Introduction to IT: ITWS 1100

Take Home Final Quiz: Due April 21st, 11:59:59pm

* Place your name on the top of this document in the header
* All answers should be in be in Your Own Words, in complete sentences and should use proper grammar
* Make sure your answers use an alternative font and/or color – (not red, and not Comic Sans, etc.)
* Create a development branch for this quiz. Tag it properly.
* Place all documents including this one in a folder ***inside*** your iit folder named:
  + Quiz3
* Save this document as:
  + ITWS1100-S25-Quiz3-*yourRCSID*-*yourname*.docx
* When finished make sure you extract your SQL database (include the CREATE statement) – save the output as *yourRCSID-website.sql.* Place it in your finalQuizTH folder
* When finished with the quiz, zip your entire repository including all related files into a file named:
  + ITWS1100-S25-Quiz3-*yourRCSID*-*yourname*.zip
  + And submit it to LMS
* Move your changes into production and deploy
* Do not forget your read me

Remember to save as you go,

Good luck!

1. HTML, CSS, JavaScript, jQuery, PHP, and then some … (70 Points)

In lab 3 you built a simple website using (primarily) static HTML. In Lab 8 you modified your projects page to read from a JSON file using jQuery and AJAX.

Now we are going repurpose our websites again. We are going to refactor our sites to be built using data from MySQL (MariaDB), using PHP.

* + Create an external, required PHP file named conn.php which will setup global variables for user, password, database and server for your mySQLi API connection.
  + Using includes, refactor your main site template (ie Header, and Menu) similar in code structure to the lab 9 example.
  + Using the includes from above, make a new index.php file to replace your index.html file from your site’s root. When served to the browser, index.php should look like your index.html used to look. (remember to archive or delete your old index.html file)
  + Databases: create a database in your MariaDB (MySQL) server named, ‘mySite’
    - In this database,
      * create a table named ‘myLabs’
      * create a table named ‘myProjects’
      * create a table named ‘myFooter’
      * create a table named ‘mySiteUsers’
    - Make sure you have a unique, primary key, that is automatically set that is 2 bytes in length in each table.
    - Create the fields necessary to store the data needed for your site.
  + Replace your labs/projects html page (or menu info) with a new php file which will be built dynamically by reading the necessary data from the myLabs table.
  + Add a new page for your projects (minimum 1 for your group project) which should also be accessible from your menus on all pages. It should use an relative link to your team project’s main page which at this point should also be located on your server(i.e. xx/xx/xx/groupX/
  + Using PHP includes – make sure to modularize all of the pages on your website
  + Login
    - Add a login button/link/menuitem or form fields, etc. to your main page
    - Add the functionality to allow a user to enter a user ID and password. The user, PW, users name, and user type (user or admin) must exist in the mySiteUsers table. Nothing fancy here: They may be in plain text.

Make sure that

* + - * if the user validates
        + add text with their name to your site. (i.e. Welcome XXXX!)
        + Replace the login option with logout (when clicked, the user should be logged out and the site should return to normal
      * If the user validates and is an admin, add an option to the labs menu to add/delete lab entries.
      * If the user does not validate, return with an error
  + Form for new lab entries
    - If the user is authorized and selects the add/delete lab entries, bring up a form that allows for new entries to be made, and lists out all entries. Allow delete as well (this should look/work similar to the movies/actors programs.
  + Note: When completed your index.html, projects.html, and labX.html(s), will no longer exist. They will be replaced with new php files, each in their appropriate folder so that when a user goes to yourFQDN/iit the index.php file will be served by default. This will be the new homepage for your website.

Document your code and include a readme with an explicit discussion of your IA and the logic contained throughout your site.

The site should be fully functional. DO NOT relocate all your other lab files. Reference/modify them where they currently exist within your iit folder, and according to your IA.

1. Blockchain and Generative AI and ethics: (30 points)
   1. From the case and your research, how is/was Blockchain a transformative technology? What is it about Blockchain that is so appealing. Is the hype justified? Why or why not? (min 250 words - 15 points)

Blockchain is a distributed ledger that allows participants to publicly and immutably store transactions and asset data. Blockchains are made up of blocks of data connected in a chain. Networks of companies can use blockchains to ensure that transactions between them are listed accurately and only once. Individuals can use this technology to facilitate decentralized finance because they do not require a third party to authenticate transactions; instead, smart contracts facilitate terms and conditions within transactions on the blockchain automatically. Blockchain is used to host cryptocurrency markets, in which each block represents a transaction in the blockchains respective currency.

Blockchain technology has become popular in developing companies as a mode for decentralized finance that separates them from instability or corruption in their traditional bank systems. Blockchain cryptocurrencies can be pegged to government-distributed currencies (e.g. USD) to create what is known as a stablecoin. These cryptocurrencies can be used as an alternative for fiat-based currencies because of their stable value, which is (ideally) maintained through smart contracts, as well as systems of overcollateralization or algorithmic burning/minting of paired currencies.

Cryptocurrencies hosted using blockchain have been known to be highly volatile and vulnerable to runs, in which participants lose belief in the value of the currency and withdraw their assets from the blockchain. Despite the drawbacks of blockchain, it has shown merit in decentralizing transaction data and giving users more power over their markets. However, the hype over blockchain technology has been exaggerated, as although there have been many attempts to integrate cryptocurrency with traditional businesses and markets, the main use of blockchain has been to make money through arbitration, and the average person or company generally does not interact with cryptocurrency, as blockchains have many risks and require specialized knowledge to participate. However, one way blockchain could become further utilized is by combining it with traditional financial models to increase transparency of transactions while reducing risk by leveraging federal insurance and enhanced security.

* 1. From the case and your research, what is Generative AI? How did it impact your understanding of the case? How do you think it is likely if at all) to change the way we work with computers? Be specific and include personal observations. (min 250 words - 15 points)

Generative AI is any artificial intelligence model used to generate media like images or text. These models are trained using preexisting images or text and they use machine learning to recognize patterns (in our current neural network models, this happens by the alterations of node weights to minimize some error metric) and replicate them in their output. Large language models are generative AI models that train on large amounts of online text input to be able to recognize and respond to any prompt in that language. We used LLMs like ChatGPT and Gemini to answer our questions about blockchain and stablecoin technology in Case 2, and based on every group’s prompt, we all got varied results from these LLMs.

The responses that my group received from Gemini were often very general because the LLM’s response tried to describe the subject of our questions in as much detail as possible using a variety of sources. However, the responses weren’t very specific, as they did not discuss details of examples or real-life events related to our questions. This is likely due to our prompting style; unlike other groups that input the case’s entire text content into the LLM to read over, we queried the model only using the questions we had to answer, and so Gemini did not have the proper context with which to answer our questions. Therefore, it probably preferred to answer our questions vaguely so as not to risk making mistakes.

I think the hype around generative AI is justified because it is quickly improving and becoming capable of generating (mostly) realistic videos/images, high quality text responses, and even semi-functional computer code (as has become obvious with the rise of “vibe coding”). As LLMs become more efficient, their functions will become runnable on local computers, and they might become integrated into the operating systems of personal computers. This could lead to a higher level of automation than is currently possible, which could be applied by individuals, businesses, governments, etc. for a huge number of possible purposes, many of them malicious.