Project created on 09.09.2016 00:08.

Report for project Senior Design

Task created on 28.10.2016 00:53.

No due date

▭ Evaluate Platform Solutions

Platforms are the method of website hosting. They range from cloud-based solutions to website builders. Platforms are evaluated on the cost of hosting, the flexibility of website construction, and the platform security. Cost of hosting refers to the cost of holding the website domain name, as well as the cost of any website building tools the platform has. These costs are normally on a subscription basis. Because of this, costs will be evaluated on a year basis. Flexibility of website construction describes how well a website platform will allow custom code. Some website tools (such as weebly) are great at constructing websites quickly and efficiently with their pre-made themes an content. However, our project will involve more specific code and plugins that require custom code. Any website platform we will use shall need to accommodate this. Thus, a website builder or hosting platform must need to have a more customizable website building tools. -Security refers to how secure our data/custome code will be on a website platform. There may be student or teacher-specific information stored on the website, and this information must be protected. Thus, each hosting option shall be evaluated on their security.

Task tags: *No tags*

❋ Amazon Web Services - LAMP   Created by Carlie Abraham on 28.10.2016 01:24.

Amazon web services provides a cloud-based (virtual) hosting platform to build websites. LAMP refers to four components of a solution stack for website building (LInux, Apache, MySQL, PHP). Using this hosting platform necessitates the creation of a EC2 instance on amazon web services. EC2 is an elastic web-scale computing platform. This means that it is easy to provision servers for various amounts of computing power easily and quickly. The EC2 instance's operating system is linux. This is a pro as many programs that we may need to use should be able to interconnect with linux, as linux is vastly used and very flexible. The EC2 instance works in conjunction with amazon's security platform, Amazon VPC. The Amazon VPC is the virtual private cloud. This allows the website creator to specify the range of IP addresses the instance uses, what instances are exposed to the internet (to the public) and what instances are kept private. It also ensures that all connections to the instance are industry-standard encrypted IPsec VPN connections. Thus, this website hosting platforms offers a wide-array of amazon-backed security options. Another pro to an EC2 connection is the cheap cost. For the smaller-scale instances (which we will need), the pricing is $0.0065/hour. This comes out to be $56.94/year. However, the first 12 months of hosting are free on a EC2 instance.

The other parts of the LAMP stack, Apache, MySQL, and PHP, are composed entirely

of free and open-source software. This allows the website creator to build dynamic, websites capable of serving tens of thousands of requests simultaneously. These tools are a pro due to their open-source (free) nature, as well as their flexibility of website creation. We will be able to create a lot of custom features with these tools in a cheap and secure manner.

Source: https://aws.amazon.com/getting-started/tutorials/get-a-domain/ https://aws.amazon.com/free/ https://aws.amazon.com/ec2/ https://aws.amazon.com/websites/getting-started/start-your-project/

✱ Amazon Web Services - Wordpress
Created by Carlie Abraham on 28.10.2016 02:00.

WordPress is an open-source software that can make the process of creating a beautiful website easier. WordPress runs on any web host that meets its minimum requirements (PHP 5.6 or greater, MySQL 5.6 or greater). AWS (Amazon Web Services) EC2 instance meets these requirements, and so WordPress can be run on it. Thus, WordPress on an EC2, LAMP stack will have many of the same features as building a website on just an EC2 instance. That is, it will have the same basic security (Amazon VPC, encrypted IPsec VPN connections). Running WordPress will not add nor take away from these securities that amazon provides. Though this software is used to build a website, that does not mean that WordPress has any claims to the content or data on the website. Additionally, it will have the same cost as running an EC2, LAMP instance (which was calculated to be $56.94/year. Thus, WordPress on AWS meets the requirements of a hosting platform for security and cost.

WordPress's main pro is its simplicity of website building. It offers many pre-build templates for the user interface (UI) of a website. A basic website will be able to be published quickly. WordPress has API's that make it possible to extend any website with plugins. This means that WordPress can interact with many databases (such as SQL and marinaDB). Additionally, it can read and write to file systems, make HTTP requests, perform URL rerouting, and take care of user and admin management. A lot of these features of WordPress make it possible to create custom content and functions on a website, which will be necessary for our project.

Source: https://aws.amazon.com/getting-started/tutorials/get-a-domain/ https://aws.amazon.com/free/ https://aws.amazon.com/ec2/ https://aws.amazon.com/websites/getting-started/start-your-project/ https://wordpress.org/about/ https://codex.wordpress.org/WordPress_APIs

✱ AWS - Domain Name Registration   Created by Carlie Abraham on 28.10.2016 02:13.

The created website will need a domain name. The Domain Name System (DNS) will establish a connection between an Amazon EC2 instance to the domain name. The first step to registering a domain name will be to obtain a static URL. This will need Elastic Load Balancing, and EC2 has an Elastic IP console to allocate addresses and establish a static address. There is no charge for Elastic IP Addresses (EIPs) that connect to running EC2 instances.

Once the elastic IP address is established, AWS's DNS service, Route 53, can be used to register a domain name. This registration is not free. Amazon's pricing depends on the usage of the website. The cost for basic usage is $0.50/month,

which will total $6.00/year.

Source: https://aws.amazon.com/getting-started/tutorials/get-a-domain/

✱ Bluehost & Wordpress   Created by Carlie Abraham on 28.10.2016 02:26.

Bluehost is a hosting service with WordPress compatibility. This hosting service costs $2.75/month, which totals $33/year. This service comes with a domain name, so no additional DNS services are needed (such as Amazon's Route 53). Bluehost provides security measures through a service called sitelock, which scans the website for malware, prevents XSS scripting (cross-site attacks to extract information from website users), SQL injection (database attacks), and other application scannings. Because WordPress will be running on the bluehost server, it will come with all of the flexibilities that WordPress on AWS would have, such as the ability to write custom code, use pre-made themes, attach plugins, etc.

Sources:

https://wordpress.org/about/ https://codex.wordpress.org/WordPress_APIs https://www.bluehost.com https://www.skyverge.com/blog/add-custom-code-to-wordpress/

Task created on 28.10.2016 03:37.

▭ Evaluate Data Storage Solutions

No due date

Any data that we will need for the application will need to be kept somewhere. We need to evaluate both how the data is stored, and where the data will be stored in order to decide on a final program or solution for data storage for this project.

Task tags: *No tags*

✱ Research into local storage options   Created by Yanlin Ho on 28.10.2016 03:43.

SQL and NoSQL databases would both require our project application to send data to a separate program or server. An alternative would be to store data on a local server, or within the computer files itself. The issue with this is that it would greatly increase the size of the application, while potentially decreasing the speed and efficiency of it. Because of its limitations, data in our application will most likely not be stored on a local server.

✱ Research into NoSQL databases   Created by Yanlin Ho on 28.10.2016 03:42.

NoSQL refers to types of code that are used to store data that either don't use SQL, or use other code in addition to SQL. They are used mainly for big data and real-time web applications now, such as Facebook and Amazon. NoSQL databases can be more flexible, efficient, and have more simplistic design than SQL databases. Downsides to NoSQL databases is that there is no consistency, standardization, and has risks of data loss. There are many formats data is stored on a NoSQL database: column, document, key-value, graph, and multi-model format. In comparing these formats, graph databases are least relevant to the team's project, as the data is not likely to be well-linked elements. One particular NoSQL data storage program that will be considered is MongoDB. It is a document-oriented NoSQL database, and is both

free and open source, which is ideal for the project.

✱ Research into SQL databases   Created by Yanlin Ho on 28.10.2016 03:42.

SQL is a programming language used to manage data held in a relational database management system (RDMS). SQL databases usually store information in tables or similar well-structured models, and can handle data insert, query, update and delete, schema creation and modification, and data access control. Extensions can be added to SQL in order to add functionality. It has been standardized by the International Organisation for Standardization, but is still different among some different database systems. This is a big issue with using SQL vendors, as data frequently isn't transferrable across different databases, even though the basic code is supposed to by standardized. This is because most of the SQL vendors are proprietary, and therefore there is incentive to make sure customers remain with the same vendor. SQL programs may be difficult to use for the intended project, as most of them are still proprietary software, meaning we would need to pay for access to them. Another issue with many SQL programs are that many of them aren't able to run on multiple platforms. Almost all are able to run on a Windows platform, but many can't run on Macs, and even fewer can do both as well as either iOS or Android platforms. A SQL software that fulfills all of these requirements is SQLite, but unlike many other database management systems, it is not a client-server database engine, but rather it is embedded into the end program. This could turn out to be an issue when coding the website application for the special needs school.

Task created on 28.10.2016 10:05.

No due date

🖵 Evaluate Device Solutions

The device must be carefully chosen in order to best optimize the resources available and consider the benefit of each to give us a better starting point for the production of our product. We investigated and compared the different devices (laptop, tablet, and mobile phone), their benefits to children's learning, as well as the pros and cons of these interactive multimedia devices compared to the traditional in-person instructions given in schools. Furthermore, we compared the iOS versus Android and also website versus app.

Task tags: *No tags*

✱ Comparison of Native Apps and Website   Created by Tong Yu on 28.10.2016 10:17.

A Native App must be downloaded first, for example from the Google Play store. These are more specifically geared toward one mobile device, such as the iPhone and not an android. The benefit is that they can use the GPS, camera, and other build-in functions within the device. However, this requires installation. Websites are cheaper, easier to share, easier to find, and more easily accessible because there is no need to download it. Therefore, it reaches more people much faster.

Source: http://searchsoftwarequality.techtarget.com/definition/native-application-native-app https://www.hswsolutions.com/services/mobile-web-development/mobile-website-vs-apps/

❋ Comparison of iOS and Android   Created by Tong Yu on 28.10.2016 10:16.

Cost: Android is much cheaper. There are multiple manufacturers of phones that run android, such as Samsung and LG. Apple phones are expensive and the variety of manufacturer is more limited.

Visual: iOS interface is bright and easy to comprehend. However, it does have many animations that can be distracting. Android interface has less animation and a more simple design.

Apps: iOS is currently more popular in the United States, but Google's Playstore has more free apps than the Apple Store. However, the Apple store is easier to navigate through.

Source: http://www.digitaltrends.com/mobile/best-smartphone-os/

❋ Comparison of Laptop, Mobile Phone, and Tablets
Created by Tong Yu on 28.10.2016 10:15.

RAM: Laptops typically have 4-8 GB of RAM, whereas tablets only have 1GB or less. Having more RAM is beneficial because it would require less freshening and allow for multitasking. However, while Windows on laptops allows for easier multitasking, conversely it would also mean potentially more distraction than for the tablet case.

Storage: Laptops have the most storage. Laptop usually have around 320 GB hard drive, and tablets and mobile devices have less.

Display: Tablets have better display. Laptops usually have 116 pixels/inch whereas tablets have 218 pixels/inch. However, laptops have much bigger screen than tablets of mobile phones. Tablets and mobile phones organize applications using icons, so it is more intuitive. For Windows on laptops, they must search through the files if it is not saved on the desktop. However, mobile phones and laptops are hard to type on, and are usually meant for short pulses of use rather than longer durations. The laptop allows for more definite control over the inputs, with mouse, insertable switches, and an actual protruding keyboard. Mobile phones typically have the best camera. In addition, many sites such as LinkedIn and Facebook have both a mobile and laptop setting for easier display and access of information on the different devices. However, not all of these websites have a mode for tablets.

Connectivity: This is a crucial aspect of choosing the device because switches must be plugged into the chosen device for many of the children to participate in the activity. Laptops win in the connectivity category by a landslide. Only 27% of the tablets have USB port, whereas laptops always have it. For HDMI port, 82% of laptops have them, compared to only 15% for the tablets. In addition, some tablets have micro-USB ports (57% of tablets), but these are not as convenient as the traditional USB port. Laptops typically also have SD card slots and DVD disc players, whereas tablets do not.

Cost: Typical laptops start at $500. Tablets are cheaper. For example, iPad (4th generation) costs $227, and other non-apple brands are even cheaper.

Battery Life: Mobile phones last the longest, followed by tablets. For example, a Galaxy phone's (5.5 inch) battery runs twice as long as a Galaxy Tab (7 inch). In general, tablets usually last 10-12 hours. Laptops only last 5-6 hours.

Others: Laptop is more suitable for longer-duration use. Tablets and mobile phones

are more suitable for social media and short browsing and communication.

Specific Comparison of Devices

Apple iPad (3rd Generation) Storage: 32 GB Lasts: Up to 10 hours 9.7 inch

ASUS VivoBook X540SA Storage: 500 GB Lasts: Up to 6 hours 15.6 inch

Apple iPhone 6 Storage: 128 GB Lasts: 10 hours 4.7 inch

Sources: http://shop.lenovo.com/us/en/faqs/laptop-faqs/laptop-vs-tablet/
http://www.usatoday.com/story/tech/personal/2015/03/21/shopping-tablet-
pc/25012357/ http://www.pcmag.com/article2/0,2817,2423065,00.asp
http://www.pcworld.com/article/2889275/phones/5-ways-the-smartphone-is-
conquering-the-tablet.html http://www.pcworld.com/article/2602917/laptop-vs-
tablets-how-they-compare-for-true-productivity.html
http://www.pcworld.com/article/2602917/laptop-vs-tablets-how-they-compare-for-
true-productivity.html
https://www.google.com/shopping/product/8788906547610116255/specs?
sclient=psy-
ab&biw=1093&bih=510&q=apple+ipad+3&oq=apple+ipad+3&pbx=1&bav=on.2,or.r_
hqb4Dw.1477643386244.7&sa=X&ved=0ahUKEwjxl4biiv3PAhUBTCYKHdRlBnMQuC8lmw

❋ Research on Pros and Cons of Mobile Use by Chidren
Created by Tong Yu on 28.10.2016 10:13.

With interactive media like mobile game, there is a potential problem of replacing the
child-parent interactions with more child-device interaction that, although may
increase certain academic knowledge, may hinder the learning of social manners and
emotional control that are usually learned through human interactions. Furthermore,
with the portability of mobile devices, the device is more readily available and used in
the child's life. Some parents tend to use these devices to distract the child and
keep them quiet, but this may lead to the lack of self-regulation and behavioral
control for the kids when these devices are not around.

Source: Radesky, Jenny S., Jayna Schumacher, and Barry Zuckerman. "Mobile and
interactive media use by young children: the good, the bad, and the unknown."
Pediatrics 135.1 (2015): 1-3.

❋ Research on Traditional versus Online Learning
Created by Tong Yu on 28.10.2016 10:12.

With traditional face-to-face classroom instruction, there are more immediate
opportunities to ask questions, give inputs, and debate different viewpoints, all of
which are essential to help solidify the lesson into the students' minds. The content
matter is important, but so is the interaction with both the teachers and the other
students. With online learning, there can be delays in communication when using
emails, chats, and discussion boards like piazza. Peer interaction during the learning
process is important for fostering a feeling of inclusion and for community building.
With online learning, the students can go at their own pace, have more time to think
before posing questions, which often leads to deeper discussions. In addition, the
instructor can post more detailed feedback online. However, this usually cannot
occur immediately after a task is done and requires a time delay before the student
can see the feedback. With face-to-face interaction and live question and answer

sessions, the class is usually strapped for time, and the conversation quality can decrease. With online learning, participation can feel less intimidating. However, the instructor's presence can fade online, and it is easier for the students to ignore the instructor. From the study in this paper, they found that persistence rate is a problem with online learning. It would be beneficial to pair these online materials with teacher advising so the student can increase their motivation, form stronger connections with the instructors, and decrease the isolation they may feel while online.

Source: Ni, Anna Ya. "Comparing the effectiveness of classroom and online learning: Teaching research methods." Journal of Public Affairs Education (2013): 199-215.'