Introduction to ITWS

Quiz 1: October 6, 2025

**Directions**

There are 4 questions of multiple parts. Point values and suggested times are indicated

* Place your name on the top of the document in the header
* Enter your answers directly into *a copy* of this document named: F25-quiz1-*yourRCSid*.docx
* All answers should be in complete sentences, in *Your Own Words*, and use proper grammar
* Make sure your answers use an alternative font AND color – (a legible font, and not Black or Red)
* Answer question referencing (as appropriate) content and example from class.
* Make sure your submitted document remains in MS Word format
  + (Pages, GDocs, etc.… will NOT be graded.)
* Follow all these instructions and additional instructions throughout this document, or you will lose points

1. Network protocols, HTML & WWW: (15 points, 10 minutes) Answer the following question referencing (as needed) content and examples from class.   
   1. Explain, in detail, and ***in your own*** words: What is a 3-way handshake and why do we care? Give examples as covered in class (5 points)

3-way handshake is the primary way 2 devices establish 2-way communication over a TCP/IP network, named for the 3 primary steps it entails.

1. The initiating device sends a Synchronize Sequence Number (SYN) packet to the responding device, alerting the target it is going to start communicating with it, and with what SYN the initiating device will start/sign it’s segments with.
2. The responding device will send the initiating device a SYN+ACK packet, or in other words a packet containing it’s own Synchronize Sequence Number and an ACKnowledgement that it received the initiator’s SYN packet.
3. Finally, the initiating device will complete the handshake with an ACK packet of it’s own, confirming that it, too, now has it’s partner’s SYN.

COME BACK

* 1. What are HTML, XML, CSS and JSON? How do they relate to each other? Be descriptive and detailed in your answer using descriptions from class (5 points).
* HTML, or HyperText Markup Language, is a programming language used to define basic structure and style for websites. It is primarily used to organize text, images, links, buttons, hyperlinks, and similarly basic UI elements using tags, such as <div>, <p>, <a>, which are division, paragraph, and hyperlink tags respectively.
* XML, or eXtensible Markup Language, is a programming language used to store information in a tree-like format of tags that can be easily exchanged and interpreted, by virtue of being self-descriptive – unlike HTML or CSS it’s tags are not predefined – hence why it is eXtensible.
* CSS, or Cascading Style Sheets, is a programming language most used in complement with HTML, to describe how to display said HTML. Whereas HTML describes information types, and roughly their relative location, CSS can provide much more detailed information, setting where information is displayed, and styling it using a variety of selectors and properties.
* JSON, or JavaScript Object Notation, is a programming language used to store information. Like XML, it is self-describing, without pre-defined tags like HTML or CSS. Also like XML, it doesn’t do anything on it’s own, functioning almost like a protocol, simplifying and standardizing the storage of information. Unlike XML however, which stores information in trees made up of tags, JSON stores information in key-value pairs.
  1. What is Azure? How are we using it? Why are we using it? (5 points)

Azure is microsoft’s cloud computing platform. Or to put it in my own words, it’s a hosting service that we (as in RPI, or maybe Professor Plotka) rent server space from in order to host the Intro to ITWS student’s personal websites and projects. It is useful for us as it handles the complicator process of designating server space and hierarchy for the intro to ITWS class’s many students, letting Professor Plotka monitor us and provide us with valuable server space to experiment with editing a live website, and share our work with him.

1. DevOps (15 pts, 10 minutes) Answer the following question referencing (as needed) content and examples from class.
   1. What is Git? How is it relevant for this class – be specific?

Git is a version control system. Or in my words, a way to keep track of all the changes made to a code database. Invaluable for not accidentally losing code and keeping track of different iterations of your project and absolutely necessary for projects involving multiple people, handling multiple individuals uploading changes to one code base. In tandem with GitHub we use it for all of the above reasons along with it’s ability to share code not just with our team members but with Professor Plotka and his TA’s.

* 1. What is a PR, and what is it used for? How have you used them this in this class? How is it important in the overall development process?

A PR, or Pull Request, is a proposal to merge changes from one branch (a version of a repository) into another (usually the main branch). PR’s often represent major milestones in a repositories life, with large amounts of code being changed or added. Thus far in this class we have used them to add labs to our main branch. Updating our website, while also keeping track of what lab involved what code.

* 1. Where on the file system do our webservers try to serve webpages by default? What is the significance of this location as it pertains to the root of your personal websites? (Be specific)

The default location our webservers try to serve webpages is /var/www/html, which is the root of our website. /var/www/html is the default location apache, azure, and other hosting services store webserver things in linux architecture. /var being where variable information is stored, /www symbolizing information relating to the world wide web, and /html referring to .html files. Summed up, /var/www/html is a location to store variable html files for display on the world wide web.

1. HTML, XML, CSS, & JavaScript (30 points, 30 minutes) Answer the following question referencing (as needed) content and examples from class.
   1. Write the code necessary (HTML/CSS only) to display 4 equally sized boxes. centered within another larger box that has a light blue background and a border. (15)

Answer below. Not setting the font for it bc reading code is already more of a pain than English:

<!DOCTYPE html>

<html>

<head>

<style type="text/css">

.box {

width: 40px;

height: 40px;

background-color: white;

margin: auto 0;

border: 5px black dotted;

justify-content: space-evenly;

}

.row {

display: flex;

flex-direction: column;

justify-content: space-evenly;

}

.box-container {

display: flex;

justify-content: space-evenly;

background-color: lightblue;

width: 200px;

height: 200px;

border: 5px black solid;

}

</style>

</head>

<body>

<div class="box-container">

<div class="row">

<div style="background-color: white " class="box"> </div>

<div class="box"> </div>

</div>

<div class="row">

<div class="box"> </div>

<div class="box"> </div>

</div>

</div>

</div>

</body>

</html>

* 1. What selectors (if any) did you use, why did you choose them? (5)

I solely used classes, simply because classes sufficed for my needs and given the time constraints of a test I saw no reason to use more specific selectors like ID’s,

* 1. What is the CLEAR method? (5)

The clear method is a CSS property that determines how text should behave around floating elements. Clear: left; will cause the element to clear (move below), elements floated to the left, and vice-versa with clear: right; whereas clear: both; will apply both simultaneously.

* 1. What is vibe coding, and how have you observed it this year? Be very specific in your observations. (5)

Vibe coding is the practice of directing LLM AI like Claude or ChatGPT to generate code, but rather than giving specific instructions simply describe an aesthetic, or ‘vibe’ that the user wants the code to match. Giving the chatbot large amounts of freedom in determining the specifics of the code and it’s results.

1. Case 1: Method (40 points, 30 minutes)
   1. From the point of the end of the case to date, what has happened? (Include 2 examples in your answer. Be specific to the class and your independent research.) (15 points)

After the case, the company seems to have been quite successful. While fiscal year immediately following (ending March 2022), has a gross profit of 3 million USD, the three years following had profits ranging from 18-25 million USD, all according to files found with the U.S. Securities and Exchange Commission. Despite this, in the past year they have dipped into the red, losing 3 million USD in the most recent fiscal year. What exactly happened is unclear but we can guess that their hybrid model is no longer working very well. Or at least not well enough in the face of whatever their other problems are.

* 1. If RPI wanted to change the way they manage students, in your opinion, how should they implement a solution? (In house, SaaS, something else) (Be descriptive and clear in your own words referencing your own case work, research, and conversation in class (25 points)

If RPI wanted to change the way they manage students, they should take inspiration from the Rensselaer Center for Open Source, if not working with them directly, to set up a work study sort of situation to have RPI students work on a new system. This has the advantage of being an extremely cheap option, taking advantage of the many RPI CS majors doing work studies and giving them the opportunity to keep getting paid to do something actually major relevant. While it doesn’t entirely address security concerns – RPI students are not necessarily terribly loyal to RPI – it is an improvement over paying an outside entity to do this work – and more importantly, store the data – as RPI students are *more* likely to be loyal to RPI, and RPI will have a measure of control over them as students. Admittedly, this plan does fail miserably by the measure of time – depending on how well RPI incentivizes students to work on this, and if any measure of professional leadership is provided – this is not a small project and if speed is of the essence than another option should be taken. Regardless, given the other potential benefits of cheapness and an appropriate balance of security, taking advantage of it’s natural resources of one of the best computer science programs in the world is RPI’s best option.