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Module Code	4BUIS012C-n	Second Marker's (acts as signature)	
Lecturer Name	Olga Yugay	Agreed Mark	
UoW Student IDs		For Registrar's office use only (hard copy submission)	
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Deadline Date	December 1, 2020		
Assignment Type	<input type="checkbox"/> Group <input checked="" type="checkbox"/> Individual		
Word Count	766 words		

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Table of Contents	1
Introduction	2
Hardware Review	3
Software Review	5
Justifications and Recommendations	10
Conclusion	11

1. Introduction

This report aims to guide a new start-up company to construct a remote environment for a web development due to the recent outbreak of COVID-19. In this report, there will be explained all required software and hardwares that all employees should be equipped with. Also, additional parameters of all sets (softwares and hardwares) will be indicated in the report.

The company will be focusing on only web development. Therefore, it's highly recommended to stick to the latest JavaScript frameworks as it's getting its popularity day by day. There are 2 layers in the web development area which are frontend and backend. Frontend part will serve as an interface of the application and there should be used optimised CSS frameworks such as Materialize, Tailwind CSS or Semantic UI. In order to make web surfing experience dynamic and beefy, it's highly recommended to use the latest Javascript technologies as React.js, Vue.js or Svelte. By combining a CSS framework with a Javascript framework, a fully responsive web application can be reproduced. It's recommended to combine Next.js framework which is known for its speed and production ready optimisation with Tailwind CSS which is also known for packing css classes into tags. As regards to the backend part of the application, it should be chosen whether what kind of sphere is the application going to cover. As an example, if the company is going to build a video hosting website, it's recommended to use the Phoenix framework on Elixir programming language, if it is a data exchanging application, then frameworks such as asynchronous Express on Node.js will be more efficient compared to other frameworks or programming languages. There might be some doubts about using programming languages as PHP or Python. However, both programming languages that are indicated below might be popular due to the mass usage on the net, but it's not speedy and efficient enough to respond to requests fast. It will just overkill the performance and efficiency of a project.

On the other hand, it's relevant to know how every member of the company is experienced. It's suggested to group people by summarizing its experience ranking of every staff member. Normally, it's recommended to have a group with a senior rated developer and 2 middle

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

developers and optionally a junior developer. Neither, you can replace 2 middle developers with a master developer.

Speaking up the budget part of the company, there should be signed a few contracts with local sponsors and investors at the initial stage.

2. Hardware Review

Name and Price	Characteristics	Short Description	Benefits	Limitations
Designers				
Apple Mac Mini 2020 USD ~\$1299	Apple M1 chip with 8-core CPU, 8-core GPU, and 16-core Neural Engine. RAM: 16 GB Storage: 1 TB SSD	Apple's first self made silicon that provides builtin motherboard with included CPU, GPU and Neural Engine that helps to preprocess rendering faster.	10x Efficient than Intel Compatible Renders 2x faster than AMD Cheap and Apple Silicon Best softwares for designers Apple Care+ Support	Windows Applications support via third party Formation might differ for other platforms Should be used only for graphic stuffs
Developers				
USD \$800~1000	CPU: Intel Core i5-11300, 6 Cores up to 4.3 GHz RAM: 16 GB GPU: Built-in Intel's is enough Storage: 128GB SSD & 512 GB HDD	Customized PC that's capable to run latest x64_86 bit apps including memory draining Electron.js applications. such as Visual Studio Code, Atom, Github Desktop, Figma Desktop, etc...	Budget Friendly Actual Service for the next 2 years Customizable (Windows Linux) go with whatever you want	Needs change or repair in the future Should be modified depending on the future environment Requires special treatment
Testers				

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

USD \$600~800	CPU: Intel Core i5-10400, 6 Cores up to 4.3 GHz RAM: 8-12 GB GPU: Built-in Intel's is enough Storage: 128 GB SSD & 128 GB HDD	Customized PC that's capable to run x64_86 bit apps and has ability to run various tests as an example, jest, pytest, etc. Has capability to run browser and speed bench.	Budget Friendly Actual Service for the next 2 years Customizable (Windows Linux) go with whatever you want	Needs change or repair in the future Should be modified depending on the future environment Requires special treatment
Project Managers				
USD \$600~800	CPU: Intel Core i3-10100 Processor 4 Cores up to 4.3 GHz RAM: 8 GB GPU: Built-in Intel's is enough Storage: 128 GB SSD or 256 GB HDD	Customized PC that's capable to run x64_86 bit apps and has ability to run various tests as an example, jest, pytest, etc. Has capability to run browser and speed bench.	Budget Friendly Service for the next 2 years Customizable Windows Linux go with whatever you want	Needs change or repair in the future Should be modified depending on the future environment Requires special treatment
Server				
USD \$1100~1200	CPU: AMD EPYC™ 7351P, S SP3, Zen, 16 Core, 32 Thread, 2.4GHz, 2.9GHz Turbo, 64MB Cache, 155W/170W, CPU, Retail RAM: 64 GB GPU: *not necessary* Storage: 128 GB SSD & 5-10 TB SSD	Reloaded Server with AMD CPU that has the ability to get things done with lightning fast speed thanks for AMD Multithreading. Capable to run stress heavy tasks thanks for 64 GB of operating RAM.	Multithreading Heavy Stress Capability (Windows Server Linux Server) go with whatever you want	Needs change or repair in the future Should be modified depending on the future environment Requires very very special treatment Needs experienced sysadmin to manage

3. Software Review

3.1 Basic

Name and Price	Minimum System / Browser Requirements	Short description	Benefits	Limitations
Designing and Prototyping				
GIMP (FOSS)	<p>Operating System: Windows XP/Vista or Windows 7/8/8.1/10</p> <p>RAM: Minimum 1GB of RAM for smooth run</p> <p>Free Hard Disk Space: Minimum 100MB of free space for installation</p> <p>Processor: Multi-core processor for best performance (dual core processor can also run this software)</p>	GIMP is a cross-platform image editor available for GNU/Linux, OS X, Windows and more operating systems. It is free software. Whether you are a graphic designer, photographer, illustrator, or scientist, GIMP provides you with sophisticated tools to get your job done.	<p>Open Source</p> <p>Free</p> <p>High Quality Photo Manipulation</p> <p>Original Artwork Creation</p> <p>Plugin Extensible & Flexible</p> <p>Graphic Design Elements</p> <p>Cross-Platform</p>	<p>Support (Limited with Discussion Board)</p> <p>Doesn't implement AI Assisting Features</p>
Inkscape (FOSS)	<p>Operating System: Windows 7/8/8.1/10</p> <p>RAM: Minimum 8GB of RAM for smooth run</p> <p>Free Hard Disk Space: Minimum 560MB of free space for installation</p> <p>Processor: Multi-core processor for best performance (dual core processor can also run this software)</p>	The design process may begin by doodles on a napkin, a sketched mindmap, a photo of a memorable object, or a mockup in software which really wouldn't work to complete the project. Inkscape can take you from this stage to a final, professional-grade design format which is ready for publication on the web or in physical form.	<p>Open Source</p> <p>Free</p> <p>Actively Contributed</p> <p>Extensible via Plugins & Modifications</p> <p>Professional Publishing</p> <p>Cross-Platform</p>	<p>Support (Limited with Discussion Board)</p> <p>Need to be updated all time.</p>
Development				

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

VSCode (FOSS)	<p>Operating System: Windows 7 / Linux 14.0.0 / OSX Yosemite</p> <p>RAM: Minimum 1GB of RAM for smooth run</p> <p>Free Hard Disk Space: Minimum 100MB of free space for installation</p> <p>Processor: Multi-core processor for best performance (dual core processor can also run this software)</p>	With Hackable text editor Go beyond syntax highlighting and autocomplete with IntelliSense, which provides smart completions based on variable types, function definitions, and imported modules.	<p>Open Source</p> <p>Free</p> <p>Highly Customizable</p> <p>IDE Manipulation</p> <p>Cross-Platform</p>	<p>Built on top of Electron.js</p> <p>(Not native solution)</p>
GitHub Desktop (FOSS)	<p>Operating System: Windows 7 / Linux 14.0.0 / OSX Yosemite</p> <p>RAM: Minimum 1GB of RAM for smooth run</p> <p>Free Hard Disk Space: Minimum 100MB of free space for installation</p> <p>Processor: Multi-core processor for best performance (dual core processor can also run this software)</p>	Focus on what matters instead of fighting with Git. Whether you're new to Git or a seasoned user, GitHub Desktop simplifies your development workflow.	<p>Open Source</p> <p>Free</p> <p>Expanded image diff support</p> <p>Extensive editor & shell integrations</p> <p>Community supported</p> <p>Cross-Platform</p>	<p>Not fully integrated with API</p> <p>Built on top of Electron.js (Not native solution)</p>
Project Management				
JetBrains Space (FOSS Beta)	<p>As possible as latest version of browsers:</p> <p>Google Chrome Mozilla Firefox Microsoft Edge Apple Safari</p>	Cloud hosted team management application that helps organizations to keep tracking, CI testing and messaging. All in one solution by JetBrains.	<p>Free</p> <p>Open Source</p> <p>Active Support</p> <p>Lots of features</p>	Beta Release
Testing				
GitHub Actions (Free)	<p>As possible as latest version of browsers:</p> <p>Google Chrome Mozilla Firefox</p>	Test your projects with built-in GitHub Workflow that lets you use various types of environment.	<p>Free at initial stage</p> <p>Variety of choices</p>	Needs to be paid as organization grows

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

	Microsoft Edge Apple Safari			
Team Communication				
JetBrains Space Messenger (FOSS Beta)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	Cloud hosted team management application that helps organizations to keep tracking, CI testing and messaging. All in one solution by JetBrains.	Free Open Source Active Support Lots of features	Beta Release
Google Meet (Freemium)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	Video Conferencing and Screen Sharing service that lets you get connected with your friends, family and organizations for free.	Free Community Support Stable	Limited with community support Can't stream hi-rate videos & streamings

3.2 Premium

Name and Price	Minimum System / Browser Requirements	Short description	Benefits	Limitations
Designing and Prototyping				
Adobe Photoshop (USD 20.99 / monthly billed)	Processor: Intel® or AMD processor with 64-bit support; 2 GHz or faster processor RAM: 2 GB Hard disk space: 3.1 GB or more of available hard-disk space Monitor resolution: 1024 x 768 display (1280×800 recommended) with Graphics processor acceleration requirements: OpenGL 2.0-capable system	From photo editing and compositing to digital painting, animation, and graphic design — you can do it all in Photoshop. Bring ideas to life across desktop and iPad. Magically transform images with the power of AI.	Active and Good Hotline Support AI Integrations with auto sketchup & assistance Natively developer for every platform on top of lowest programming language	Might be hardcore for newbies Very heavy to bootstrap Quite Expensive

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

Adobe Illustrator (USD 20.99 / monthly billed)	Processor: Intel® or AMD processor with 64-bit support; 2 GHz or faster processor RAM: 2 GB Hard disk space: 3.1 GB or more of available hard-disk space Monitor resolution: 1024 x 768 display (1280×800 recommended) with Graphics processor acceleration requirements: OpenGL 2.0-capable system	The industry-standard vector graphics software lets you create everything from web and mobile graphics to logos, icons, book illustrations, product packaging, and billboards. And now, experience the freedom and flexibility of Illustrator across desktop and iPad.	Active and Good Hotline Support AI Integrations with auto sketchup & assistance Natively developer for every platform on top of lowest programming language	Might be hardcore for newbies Very heavy to bootstrap Quite Expensive
Development				
JetBrains WebStorm IDE (USD 130 / yearly billed)	OS: 64-bit versions of Microsoft Windows 10, 8 RAM: 2 GB RAM minimum, 8 GB RAM recommended HD: 2.5 GB hard disk space, SSD recommended DP: 1024x768 minimum screen resolution	Full power of the modern JavaScript ecosystem. Intelligent code completion, on-the-fly error detection, powerful navigation and refactoring for JavaScript, TypeScript, stylesheet languages.	Debugger Extensible Plugins Unit Testing Integration with VCS Seamless tool integration Server, Web, Mobile and Desktop implementation	Built on top of JVM Includes free learning courses to get started in
Project Management				
JetBrains Space Organization (USD 20 per active user / monthly)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	Cloud hosted team management application that helps organizations to keep tracking, CI testing and messaging. All in one solution by JetBrains.	Cloud Hosted Solution All-In-One Solution	Cloud Hosted No native application provided, only Electron.js port

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

billed)				
GitHub Projects (USD 4 per month)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	On GitHub, project managers and developers coordinate, track, and update their work in one place, so projects stay transparent and on schedule.	Tasks Assignments Labels Milestones Task Planner	There are no native application to integrate with
Testing				
Travis (USD 69 / monthly billed)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	Test and Deploy with Confidence. Easily sync your projects with Travis CI and you'll be testing your code in minutes!	Git ready Free to get started in Recommendation & Suggestion	Need to integrate over Git Hosting system
Team Communication				
JetBrains Space Organization (USD 20 per active user / monthly billed)	As possible as latest version of browsers: Google Chrome Mozilla Firefox Microsoft Edge Apple Safari	Cloud hosted team management application that helps organizations to keep tracking, CI testing and messaging. All in one solution by JetBrains.	Cloud Hosted Solution All-In-One Solution	Cloud Hosted No native application provided, only Electron

4. Justifications and Recommendations

All suggestions and recommendations for hardware equipment have been provided on the table below. As it can be seen, the first three columns describe the details and price of hardwares and the rest compares the pros and cons of those provided hardwares. It has been decided that every type of employer should have their own PC that suits them with its requirements. As an example, designers will be using the latest Apple iDevices, because Apple's products support various types of gestures and accessibility that will make the working process more convenient for graphic designers. In order to let those iDevices render high quality pictures, textures, and animations, also

WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

to be avoided full capacity issues, it has been provided to purchase 16 GB of ram with at least a TB of hard disk option. Also, for other member types as Developers and Testers, it has been suggested to build a customized PC with it's given characteristics in the table below. Nowadays, Electron JS applications have been actively used in the development process and as an implement for that, it has been said to store the latest 10th generation of Intel Core i5 to run those Electron apps smoothly. In order to be avoided from memory draining issues, it has been recommended to get 16 GBs of random access memories. For testers, it is preferable to store 8 GB of random access memories with a little less powerful CPU than Developer's. Project Managers are the people who will be using document editors and testing runtimes such as pytest for python apps, jest and node-test for Node.js applications and they are not high specs required applications. In that case, they are ok to use Intel's latest Core-i3 generation processors with 8 GB of random access memories.

5. Conclusion

By concluding the report, It's recommended to stick to the premium plan recommendation provided below in order to let the company employers to reproduce applications efficiently and fast. In cases such as lack of financial support, it's recommended to get started with the basic plan as soon as the company recovers its initial state and finance.

Google Docs Link:

https://docs.google.com/document/d/1kD0AI5PxmLUhdpTVMeh_oGMv_gQJBAzBJ0jQsDJg_gVk

GitHub Repository:

<https://github.com/xxxxxxxx/csf.coursework>

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WESTMINSTER INTERNATIONAL UNIVERSITY IN TASHKENT

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