Cpt S 489 – Web Development

Introduction

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A Common Question

- What's the best programming language to learn?
- No right/wrong answer to it, as it depends on your needs
- Consider the set of questions on the next slide, and we'll see how a few different programming languages stack up

Does the Language … ?

- run on all major platforms?
- have managed memory?
- suffice for writing an operating system?
- have object-oriented features?
- allow you to write “desktop-quality” software applications like word-processors, spreadsheet applications, etc.?
- have a set of standardized, cross-platform UI technologies associated with it?

Comparison Details

- We will be using JavaScript as the programming language in this course
  - Quick side note: we also go over HTML and CSS, but those aren't programming languages
- You should be coming from a background of C++, Java, C#, several, or all of these
- Let's compare the 4 languages by using the questions from the previous slide, one at a time
  - Assume target operating systems are Desktop Windows, Mac OS, iOS, Andriod and Linux

Language Comparison Q1

Does the Language Run on All Major Platforms?	
C++	Yes, you can compile native C++ for all major platforms. However, it needs to be recompiled for each new platform and inconsistencies are in behavior are somewhat common since the language has several things with undefined behavior.
C#	Sort of. You need to get tools like Xamarin to compile on iOS, whereas C++ for iOS can compile right within Xcode. Also, only a subset of the language and UI technologies are supported on non-Windows platforms.
Java	Again, sort of. There are non-Xcode tools that compile Java natively on iPhone. It won't be running the JVM in the same way that it does on the desktop
JavaScript	Yes. No recompilation required and behavior very consistent across platforms.

Language Comparison Q2

Does the Language Have Managed Memory?	
C++	No
C#	Yes
Java	Yes
JavaScript	Yes

Language Comparison Q3

Does the Language Suffice for Writing an Operating System?	
C++	Yes
C#	No
Java	No
JavaScript	No

Language Comparison Q4

Does the Language Have Object-Oriented Features?	
C++	Yes
C#	Yes
Java	Yes
JavaScript	Yes

Language Comparison Q5

Does the Language Allow You to Write Desktop-Quality Software?	
C++	Yes
C#	Yes
Java	Yes
JavaScript	Yes

Language Comparison Q6

Does the language have a set of standardized, cross-platform UI technologies associated with it?	
C++	No
C#	No. It DOES have WinForms and WPF, but those aren't cross-platform.
Java	Sort of. Java Swing provides UI capabilities, and it goes across the desktop platforms, but since Java isn't well supported on iOS you can't use it there.
JavaScript	Yes

This is the big one. If you want to design your UI once, write your code once, and just have it work everywhere, JavaScript (+ HTML and CSS) becomes your best option.

What we will cover in this course

- Overview of visual design elements and styles using HTML and CSS
- Programming in JavaScript, approached as transitioning from C++ and/or C# to JavaScript. Some examples of things that we will address:
  - Custom “classes” in JavaScript (even though JavaScript doesn’t have classes) and reusable code
  - Inheritance (again, even though JavaScript doesn’t have classes)
  - “Overloaded functions” even though JavaScript doesn’t have overloaded functions
- Each of the above has an equivalent in JavaScript. It is a language that is quite powerful, although seemingly very commonly misunderstood by the programming community.

What we will cover in this course

- Server-side applications and concepts will be covered as well
  - PHP
- Majority of time will be spent on JavaScript
  - More heavy server-side programming covered in other courses and a deeper dive into the underlying web technologies like HTTP
- In all seriousness, JavaScript is one of the best languages to learn at this point in time
  - Easy app deployment
  - Powerful language features
  - A bright future (WebGL is one example that shows just how far it’s going)