


## Programming

- Why is programming fun?
  - Finally, there is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly re-moved from pure thought-stuff. He builds his castles in the air, from air, creating by exertion of the imagination. Few media of creation are so flexible, so easy to polish and rework, so readily capable of realizing grand conceptual structures.


Source: Frederick P. Brooks, Jr. *The Mythical Man-Month Essays on Software Engineering.*



## JavaScript Wrap Up

*JavaScript is a versatile programming language ... if you know it, you can learn others*


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## The Big Picture

Without JavaScript, HTML is quite limited

- \* Only static page-layouts are possible
- \* JS allows
  - Adaptivity ... the page can be customized to the browser, site, user, etc.
  - Interactivity ... users can give information and a response can be displayed: Memory Bank
  - Applications ... tasks unrelated to documents can be created
  - Animations




## Big Picture

Notice the standard HTML process

- HTML is parsed -- read & "decoded"
- During parse JavaScript runs ... allowing it to generate HTML, e.g. `document.write()`
- Browser generates the page from HTML
- After page generated, all is quiet until an event happens, caused by user or timer
- Event handlers handle the events, and then all is quiet again

**This sequence defines the action**



## Consider The Quiz

Analyze the process for the Quiz

- \* HTML is parsed
- \* JavaScript runs ... HTML generated
- \* Browser makes page
- \* All is quiet except for events from user
- \* Event handlers handle events, quiet returns


Enter your first name:

1. What is the Seattle Football team?

2. Where do they play?

3. How many games a year do they play?

4. How many players are on the team?




## Consider The PC

Analyze the process for an animation

- HTML is parsed
- JavaScript runs ... HTML generated
- Browser makes page
- All is quiet except for events from timer
- Event handlers handle events, quiet returns

**New**



## Other Languages


JS is a "modern" programming language like C, C++, Java, etc.

- Expect to find numbers, strings, Booleans,
- Variables (of same form) must be declared
- There are **if**-statements & **else**-statements
- There is a **for**-statement

```

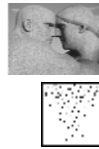

for (j=0; j<5; j++){
    <statement list>
}
    
```


It is not easy to teach yourself, but you can learn quickly



## Review & Tutorial

Can you create an animation?  
 Can you take in data and compute answers?  
 Got questions? New



## j As Variable & String

Consider ...

```


for (j = 0; j < 7; j++) {
    document.write('');
}
    
```



```

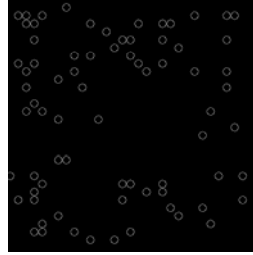
for (j = 0; j < 7; j++) {
    document.write('');
}
    
```






## One More Application

### Bubbles ...



```

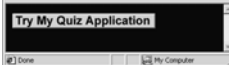

<html><head><title>Bubbles</title></head>
<body bgcolor="navy">
<script language="JavaScript">
var i, j, pix=new Array(2), timerID;
pix[0]=new Image; pix[0].src="NavyBox.gif";
pix[1]=new Image; pix[1].src="bubble.gif";
for (i=0; i<30; i++) {
    for (j=0; j<30; j++) {
        document.write('');
    }
    document.write("<br>");
}
timerID=setTimeout("animate()",2000);
function animate() {
    var row, col;
    row = randNum(30);
    col = randNum(30);
    document.images[row*30+col].src=pix[1].src;
    timerID=setTimeout("animate()",200*randNum(5)+50);
}
function clearBubble(row, col) {
    document.images[row*30+col].src=pix[0].src;
}
function randNum(range) {
    return Math.floor(range*Math.random());
}
</script></body></html>
    
```



## Summary

JavaScript can build Web pages, process forms and animate ... it's a whole lot more interesting than HTML!

Add the applications you've written in JS to your personal Web page

## Reflection

- Write for five minutes on this topic:
  - \* Compare and contrast JavaScript and HTML