спортмастер

{ Асинхронный JavaScript }

Дмитрий Нефедов

dnefedov@sportmaster.ru

```
.className {
  transition: color 10s linear;
}


function animate(color) {
  element.style.color = color;
}


animate(“blue”);


setTimeout(() => animate(“red”), 10);
```

.className

{ JavaScript }

однопоточный

не блокирующий

асинхронный

{ Концепция жизненного цикла }

{ Stack }

структура, описывающая порядок выполнения кода

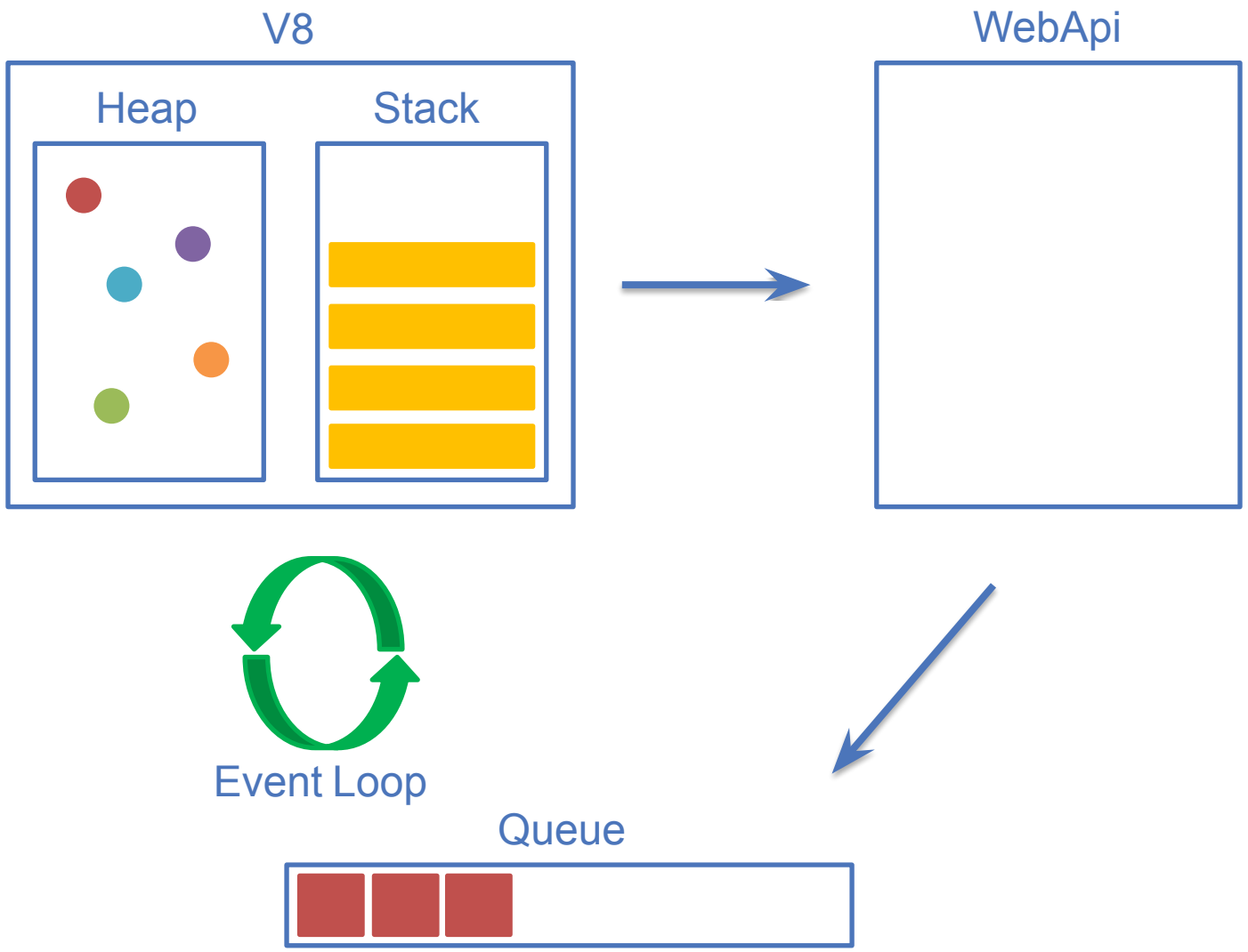
{ Heap }

это ссылка на определённую неструктурированную область памяти

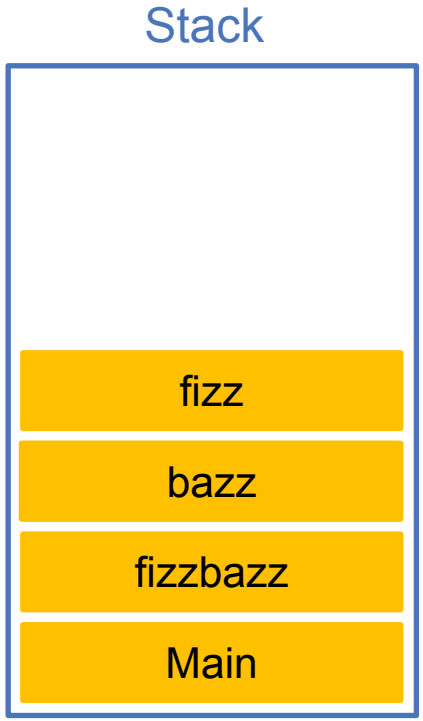
{ Event Queue }

список событий, подлежащих обработке

Каждое событие ассоциируется с некоторой функцией. Когда на стеке освобождается достаточно места, событие извлекается из очереди и обрабатывается


V8
Heap
Stack
WebApi
Event Loop
Queue

```
function fizz() {
  throw 'Error';
}

function bazz() {
  fizz();
}

function fizzbazz() {
  fizz();
  bazz();
}

fizzbazz();
```




```
▼Uncaught Error
 fizz          @ VM171:2
 fizzbazz      @ VM171:8
 (anonymous) @ VM171:11
```

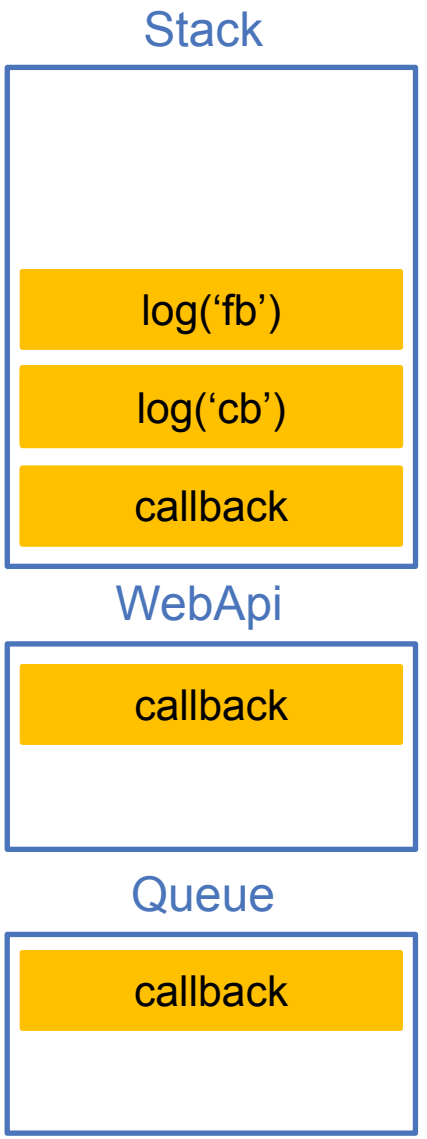
{ Переполнение стека }

```
function bazz() {
  bazz();
}

bazz();
```

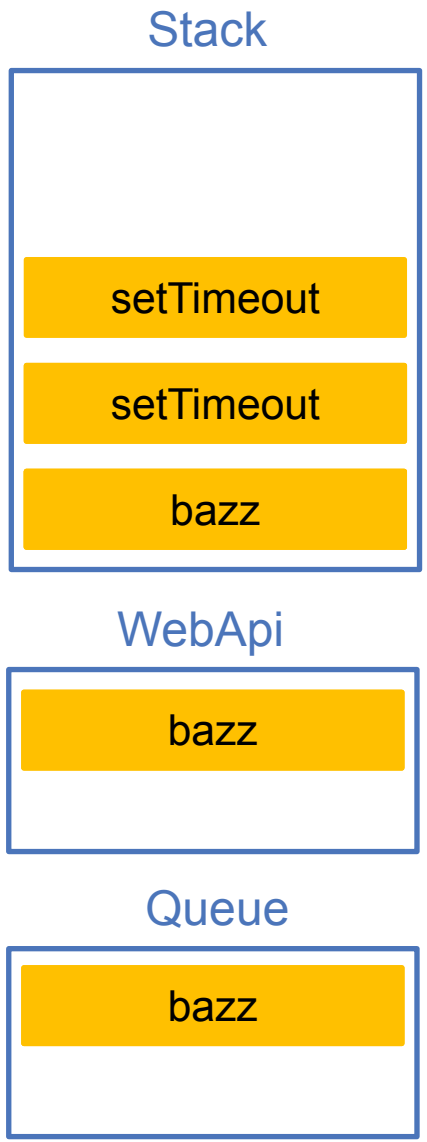
```
▸Uncaught RangeError: Maximum call stack size exceeded
    at bazz (<anonymous>:1:14)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
    at bazz (<anonymous>:2:3)
```

{ Очередь событий }

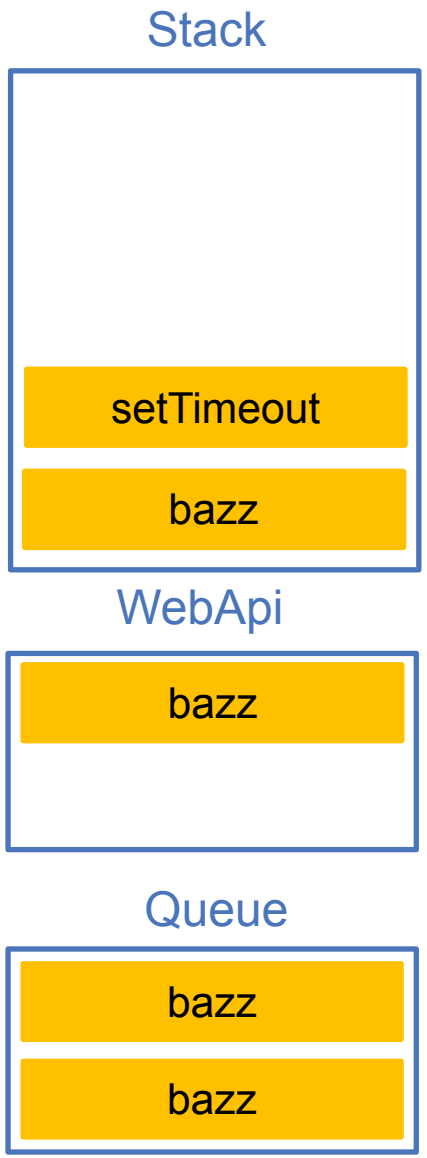
```
function fizzbazz() {
  console.log('fb');
}


function callback() {
  console.log('cb');
}


setTimeout(callback, 5000);


fizzbazz();
```

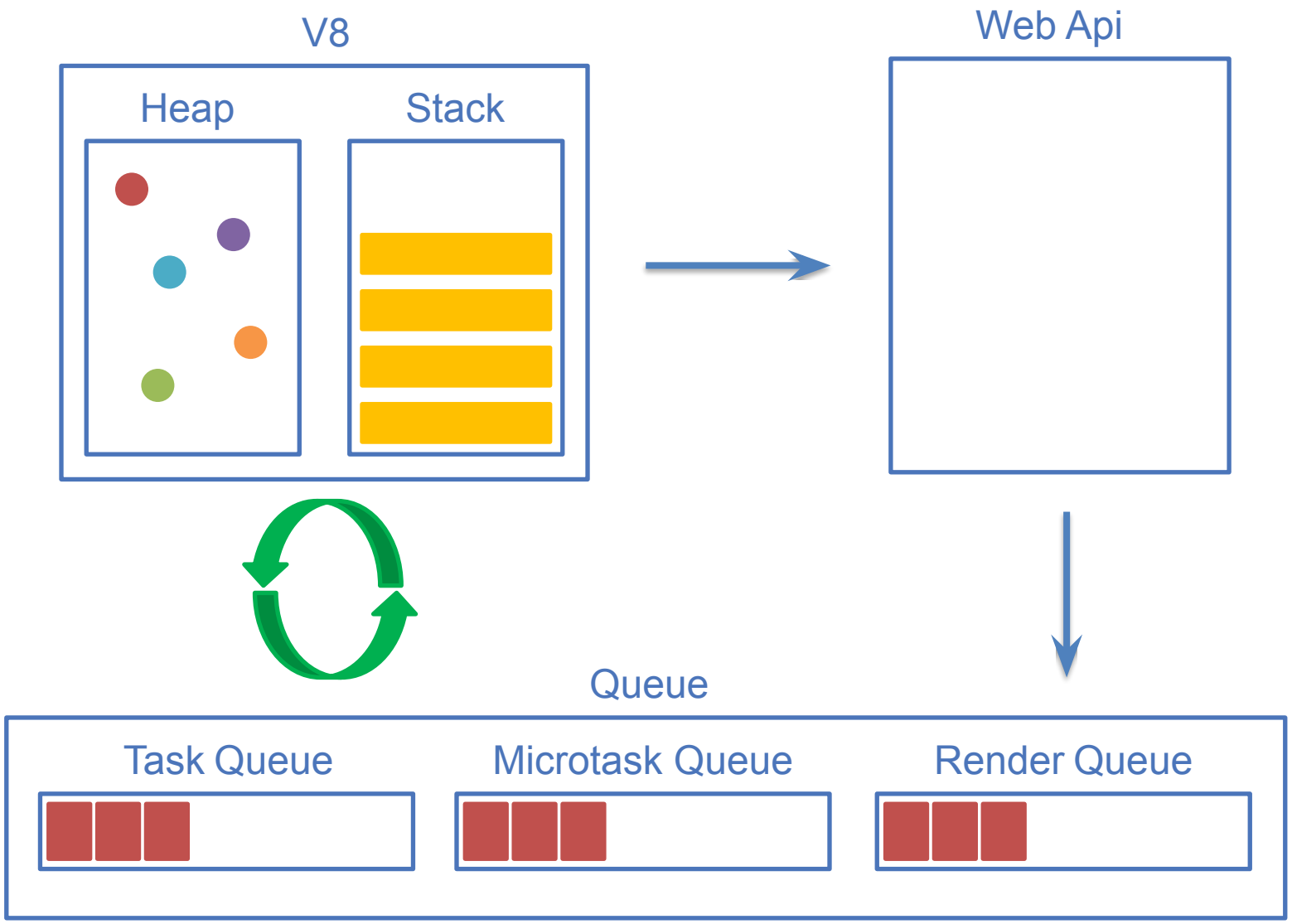


```
function bazz() {
  setTimeout(bazz, 0);
}


bazz();
```

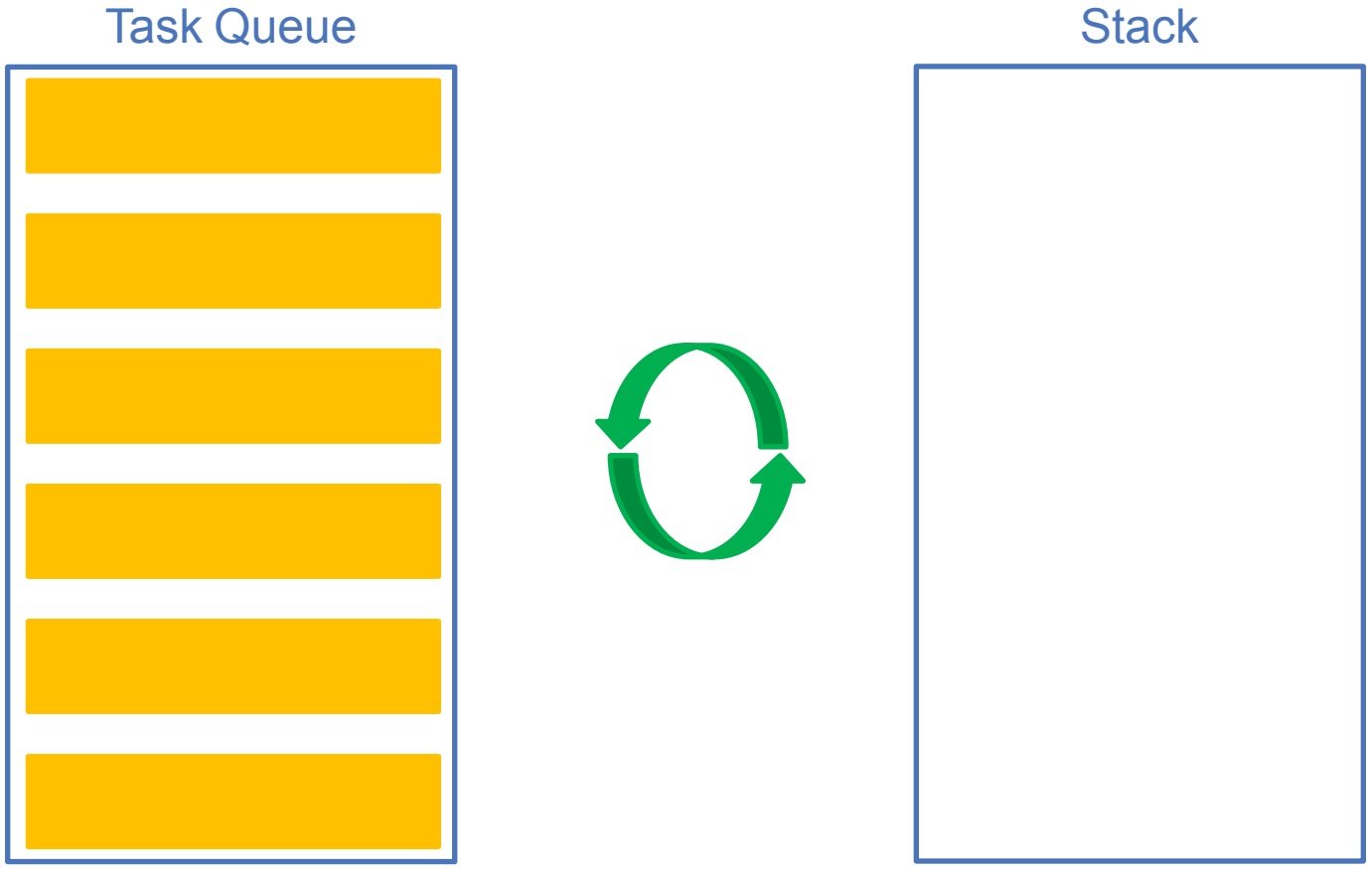


```
function bazz() {
  delay(5000);
}


setTimeout(bazz, 0);

setTimeout(bazz, 0);
```




V8
Heap
Stack
Web Api
Queue
Task Queue
Microtask Queue
Render Queue

{ Task Queue }


Task Queue
Stack

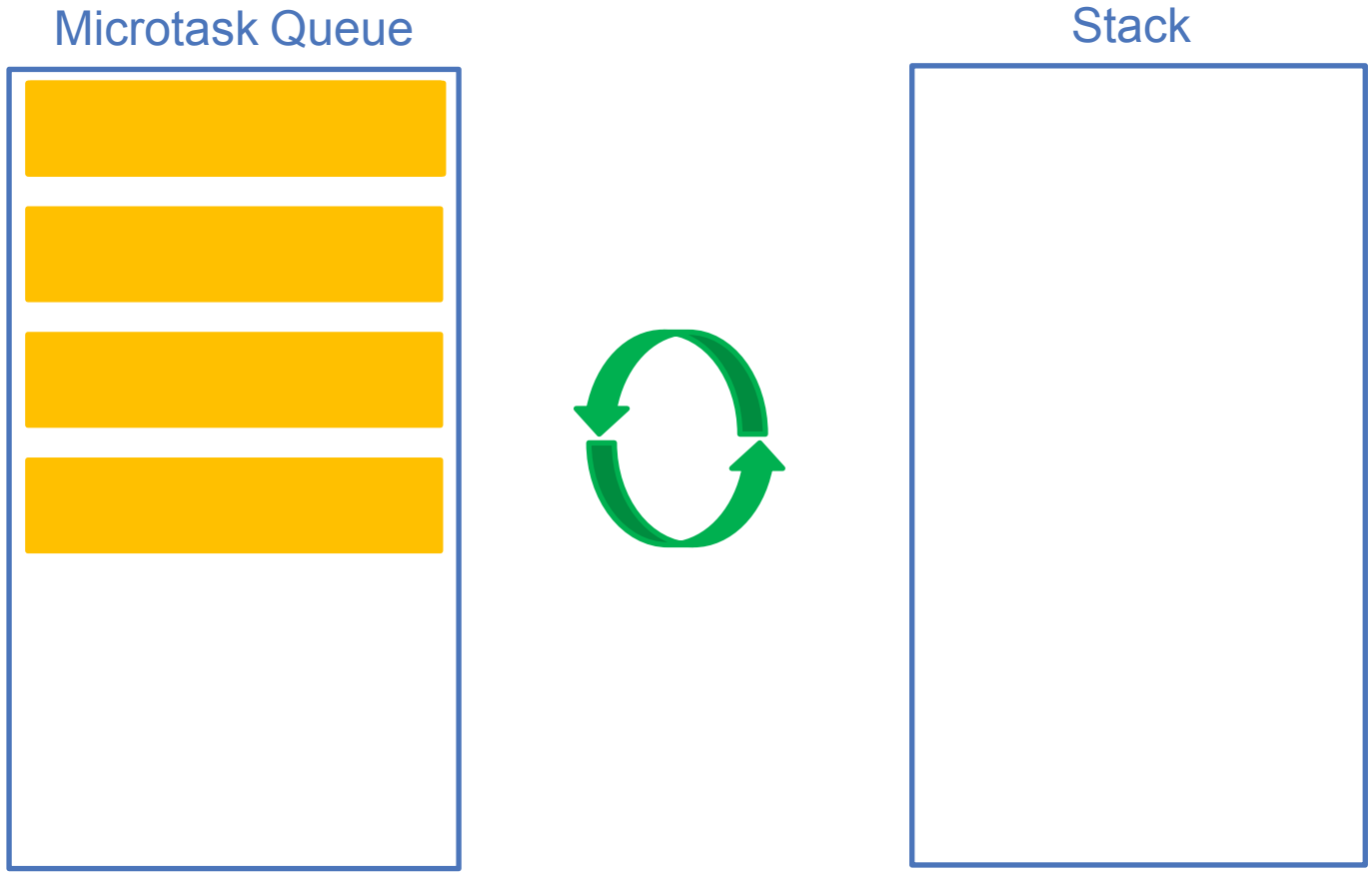
{ Microtask Queue }

```
button.addEventListener('click', () => {
  Promise.resolve().then(() => console.log('Promise 1'));
  console.log('Click 1');
});

button.addEventListener('click', () => {
  Promise.resolve().then(() => console.log('Promise 2'));
  console.log('Click 2');
});
```

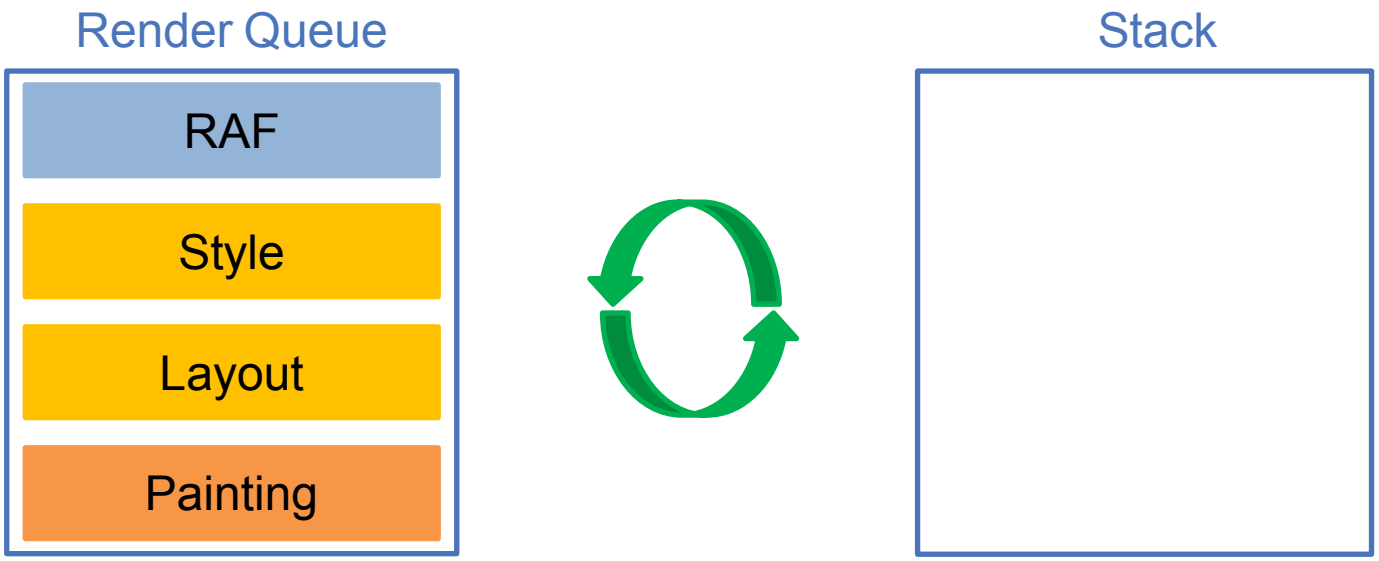
```
Click 1
Promise 1
Click 2
Promise 2
```

```
button.click();
```

```
Click 1
Click 2
Promise 1
Promise 2
```


Microtask Queue
Stack

{ Render Queue }




```
button.addEventListener('click', () => {
  element.style.color = ‘red';
  element.style.color = 'black';
  element.style.color = ‘red';
  element.style.color = 'black';
  element.style.color = ‘red';
  element.style.color = 'black';
});
```

```
button.addEventListener('click', () => {
  element.style.color = 'red';
  element.style.transition = 'color 1s linear';
  element.style.color = 'black';
});
```

```
button.addEventListener('click', () => {
  element.style.color = 'red';
  element.style.transition = 'color 1s linear';
  requestAnimationFrame(() => {
    element.style.color = 'black';
  });
});
```

```
button.addEventListener('click', () => {
  element.style.color = 'red';
  element.style.transition = 'color 1s linear';
  requestAnimationFrame(() => {
    requestAnimationFrame(() => {
      element.style.color = 'black';
    });
  });
})

button.addEventListener('click', () => {
  element.style.color = 'red';
  element.style.transition = 'color 1s linear';
  getComputedStyle(element).color;
  element.style.color = 'black';
});
```

Спасибо за внимание!