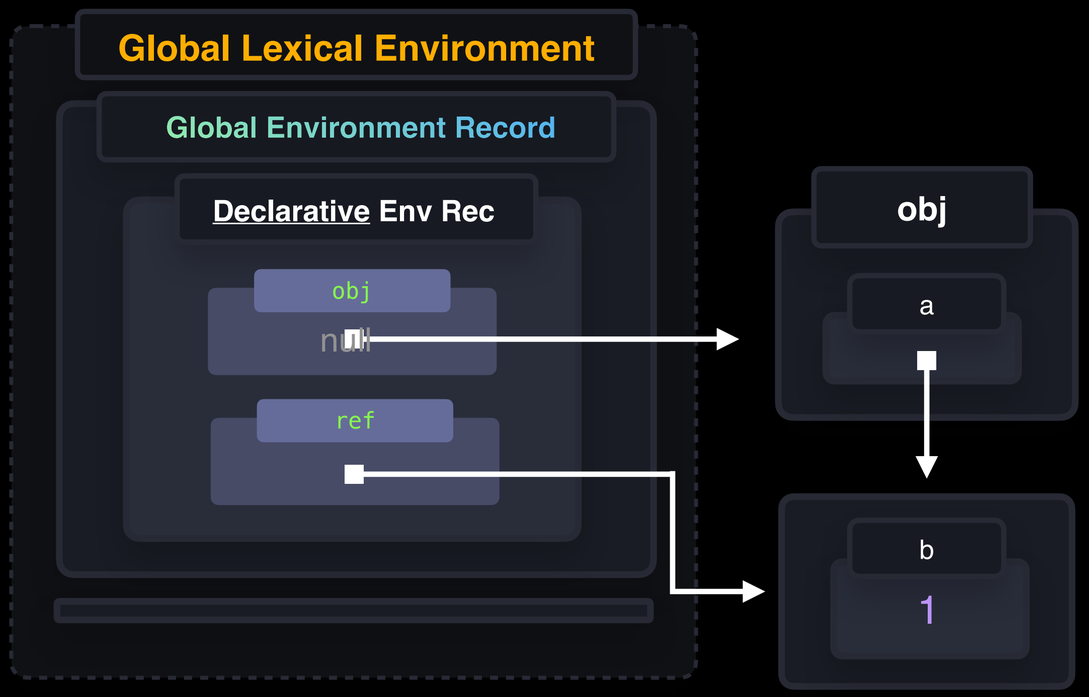
```
1  let obj = { a: { b: 1 } };
2  let ref = obj.a;
3
4  obj = null;
```

A The object { b: 1 } will be garbage collected

B ref still references { b: 1 }, so it won't be garbage collected

C The entire obj object is retained in memory due to the reference in ref

D Setting obj to null frees all memory associated with it



Question 28

You can get a list of all keys in a WeakMap using its keys method, but you can not get its values

A true

B false

Question 28

You can get a list of all keys in a WeakMap using its keys method, but you can not get its values

A true

B false

```
1   const user = { name: "johndoe" }
2   const userSessionData = new WeakMap();
3
4   userSessionData.set(
5     user,
6     { /* sessionInfo */ }
7   );
8
9   userSessionData.keys(); // TypeError
10  userSessionData.values(); // TypeError
11  [...userSessionData]; // TypeError
```

Question 29

When will each user be eligible for garbage collection?

```
1  function myFunc() {
2    for (let i = 0; i < 3; i++) {
3      const user = { name: "John Doe" };
4      return user;
5    }
6  }
```

A Immediately after each iteration.

B After the loop completes

C Only if explicitly set to **null** within the loop.

D When the function containing the loop finishes execution

Question 29

When will each user be eligible for garbage collection?

```
1  function myFunc() {
2    for (let i = 0; i < 3; i++) {
3      const user = { name: "John Doe" };
4      return user;
5    }
6  }
```

A Immediately after each iteration.

B After the loop completes

C Only if explicitly set to **null** within the loop.

D When the function containing the loop finishes execution

```
function myFunc() {
  for (let i = 0; i < 3; i++) {
    const user = { name: "John Doe" };
    return user;
  }
}
```

Question 30

What gets logged?

```
1  const obj = {
2    bar() {
3      console.log(this)
4    }
5  }
6
7  setTimeout(() => obj.bar(), 0);
8
9  queueMicrotask(() =>
10     delete obj.bar
11 });
```

A obj

B window

C setTimeout

D undefined

E TypeError

Question 30

What gets logged?

```
1  const obj = {
2    bar() {
3      console.log(this)
4    }
5  }
6
7  setTimeout(() => obj.bar(), 0);
8
9  queueMicrotask(() =>
10     delete obj.bar
11 });
```

A obj

B window

C setTimeout

D undefined

E TypeError

```
1   const obj = {
2     bar() {
3       console.log(this)
4     }
5   }
6
7   setTimeout(() => obj.bar(), 0);
8
9   queueMicrotask(() =>
10    delete obj.bar
11  });
```

Modules

Question 31

Match each module loading mechanism with its correct characteristic

1	CommonJS	A	Focuses on client-side asynchronous loading, allowing modules to be fetched and executed in a non-blocking manner
2	AMD	B	supports various environments, accommodating both server and client-side usage
3	UMD	C	used mainly in server-side contexts, this approach loads modules sequentially
4	ESM	D	uses static syntax for imports/exports

Question 31

Match each module loading mechanism with its correct characteristic

1	CommonJS	C	used mainly in server-side contexts, this approach loads modules sequentially
2	AMD	A	focuses on client-side asynchronous loading, allowing modules to be fetched and executed in a non-blocking manner
3	UMD	B	supports various environments, accommodating both server and client-side usage
4	ESM	D	uses static syntax for imports/exports

1 CommonJS

C used mainly in server-side contexts, this approach loads modules sequentially

```
const sum = require("./sum");

const value = sum(2, 3);

module.exports = { value };
```

- Modules are loaded synchronously, typically on the server-side.
- Uses require() for importing and module.exports for exporting.
- The primary module system for Node.js.

- Requires bundling and transpilation for use in browsers.
- Can cause performance issues when loading modules on the client-side.

2 AMD

A focuses on client-side asynchronous loading, allowing modules to be fetched and executed in a non-blocking manner

```
define(‘main', ['sum', function(sum) {
  const value = sum(2, 3);
  return { value };
});
```

- Modules and their dependencies are loaded asynchronously.
- Modules can be loaded at runtime as needed.
- Uses **define** for defining modules and **require** for loading modules.

- More complex syntax compared to CommonJS or ESM.
- Not commonly used in Node.js environments.

3 UMD

B supports various environments, accommodating both server and client-side usage

```
(function(root, factory) {
    if (typeof define === 'function' && define.amd) {
        // AMD. Register as an anonymous module.
        define([], factory);
    } else if (typeof module === 'object' && module.exports) {
        // Node.js/ CommonJS
        module.exports = factory();
    } else {
        // Browser globals (root is typically `window`)
        root.sum = factory();
    }
}(typeof self !== 'undefined' ? self : this, function() {
    // Module definition and factory function
    return function sum(a, b) {
        return a + b;
    };
}));
```

- Works with both client-side and server-side JavaScript.
- Can switch between AMD and CommonJS environments, and also work in global scope.
- Ideal for libraries intended to be used in various environments.

- More complex than using either AMD or CommonJS alone.
- Can lead to larger file sizes due to handling multiple environments.

4 ESM

D supports various environments, accommodating both server and client-side usage

```
1  import sum from "./sum";
2
3  const value = sum(2, 3);
4
5  export default { value };
```

- Allows for static analysis, tree shaking, and more efficient bundling.
- Supports both synchronous and asynchronous loading.
- Directly supported by modern web browsers.
- Uses import and export keywords.

- Requires transpilation and bundling for legacy browser support.
- Requires changes to codebase when migrating from CommonJS.

Question 32

Put the logs in the correct order

```
import { createRequire } from "module";
const require =
    createRequire(import.meta.url);

require("./file1.js")
import "./file2.mjs"
import "./file3.mjs"

function getModule() {
    import("./file4.mjs")
    require("./file5.js")
}

getModule()
```

```
console.log("file1.js")
module.exports = {}
```

```
console.log("file2.mjs")
export default {}
```

```
await new Promise((res) =>
    setTimeout(() => res(), 0))

console.log("file3.mjs")
export default {}
```

```
console.log("file4.mjs")
export default {}
```

```
console.log("file5.js")
module.exports = {}
```

"file1.js"

"file2.js"

"file3.js"

"file4.js"

"file5.js"

Question 32

Put the logs in the correct order

```
import { createRequire } from "module";
const require =
    createRequire(import.meta.url);

require("./file1.js")
import "./file2.mjs"
import "./file3.mjs"

function getModule() {
    import("./file4.mjs")
    require("./file5.js")
}

getModule()
```

```
console.log("file1.js")
module.exports = {}
```

```
console.log("file2.mjs")
export default {}
```

```
await new Promise((res) =>
    setTimeout(() => res(), 0))

console.log("file3.mjs")
export default {}
```

```
console.log("file4.mjs")
export default {}
```

```
console.log("file5.js")
module.exports = {}
```

"file2.js"

"file3.js"

"file1.js"

“file5.js"

“file4.js"

Question 33

Which of the following statements correctly describe the differences between `require` and `import`

A	`require` can be called conditionally, while the `import` statement cannot
B	`import` statements are hoisted, but `require` calls are not
C	`require` synchronously loads modules, while `import` can load modules asynchronously
D	`import` allows for static analysis and tree shaking, but `require` does not

Question 33

Which of the following statements correctly describe the differences between `require` and `import`

A `require` can be called conditionally, while the `import` statement cannot

B `import` statements are hoisted, but `require` calls are not

C `require` synchronously loads modules, while `import` can load modules asynchronously

D `import` allows for static analysis and tree shaking, but `require` does not

Miscellaneous

Question 34

What gets logged?

```
let number = 0;
console.log(number++);
console.log(++number);
console.log(number);
```

A 1 1 2

B 1 2 2

C 0 2 2

D 0 1 2

E 1 1 0

Question 34

What gets logged?

```
1  let number = 0;
2  console.log(number++);
3  console.log(++number);
4  console.log(number);
```

A 1 1 2

B 1 2 2

C 0 2 2

D 0 1 2

E 1 1 0

```
1  let number = 0;
2  console.log(number++);
3  console.log(++number);
4  console.log(number);
```

Question 35

What gets logged?

```
1  const a = 3;
2  const b = new Number(3);
3  const c = 3;
4
5  console.log(a == b);
6  console.log(a === b);
7  console.log(b === c);
8  console.log(a.toString() === b.toString());
```

A	true	false	true	false
B	false	false	true	false
C	true	false	false	true
D	false	true	true	true
E	false	true	true	false

Question 35

What gets logged?

```
1  const a = 3;
2  const b = new Number(3);
3  const c = 3;
4
5  console.log(a == b);
6  console.log(a === b);
7  console.log(b === c);
8  console.log(a.toString === b.toString);
```

A	true	false	true	false
B	false	false	true	false
C	true	false	false	true
D	false	true	true	true
E	false	true	true	false

```
1  const a = 3;
2  const b = new Number(3);
3  const c = 3;
4
5  console.log(a == b);
6  console.log(a === b);
7  console.log(b === c);
8  console.log(a.toString === b.toString);
```

c	true	false	true	true

Question 36

What gets logged?

```
1  const a = isNaN("5.2" + 2);
2  const b = isNaN(parseInt(a));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

A	true	true	true	true
B	false	false	false	false
C	true	false	false	true
D	true	false	false	false
E	false	true	true	true

Question 36

What gets logged?

```
1  const a = isNaN("5.2" + 2);
2  const b = isNaN(parseInt(a));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

A	true	true	true	true
B	false	false	false	false
C	true	false	false	true
D	true	false	false	false
E	false	true	true	true

```
1  const a = isNaN(        "5.2" + 2       );
2  const b = isNaN(parseInt(a));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = isNaN(        "5.22"    );
2  const b = isNaN(parseInt(a));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = isNaN(parseInt(a));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = isNaN(parseInt(false));
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = isNaN(NaN);
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = true;
3  const c = isNaN(parseFloat(a));
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = true;
3  const c = true;
4  const d = isNaN("1 * 2" * 2);
5
6  console.log(a, b, c, d);
```

```
1  const a = false;
2  const b = true;
3  const c = true;
4  const d = true;
5
6  console.log(a, b, c, d);
```

Question 37

Match the equivalent values

1	"ff"	A	255..toString(16)
2	"11111111"	B	255["toString"](2)
3	SyntaxError	C	255.toString(10)
4	"255"	D	255["toString"](10)

Question 37

Match the equivalent values

1	"ff"	A	255..toString(16)
2	"11111111"	B	255["toString"](2)
3	SyntaxError	C	255.toString(10)
4	"255"	D	255["toString"](10)

1	"ff"	A	255..toString(16)
2	"11111111"	B	255["toString"](2)
3	SyntaxError	C	255.toString(10)
4	"255"	D	255["toString"](10)

Question 38

Which method(s) will return the value "Hello World"?

```
1  const myMap = new Map();
2  const myFunc = () => "greeting";
3
4  myMap.set(myFunc, "Hello World”);
```

A myMap.get("greeting")

B myMap.get(myFunc)

C myMap.get(() => "greeting")

D myMap.get(myFunc())

E None of the above

Question 38

Which method(s) will return the value "Hello World"?

```
1  const myMap = new Map();
2  const myFunc = () => "greeting";
3
4  myMap.set(myFunc, "Hello World”);
```

A myMap.get("greeting")

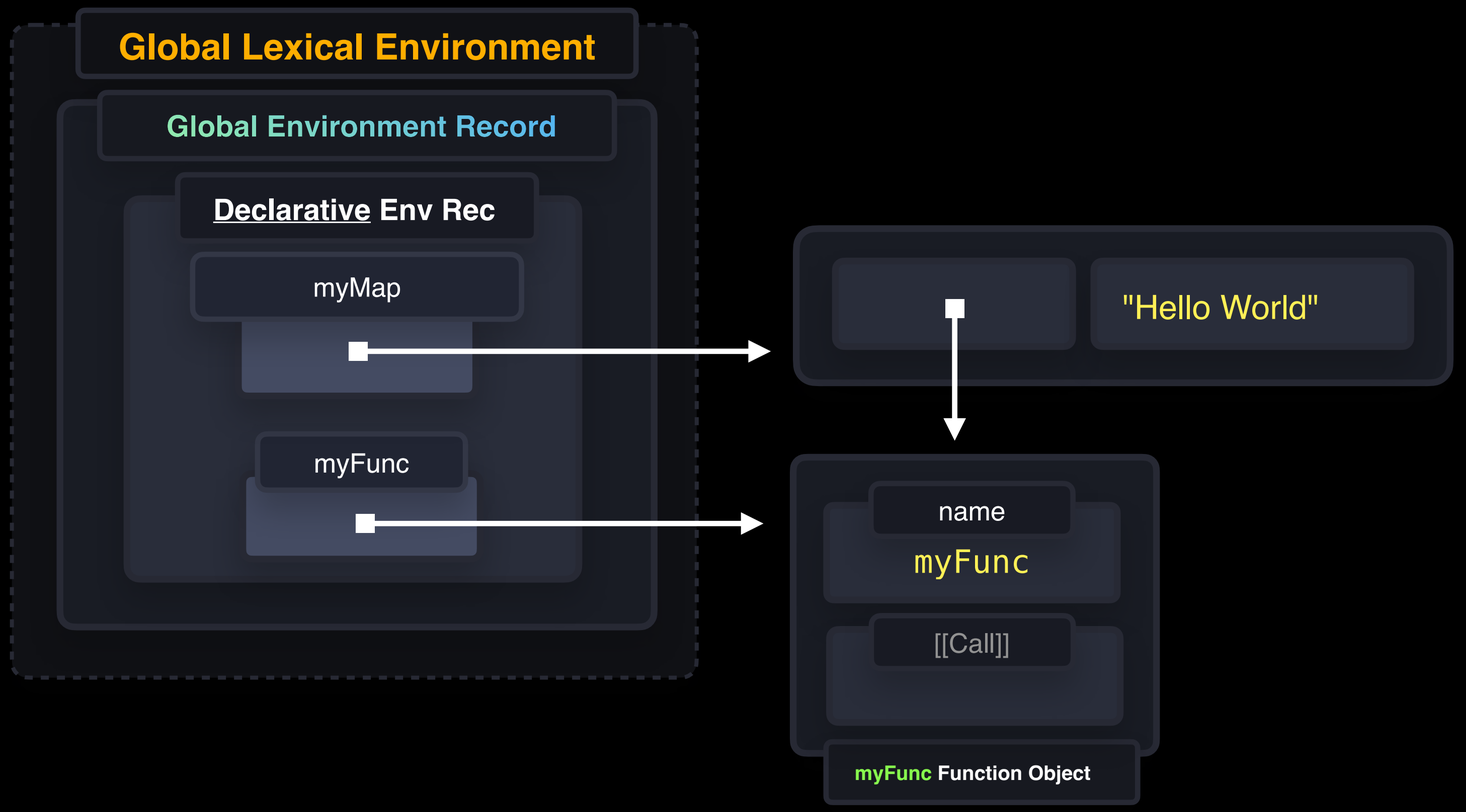
B myMap.get(myFunc)

C myMap.get(() => "greeting")

D myMap.get(myFunc())

E None of the above

```
1   const myMap = new Map();
2   const myFunc = () => "greeting";
3
4   myMap.set(myFunc, "Hello World");
```



Question 39

What does the person object look like after executing this script?

```
const person = {
  name: "Jane",
  address: { city: "Amsterdam" }
};

Object.freeze(person);

const personProxy = new Proxy(person, {
   set(...args) {
     Reflect.set(…args)
   }
})

personProxy.name = "Sarah";
personProxy.address.city = "Paris"

console.log(person)
```

A

```
{
  name: "Jane",
  address: { city: "Amsterdam" }
}
```

B

```
{
  name: “Sarah",
  address: { city: "Amsterdam" }
}
```

C

```
{
  name: "Jane",
  address: { city: "Paris" }
}
```

D

```
{
  name: “Sarah",
  address: { city: "Paris" }
}
```

E

TypeError

Question 39

What does the person object look like after executing this script?

```
1  const person = {
2    name: "Jane",
3    address: { city: "Amsterdam" }
4  };
5
6  Object.freeze(person);
7
8  const personProxy = new Proxy(person, {
9     set(...args) {
10      Reflect.set(…args)
11    }
12 })
13
14 personProxy.name = "Sarah";
15 personProxy.address.city = "Paris"
16
17 console.log(person)
```

A

```
{
  name: "Jane",
  address: { city: "Amsterdam" }
}
```

B

```
{
  name: “Sarah",
  address: { city: "Amsterdam" }
}
```

C

```
{
  name: "Jane",
  address: { city: “Paris" }
}
```

D

```
{
  name: “Sarah",
  address: { city: "Paris" }
}
```

E

TypeError

```
1   const person = {
2     name: "Jane",
3     address: { city: "Amsterdam" }
4   };
5
6   Object.freeze(person);
7
8   const personProxy = new Proxy(person, {
9     set(obj, prop, value) {
10      Reflect.set(...arguments)
11    }
12  })
13
14  personProxy.name = "Sarah";
15  personProxy.address.city = "Paris"
16
17  console.log(person)
```

Question 40

What will be the output of the following code if executed in a module?

```
const obj = Object.freeze({
  name: "John"
})

obj.name = "Jane"

console.log(obj.name);
```

A Jane

B John

C TypeError

D undefined

E ReferenceError

Question 40

What will be the output of the following code if executed in a module?

```
1  const obj = Object.freeze({
2      name: "John"
3  })
4
5  obj.name = "Jane"
6
7  console.log(obj.name);
```

A Jane

B John

C TypeError

D undefined

E ReferenceError

```
1  const obj = Object.freeze({
2      name: "John"
3  })
4
5  obj.name = "Jane"
6
7  console.log(obj.name);
```

```
1  "use strict"
2
3  const obj = Object.freeze({
4      name: "John"
5  })
6
7  obj.name = "Jane"
8
9  console.log(obj.name);
```

Question 41

Which method should we choose so it logs `{ name: "Lydia", age: 25 }`

```
const keys = ["name", "age"];
const values = ["Lydia", 25];

Object[???](keys.map((_, i) => {
  return [keys[i], values[i]]
}))
```

A entries

B values

C fromEntries

D forEach

E keys

Question 41

Which method should we choose so it logs `{ name: "Lydia", age: 25 }`

```
1  const keys = ["name", "age"];
2  const values = ["Lydia", 25];
3
4  Object[???](keys.map((_, i) => {
5    return [keys[i], values[i]]
6  }))
```

A entries

B values

C fromEntries

D forEach

E keys

```
1  const keys = ["name", "age"];
2  const values = ["Lydia", 25];
3
4  Object[???](keys.map((_, i) => {
5    return [keys[i], values[i]]
6  }))
```

A entries

B values

C fromEntries

D forEach

E keys

Question 42

What gets logged?

```
1  const array = [1, 2, 3, 4, 5];
2  array.splice(2);
3  array.concat(6);
4  array.slice(0, 1);
5  delete array[0]
6
7  console.log(array.length);
```

A 1

B 2

C 4

D 5

E 6

Question 42

What gets logged?

```
1  const array = [1, 2, 3, 4, 5];
2  array.splice(2);
3  array.concat(6);
4  array.slice(0, 1);
5  delete array[0]
6
7  console.log(array.length);
```

A 1

B 2

C 4

D 5

E 6

```
1  const array = [1, 2, 3, 4, 5];
2  array.splice(2); // array: [1, 2]
3  array.concat(6); // array: [1, 2]
4  array.slice(0, 1); // array: [1, 2]
5  delete array[0]; // array: [empty, 2]
6
7  console.log(array.length); // 2
```

Question 43

What gets logged?

```
1  const config ={
2      languages: [],
3      set language(lang) {
4          return this.languages.push(lang)
5      }
6  }
7
8  config.language = "Dutch";
9  console.log(config.language);
```

A ["Dutch"]

B []

C 0

D undefined

E ReferenceError

Question 43

What gets logged?

```
1  const config ={
2      languages: [],
3      set language(lang) {
4          return this.languages.push(lang)
5      }
6  }
7
8  config.language = "Dutch";
9  console.log(config.language);
```

A ["Dutch"]

B []

C 0

D undefined

E ReferenceError

```
1  const config = {
2      languages: [],
3      set language(lang) {
4          return this.languages.push(lang)
5      }
6  }
7
8  config.language = "Dutch";
9  console.log(config.language);
```

Question 44

What gets logged?

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};

const result = team.members.map(getInfo);
```

A ['Unknown','Unknown', 'Unknown', 'Unknown']

B [undefined,'', null, 'Unknown']

C ['Unknown','Boston', 'Unknown', 'Unknown']

D ['Boston','Unknown', 'Boston', 'Unknown']

E TypeError

Question 44

What gets logged?

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};

const result = team.members.map(getInfo);
```

A ['Unknown','Unknown', 'Unknown', 'Unknown']

B [undefined,'', null, 'Unknown']

C ['Unknown','Boston', 'Unknown', 'Unknown']

D ['Boston','Unknown', 'Boston', 'Unknown']

E TypeError

Nullish Coalescing Operator ??

Returns its right-hand operand when its left-hand operand is `null` or `undefined`

Logical AND &&

Returns the value of the first operand if it is falsy

Logical OR ||

Returns the value of the first operand if it is truthy

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

(undefined ?? "Boston") || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

“Boston" || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

“Boston"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

```
("" ?? "Boston") || "Unknown"
```

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

"" || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

"Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

(null ?? "Boston") || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

"Boston" || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

"Boston"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

(undefined ?? undefined) || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

undefined || "Unknown"

```
const team = {
  members: [
    { info: { street: undefined, city: "Boston" } },
    { info: { street: "", city: "Boston" } },
    { info: { street: null, city: "Boston" } },
    null
  ]
};

const getInfo = (mem) => {
  const info = mem?.info;
  return (info?.street ?? info?.city) || "Unknown";
};
```

"Unknown"

Question 45

Match the code to the correct error it would throw

1	`new Array(-1)`	A	ReferenceError
2	`25.toString()`	B	TypeError
3	`[].reduce((acc, cur) => acc + cur);`	C	SyntaxError
4	`const { a: b = c } = { a: undefined, c: 12 };`	D	RangeError
5	`const a = { b: 1 }; console.log((a ?? 1) ll b);`	E	No error gets thrown

Question 45

Connect the code to the correct error it would throw

1	`new Array(-1)`
2	`25.toString()`
3	`[].reduce((acc, cur) => acc + cur);`
4	`const { a: b = c } = { a: undefined, c: 12 };`
5	`const a = { b: 1 }; console.log((a ?? 1) ll b);`

D	RangeError
C	SyntaxError
B	TypeError
A	ReferenceError
E	No error gets thrown

Question 46

Match the date methods with the correct values when invoked on new Date()

1	toDateString()	A	Sun Nov 19 2023
2	toISOString()	B	2023-11-19T23:11:08.263Z
3	toLocaleDateString()	C	Sun Nov 19 2023 22:11:08 GMT+0100 (Central European Standard Time)
4	toUTCString()	D	Sun, 19 Nov 2023 21:11:08 GMT
5	toString()	E	11/19/2023

Question 46

Match the date methods with the correct values when invoked on new Date()

1	toDateString()	A	Sun Nov 19 2023
2	toISOString()	B	2023-11-19T23:11:08.263Z
3	toLocaleDateString()	E	11/19/2023
4	toUTCString()	D	Sun, 19 Nov 2023 21:11:08 GMT
5	toString()	C	Sun Nov 19 2023 22:11:08 GMT+0100 (Central European Standard Time)

1 toDateString()

Converts the date portion of a Date object into a readable string, ignoring the time part.

2 toISOString()

Converts a Date object to a string using the ISO 8601 format

3 toLocaleDateString()

Converts the date portion of a Date object into a string, using locale-specific formatting.

4 toUTCString()

Converts a Date object to a string, using the UTC time zone.

5 toString()

Converts a Date object to a string, typically in a default format specific to the environment's locale.

Question 47

What gets logged?

```
const {
  a = 'default',
  b = 'default',
  c = 'default',
  d = 'default',
} = {
  a: null,
  b: undefined,
  c: false,
  d: 0
};

console.log(a, b, c, d);
```

A null undefined false 0

B null "default" false 0

C "default" "default" "default" "default"

D "default" "default" false 0

Question 47

What gets logged?

```
1   const {
2     a = 'default',
3     b = 'default',
4     c = 'default',
5     d = 'default',
6   } = {
7     a: null,
8     b: undefined,
9     c: false,
10    d: 0
11  };
12
13  console.log(a, b, c, d);
```

A null undefined false 0

B null "default" false 0

C "default" "default" "default" "default"

D "default" "default" false 0

Default parameters used if no value or undefined is passed.

```
const {
  a = 'default',
  b = 'default',
  c = 'default',
  d = 'default',
} = {
  a: null,
  b: undefined,
  c: false,
  d: 0
};

console.log(a, b, c, d);
```

Question 48

What gets logged?

```
1  const symbolOne = Symbol.for("key");
2  const symbolTwo = Symbol(“key");
3  const symbolThree = Symbol.for("key");
4
5  console.log(symbolOne === symbolTwo);
6  console.log(symbolTwo === symbolThree);
7  console.log(symbolOne === symbolThree);
8  console.log(symbolThree === Symbol("key"));
```

A	true	true	true	true
B	false	false	false	false
C	true	true	false	true
D	false	false	true	false
E	false	true	false	true

Question 48

What gets logged?

```
1  const symbolOne = Symbol.for("key");
2  const symbolTwo = Symbol("key");
3  const symbolThree = Symbol.for("key");
4
5  console.log(symbolOne === symbolTwo);
6  console.log(symbolTwo === symbolThree);
7  console.log(symbolOne === symbolThree);
8  console.log(symbolThree === Symbol("key"));
```

A	true	true	true	true
B	false	false	false	false
C	true	true	false	true
D	false	false	true	false
E	false	true	false	true

```
Symbol.for("key");
```

Checks if a symbol with the key "key" already exists in the global symbol registry.
If yes, it returns the existing symbol, otherwise it creates a new symbol and adds it to the global registry

```
Symbol("key");
```

Always creates a new, unique symbol that is different from any other symbol

```
1  const symbolOne = Symbol.for("key");
2  const symbolTwo = Symbol("key");
3  const symbolThree = Symbol.for("key");
4
5  console.log(symbolOne === symbolTwo);
6  console.log(symbolTwo === symbolThree);
7  console.log(symbolOne === symbolThree);
8  console.log(symbolThree === Symbol("key"));
```

D	false	false	true	false

Question 49

What gets logged?

```
function compareUsers(user1, user2 = user) {
    console.log(user1 === user2);
}

const user = { name: "Lydia" };
compareUsers(user, { ...user });
compareUsers(user);
compareUsers({ name: "Lydia" }, { name: "Lydia" })
```

A	true	true	false
B	false	true	false
C	false	false	false
D	true	false	false
E	ReferenceError		

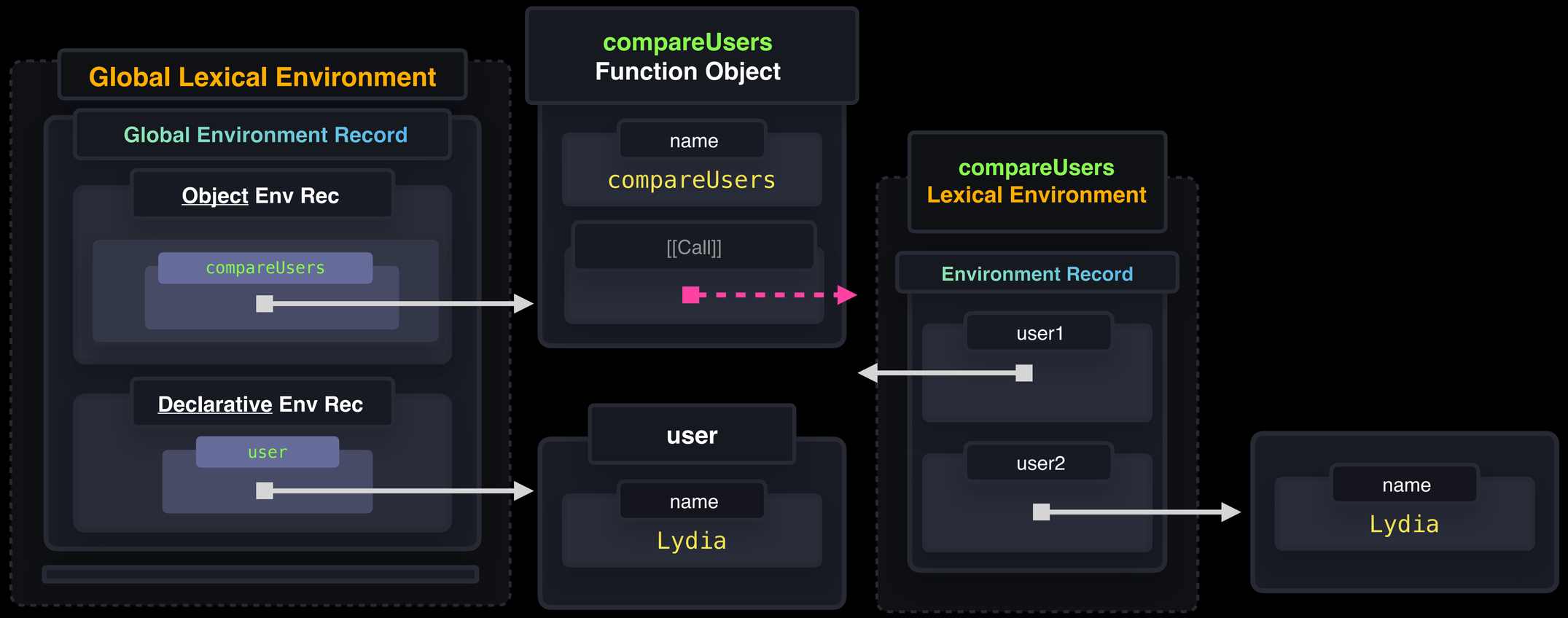
Question 49

What gets logged?

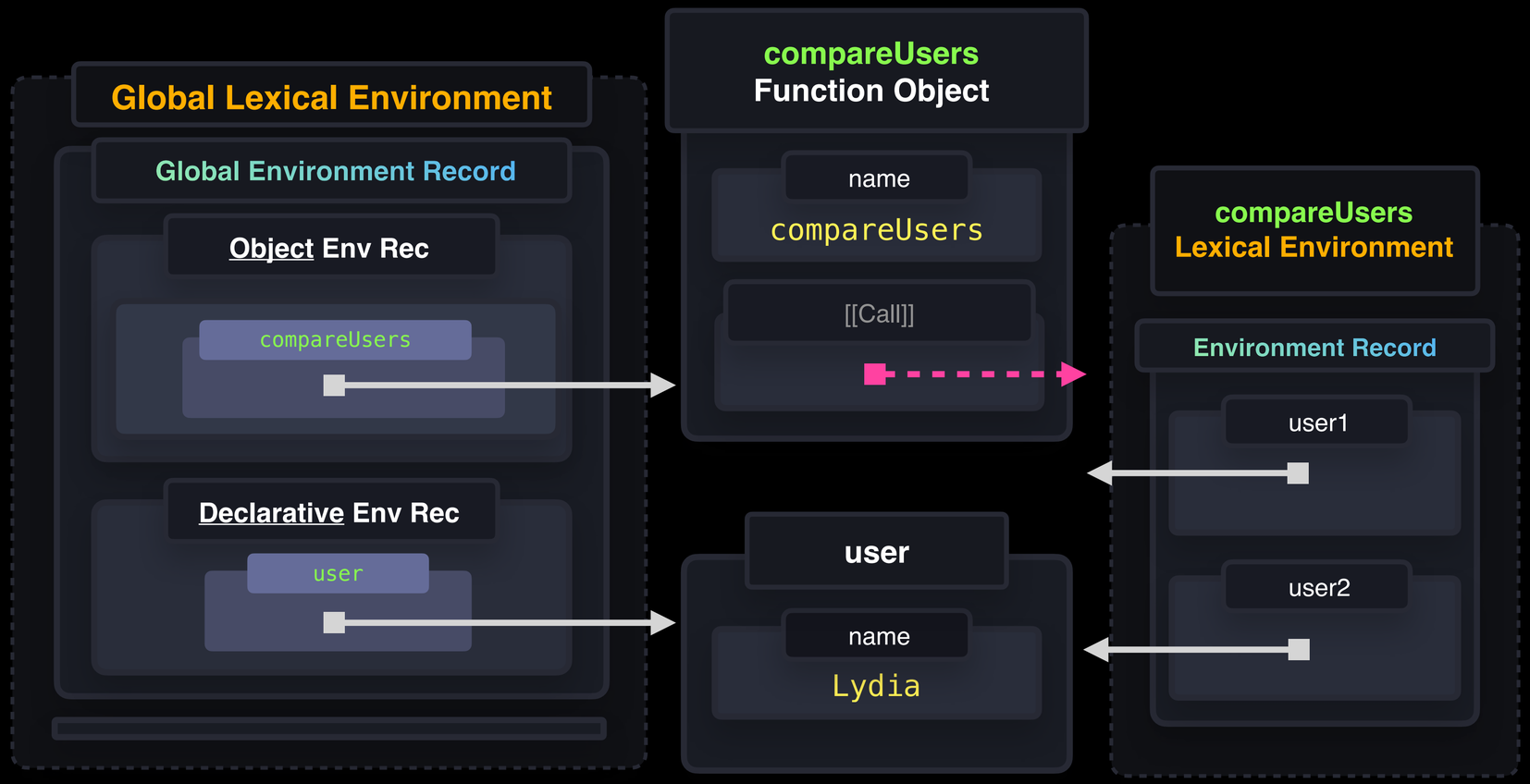
```
function compareUsers(user1, user2 = user) {
    console.log(user1 === user2);
}

const user = { name: "Lydia" };
compareUsers(user, { ...user });
compareUsers(user);
compareUsers({ name: "Lydia" }, { name: "Lydia" })
```

A	true	true	false
B	false	true	false
C	false	false	false
D	true	false	false
E	ReferenceError		

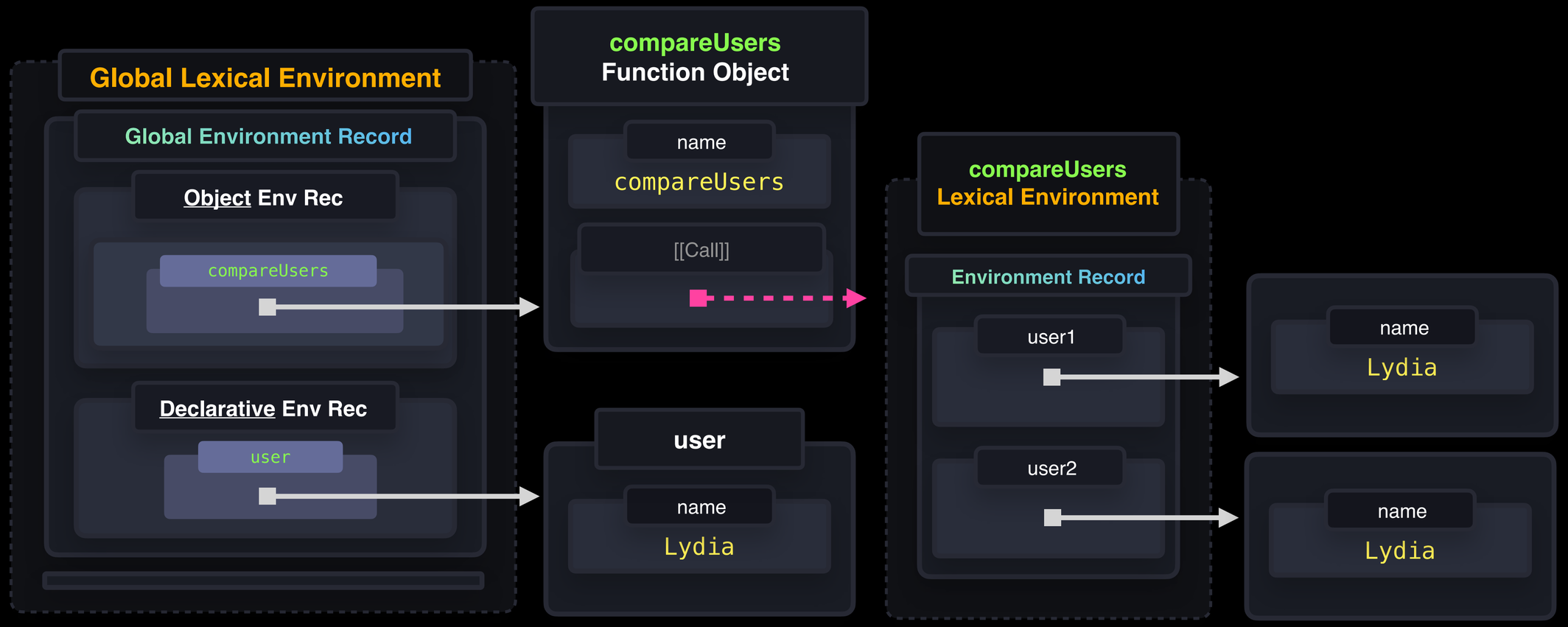
```
compareUsers(user, { ...user });
```



```
compareUsers(user);
```



```
compareUsers({ name: "Lydia" }, { name: "Lydia" });
```



Question 50

What gets logged?

```
function thankYouTag(strings, greeting) {
    console.log(strings, greeting)
}

const greeting = 'Thank you for coming to my workshop!';
thankYouTag`This is the last question! ${greeting}`
```

A
['This is the last question! ', ''],
'Thank you for coming to my workshop!'

B
'This is the last question! Thank you for coming to my workshop!'
'Thank you for coming to my workshop!'

C
'This is the last question! ',
'Thank you for coming to my workshop!'

D
['This is the last question! '],
['Thank you for coming to my workshop!']

E
['This is the last question! ', ''],
['Thank you for coming to my workshop!', ‘’]

Question 50

What gets logged?

```
function thankYouTag(strings, greeting) {
    console.log(strings, greeting)
}

const greeting = 'Thank you for coming to my workshop!';
thankYouTag`This is the last question! ${greeting}`
```

A ['This is the last question! ', ''],
'Thank you for coming to my workshop!'

B 'This is the last question! Thank you for coming to my workshop!'
'Thank you for coming to my workshop!'

C 'This is the last question! ',
'Thank you for coming to my workshop!'

D ['This is the last question! '],
['Thank you for coming to my workshop!']

E ['This is the last question! ', ''],
['Thank you for coming to my workshop!', ‘’]

```
function thankYouTag(arrayOfStrings, firstExpression, secondExpression, ...) {
  console.log(
    arrayOfStrings,          // ['This is the last question! ", " This is another part of the", '"']
    firstExpression,         // Thank you for coming!
    secondExpression         // string
  )
}
thankYouTag`This is the last question! ${greeting} This is another part of the ${"string"}`
```

```
function thankYouTag(strings, greeting) {
  console.log(
    strings,          // ['This is the last question! ', '']
    greeting,         // Thank you for coming to my workshop!
  )
}
const greeting = 'Thank you for coming to my workshop!';
thankYouTag`This is the last question! ${greeting}`
```

JavaScript Quiz