

CS 152: *Programming Language Paradigms*



Event-based
programming

Prof. Tom Austin

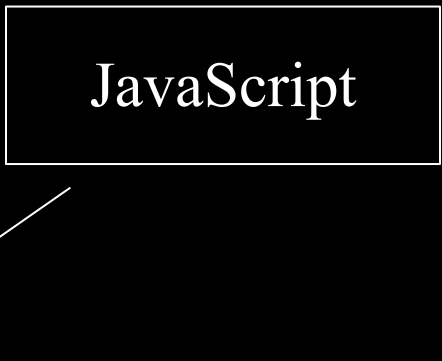
San José State University

HW3: Contracts Library for JavaScript

Project, part 1

Inline JavaScript

```
<html>
  <input
    type='button'
    onclick='alert("Hello!");'
    value='Say hi' />
</html>
```



JavaScript

The "better" approach

```
<html>
  <input id='thebutton'
        type='button'
        value='Say hi' />
  <script type="text/javascript">
    var btn = document.
      getElementById('thebutton');
    btn.onclick = function() {
      alert('Groovy');
    };
  </script>
</html>
```

Note the id attribute

Perhaps better still

```
<html>
  <input id='thebutton'
        type='button'
        value='Say hi' />
  <script type="text/javascript">
    var btn = document.
      getElementById('thebutton');
    function sayGroovy() {
        alert('Groovy');
    }
    btn.addEventListener('click', sayGroovy);
  </script>
</html>
```

```
function sayGroovy() {  
    alert('Groovy');  
}  
  
btn.addEventListener('click',  
                    sayGroovy);  
  
btn.addEventListener('click',  
    function() { alert("Bogus"); }  
);
```

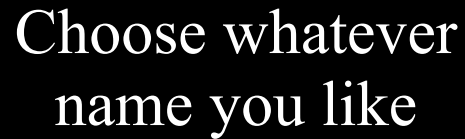
```
function sayGroovy() {  
    alert('Groovy');  
    btn.removeEventListener('click',  
                                sayGroovy);  
}  
btn.addEventListener('click',  
                    sayGroovy);  
btn.addEventListener('click',  
    function() { alert("Bogus"); }  
);
```

Note that JavaScript (in a browser) is single threaded.

An event runs to completion before the next event begins.

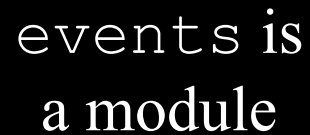
Importing events in Node.js

Choose whatever
name you like



```
var EE =  
  require('events').EventEmitter;
```

events is
a module



```
var EE = require('events').EventEmitter;
var ee = new EE();
dead = false;
ee.on('die', function() {
  console.log("I'm melting!!!");
  dead = true;
});
setTimeout(function() {
  ee.emit('die');
}, 100);
while (!dead) {}
console.log('done');
```

TCP Server example

```
var net = require('net');
var eol = require('os').EOL;

var srvr = net.createServer();

srvr.on('connection', function(client) {
  client.write('Hello there!' + eol);
  client.end();
});

srvr.listen(9000);
```

```
$ node tcpserver.js
```

```
$
```

```
$ nc 127.0.0.1 9000  
Trying 127.0.0.1...  
Connected to localhost.  
Escape character is '^]'.  
Hello there!  
Connection closed by foreign host.  
$
```

Lab

Write a chat server.

Details in Canvas.