**COURSEWORK SUBMISSION FORM**

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| **STUDENT USE** | | **STAFF USE** | |
| Module Name | Computer Science Fundamentals | First Marker’s  (acts as signature) |  |
| Module Code |  | Second Marker’s  (acts as signature) |  |
| Lecturer Name | Olga Yu | Agreed Mark |  |
| UoW Student IDs |  | **For Registrar’s office use only (hard copy submission)** | |
| WIUT Student IDs | 00010443 |
| Deadline Date |  |
| Assignment Type | ☐☑ Group ☐☑ Individual |
| Word Count | 1398 words |

**SUBMISSION INSTRUCTIONS**

**COURSEWORKS *must* be submitted in *both* HARD COPY (to the Registrar’s Office) *and* ELECTRONIC unless instructed otherwise.**

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| **MARKERS FEEDBACK (Continued on the next page)** |
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**Introduction**

Since the beginning of 2020, the world has experienced a huge crisis in many areas due to the outbreak of Covid-19. This event produced a financial crisis, a crisis in ideas and plans, in development. Therefore people in all industries had to look for new opportunities to continue working plans. Taking the IT sphere, it was easier to find new solutions for remote work. Due to the rapid development of online platforms for employees, this has served to create new forms and convenience for working processes. This report will explain in detail a new type of IT project for a start-up company, which was created during the pandemic.

This IT start-up company plans to create various applications for customers. It can be online stores or fitness trainers who want to have their own application with a complex of training for athletes, or orders from any other area. The working team consists of Project Managers, Designers, Web-developers, Testers and Team Communication activities. These are the main vacancies in this project. Now in detail about each department.

According to Jack R Meredith (1), the Management Department is responsible for organizational matters, regulation and control of all other departments, as well as collecting and analyzing customer requirements, negotiating their budget.

Next comes the most creative department - Design. Professionals in this department usually contact customers to find out their wishes about the application. These are mainly colors, customer usability and visual details. According to Jamil Hussain (2), the design department has specialists who are responsible for the User Interface and User Experience. The User Interface is responsible for the correct positioning of elements on the screen. In turn, User Experience for the ease and convenience of the user on the site.

One of the most important department activities during creating websites or applications is development. This is the process where the layout designer implements the designer's plans with the help of codes. This department, in turn, is divided into Backend and Frontend. The first direction works with the internal server part of the site, the user does not see data processing in it. This is where the interaction with the database takes place. Specialists in this area work mainly with programming languages such as PHP, Ruby and Python. They allow you to make purchases in online stores, watch videos in a browser, write posts and comments, and arrange online broadcasts. In turn, Front End specialists target the front side of the site / application. Mostly they use languages like HTML, CSS, Java Script. They allow users to enter data, turn on the video with the Play button, design posts, search in the search bar. There are also professionals like Fullstack-developers who write codes for both Back End and Front End.

The final department employees, but no less important, are the testers. They check not only the final operation of the application, but also help in the beginning, before creating the web-applications, to filter the necessary details. According to Hui Li (3) Bug tracking systems are currently used to collect and manage bug reports in many software projects. As participants, testers not only submit bug reports to the system, but also comment on bug reports in the system.

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| --- | --- | --- |
| Name and Price | System requirements | Description |
| Web Design | | |
| Acer Slimmest AIO Desktop Price: $880 | Windows 10 Home 64-bit  Aspire S24  Intel Core i5-8250U  12GB (1 x 8GB, 1 x 4GB) of DDR4-2133 memory  1TB 5,400 RPM HDD housed under a 23.8” 1920 x 1080 active matrix TFT display  Intel UHD 620 Graphics | Aimed at the luxury crowd, boasting mainstream performance for programming tasks with necessary features for web designers |
| IT Project Management | | |
| XPS 15 Laptop  Price: $999 | Core i5-8300HQ or i7-8750HQ  Intel UHD Graphics 620  XPS 15’s 15.6 ”display  Memory runs at 2,666MHz | Slim and versatile laptop great for daily tasks and planning |
| Developing | | |
| Apple AMD CPUs Price: $1400 | 10.15.4 operating system (OS)  Ryzen 4000-series  Zen 2 microarchitecture  RDNA 2.0 architecture and TSMC's enhanced 7nm+ node | The desktop has a powerful processor and can withstand the most complex programs, well suited for application programming |
| Server | | |
| Hostwinds  Price: $100/month | 32GB Memory  4vCPUs  6TB Transfer  600 GB SSD Disk | Hostwinds offers website hosting for individuals and businesses of all sizes, with 24/7/365 support and nightly backups |
| Testing | | |
| HP Omen 15 Laptop Price: $1,299.99 | GTX 1660 Ti  CPU AMD Ryzen 7 4800H  Graphics Nvidia GeForce GTX 1660 Ti (6GB GDDR6)  RAM 16GB DDR4 3200 MHz  SSD 512GB M.2 PCIe NVMe SSD  Display 15.6-inch, 1920 x 1080, IPS, 144 Hz display  USB 3.2 Gen 1 Type-C SD card slot  Operating System Windows 10 Home  Size 14.1 x 9.4 x 0.9 inches | Stylish and compact laptop has a powerful processor and supports complex programs |

# Table 1.1 Software ‘’Basic’’ version

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name and Price | System requirements | Short description | Benefits | Limitations |
| Project Management |  |  |  |  |
| Nicus  Price: Cost not specified  Payment: Monthly, Yearly | Cloud based SaaS solution  Operation System:  Web App,  Windows,  Android | Provides the tools and process for controlling and monitoring computer networks, including | Powerful tool, highly customizable with great potential | For those not accustomed to database structures, it requires a mid-shift from the more traditional Excel models most Finance teams have utilized for years |
| Todo.Vu  Price: Free for freelancers  $9.00/month | Cloud based Saas solution  Deployment:  IPhone/IPad,  Android | Todo.vu is a productivity progress assistant for managing tasks, invoices and contacts | Time tracking and reporting  Google has in their email  Easy to get accustomed | No way to set up recurring tasks  The UI is not modern and the UX is bit bad, which lacks the feel of using modern app |
| Monday.Com  Price: $7,80 | Cloud based Saas solution  Deployment:  Mac  Windows  iPhone / iPad  Android | A powerful Resource Management software, helps teams plan and execute projects that deliver results on time | Users can invite others and assign tasks or share timelines with them  Ease of dragging and dropping and clicking on tasks to mark them as done or ongoing | Hyperlinks do not always carry over when spreadsheets are imported |
| Design and Prototyping | | | | |
| Sketch  Price: $8.30 | Cloud based Saas solution  Platforms:  Windows  Mac  Linux | Digital design toolkit for app building with broad choice of design symbols that can be reused and shared with the design community | Lightweight platform  Users can design using pixels | There are no print-medium settings |
| Appmaker.xyz  Price: Free | Cloud based Saas solution  Platforms:  Windows  Android  Mac | Provides sleek functionality for Mobile eCommerce, Digital media and other businesses | Very easy to set up even without any coding skills | Short dashboard management  The time giving to manage the dashboard before making payment is too short |
| Mapbox  Price: Free | Cloud based Saas solution  Windows  Android  Mac  Linux | Provides a global map, real-time traffic, location search, and navigation via our APIs and SDKs | Nice for programming and customizable with good documentation for users own app | It has a steep learning curve for developers used to other APIs |
| Development | | | | |
| Notepad++  Price: Free | Cloud based Saas solution  Windows  Mac | A free text code editor that supports various languages and uses Win32 API and STL | Software understands a ton of programming languages  It is a very reliable tool that has the main functions of a good code editor and some more that are very useful | Not easy to find where users error out in the code lines that users create  Limited with documentation on how to troubleshoot to locate the error |
| GitLab  Price: $4.00/month | Cloud based SaaS solution  Windows  Mac | Helps small to large enterprises improve business operations using time tracking, incident management, code review, regulatory compliance | Good file management system with perfect revision numbers and branching is very easy on GitLab  Users can self-host it | Annoying bugs and limitations  The lack of funding makes it very hard to expand on Gitlab and use it full time |
| Docker  Price: $7.00/month | Cloud based SaaS solution  Windows  Mac  Linux | Application development solution that enables businesses to build applications, share container images | Toolkit makes easy to get started with containerization applications | Lack of documentation for insecure docker registries |
| Testing | | | | |
| ConvertCart Tool Suite Price: Free | Cloud based SaaS solution  Windows  Linux  Mac | Machine learning-based all-in-one conversion optimization tool suite that ties together 21 tools into a powerful ecosystem | Convertcart seemingly incorporates all of the tools user has historically worked with for CRO | Features should be discrete packages that would stick around even if the service were stopped |
| Zoho PageSense  Price: Free | Cloud based Saas solution  Windows | A complete A/B testing & CRO platform. Equipped with an intuitive UI and an assortment of features | User can customize reports, filter the data to what they need, collaborate with other team members, and track visitor engagement | If user need on-time responsive support, Zoho may not be the best fit |
| UseltBetter  Price: $9.00 | Cloud based SaaS solution  Mac Windows  Linux | Helps e-commerce and online product owners improve efficiency of their web development efforts through customer insights and experimentation | Built-in features makes easy for the person who does not know coding | UseltBetter is a platform that must fit the pricing to the small business and the initial entrepreneurs |
| Team Communication | | | | |
| Pexip | SaaS solution  Windows  Mac  IPad/IPhone  Linux | Enables enterprises and organizations of any size to deploy and use video-based communication and collaboration | Top professional solution provided by professional people.  Flexible to the max and yet the manage to keep on developing the solution | Configurations in the firewall can be a problem, since it varied from one version to another |
| Groupe.io  Price:  $1.00 | SaaS cloud based  Windows  Android  Mac | Any company looking to connect their entire workforce, including frontline workers, over a unified platform | It will improve company culture | Sometimes the application gets stuck and is slow |
| Loom  Price: $5.00 | Cloud based Saas solution  All platforms | An internal communications tool allowing your message to be instantly shared through video | Google Chrome extension, and allows to seamlessly share video links with other people | Loom is a critical tool in communicating |

**Table 1.2 Software ‘’Premium’’ version**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name and Price | System requirements | Short description | Benefits | Limitations |
| Project Management | | | | |
| Univention Corporate Server  Price: $1200.00/year | Cloud based SaaS solution  Deployment:  Mac  Windows | Scalable and Open Source Linux based software appliance for identity, IT infrastructure and service management | It is the product of an organisation who employs the highest levels of stringent software development and engineering | The web management interface (UMC) will not accomplish some tasks & some command line admin is required |
| Lansweeper Price: $495.00/year | Cloud based SaaS solution  Windows | An agentless IT Asset Management solution that can scan any network setup | Users can keep track of things just over the network without having to physically go to every device | It only hold onto the record of the device for 30 days after it goes offline |
| LogMeIn Pro Price: $840.00/year | Cloud based Saas solution  Windows  Mac | Remote device management solution that helps businesses remote printing, password management, multi-monitor display | It helps tremendously with being able to train others and adding another computer as well | if user works with more than one monitor it can be very tricky trying to switch between monitors |
| Design and Prototyping | | | | |
| Indigo.Design Price: $39.00 per month | Cloud based Saas solution  Platform:  Windows  Mac | Provides your design and development teams with a solution to design, test, and deliver pixel perfect apps as quickly as possible without losing focus on UX | Ability to have features and animation abilities are very easy to configure | Limited functionality |
| Pastel  Price: $27.00/month | Cloud based Saas solution  Platforms:  Windows  Mac  Linux | Is the easiest way for designers and developers to collect feedback on what they are building | The comments/pastel interface is a frame or layer on top of this | Comments on website headers are hard to read and interpret |
| Shoutem  Price: $19.09/month | Cloud based Saas solution  Platforms:  IPhone/IPad  Windows  Android | Allows users to create remarkable mobile apps in an easy and fun drag & drop way | Many things that come out-of-the-box, like location-based services, push notifications, and multiple content integration options a real time-savers | Pricing does not have an iOS only option |
| Development | | | | |
| TestRail Test Case Management  Price: $34.00/month | Cloud based Saas solution  Platforms:  Windows  Mac | Modern Test Case Management Software for QA and Development Teams | Configuration options for test cases templates is good  Flexible and user have not encountered any application of it that was not a perfect fit | No choice to raise defect  No detailed and single page view on the over all test cases |
| DXTMLH  Price: $599.00/year | Cloud based Saas solution  Deployments:  Windows  Mac  Linux | Web developers and decision-makers from companies of any size and industry, who aim at saving time and effort while creating feature-rich web apps | Components are feature-rich and easy to use  Features are useful for final users | No components which we can implement into users product |
| Sublime Text  Price: $80.00 | Windows | Designed to assist businesses with application development using project switches, customizable snippets, syntax changing | The ability to have multiple cursors, search and edit multiple occurrences of the same characters | Popup asking users to buy the full version |
| Testing | | | | |
| VWO Testing  Price: $199.00/month | Cloud based Saas solution  Windows  Linux  Mac | VWO is a leading website optimization and testing platform used to analyze web activity and increase conversions | User can segment traffic very thoroughly throughout all the heatmaps, visitor recordings, and A/B tests | Can not store data forever  Make user’s website more slow |
| Proof Pulse  Price: $29.00/month | Cloud based SaaS solution  Windows  Linux | Helps online business increase their leads and sales by showing real-time social proof | Ease of implementation and the design  It is pleasure to work with Proof | Suggest a slightly more thorough review pre-deploy |
| TryMyUI  Price: $299.00 | Cloud based SaaS solution  Windows  Mac | Usability testing solution that provides remote, mobile, wideframe, impression testing | Usability of the website is easy to navigate  It is offering various attempts for the user to improve their qualification- rating | There are a lot of invitations for websites to review, but most of them are picked up by other testers before user can get to them |
| Team Communication | | | | |
| Cisco Webex  Price: $13.15 | SaaS solution  Windows  Mac | To collaborate and to move projects forward faster | It is very easy to schedule a meeting, and invite people to it  Both sound and video quality are awesome | The pricing is slightly higher for individuals with a low budget |
| Pyrus  Price: $20.00 | SaaS solution  Windows  Mac  IPad/IPhone | It makes user’s work day smarter by automating tedious yet essential business processes | Asking for approval is easier than in another softwares | Can be some issue during installation |
| ThirdSpace  Price: $10.00 | SaaS solution  Windows  Linux  Mac | Spaces organize interactions by topics, teams, and events similar to how physical spaces give context to communication | Simple to use and a good way to incorporate personal aspects of people's lives into a business setting | The notification system is overwhelming. Getting a notification each time someone does something adds a lot of red numbers to the top |

**Recommendation and Justification**

This section will explain in detail what software and hardware should be used in the future for a startup company to achieve the desired results.

The IT project managers department consists of 5 people, one of whom is the chief and four assistants, who most often discuss the order with clients. They need a convenient and easy-to-use laptop that will help them complete all the necessary daily tasks and plan future projects. Therefore, the XPS 15 Laptop is recommended, it is easy to use and has all the necessary design features and a profitable price. They will also need to install software Monday.com. Having studied this program, users can understand that it is very convenient and cheap compared to other applications. Can be installed on any platform and create team projects on time.

For a design department with 5 employees, two for the User Interface and three for the User Experience, it is recommended to buy a desktop computer. The business of designers is not for laptops; they need a powerful processor and multifunctional hardware with a large screen. Acer Slimmest AIO Desktop with Windows 10 operating system is best suited for this. The price is much lower than other computers, but the functionality is not inferior. Users can work with this equipment with any software for Web Designers, for example Indigo.Design. This application has features and animation abilities, which are very easy to configure. Designers can easily find the necessary details for projects and depict them for further developer actions.

6 developers in the company, three of which are Frontend and three other Backend specialists, will implement the designers' plans using Apple AMD CPUs. This equipment was chosen specifically for developers, as Apple creates multifunctional equipment for IT specialists. Here developers can work with any software and create applications for any level of complexity and amount of functionality. The price of this computer for such multitasking equipment is very reasonable. It is advised to install TestRail Case Management software here. The monthly subscription costs $ 34.00, which is very good for such a modern and improved software, where everyone can use all programming languages such as Python, C ++, Java Script, CSS, HTML and many others.

This software can be used by both Frontend developers and Backend developers.

The last no less important department is testing, where three specialists work. They will need lightweight equipment that they can carry with them and work in any convenient place, since their work is spontaneous. Their work may be needed at any time, since coding errors may appear at any time. But also being a laptop, it must have a powerful configuration. Therefore, the best solution for hardware was the HP Omen 15 Laptop with Display 15.6-inch 1920 × 1080. The price ($ 1,299.99) is more expensive than the rest of the hardware companies, but worth it. It supports complex programs and necessary features for Testers.

As a software, it is recommended using Proof Pulse, where the monthly subscription costs $ 30, which is very good for such usability testing solution that provides remote, mobile, wide frame impression testing. Usability of the webapp is easy to navigate, helps users to improve their qualification-ratings.

While each department is doing its own thing during a pandemic, it is necessary to maintain contact, discuss and plan projects together and send each other the necessary documents and files. To do this, workers can use various social applications to maintain contact. The best choice was Pexip. Its main advantage is its free use. Moreover Pexip enables enterprises and organizations of any size to deploy and use video-based communications and collaborations. Flexible to the max and yet the manage to keep on developing the solution.

Hostwinds was chosen as the server, it is one of the largest server companies. The monthly price is $ 100. It has many advantages, such as convenient pricing, pricing plans for the right memory size.

**Conclusion**

To summarize, these were plans for a start-up start-up company with an initial budget of roughly $ 50,000. With such a beginning, the company will develop for the better and already use more professional equipment and use software of a more complex level and functionality. In the future, new professional employees with extensive experience and a rich portfolio will be presented, who can easily create the necessary web-project clients.

Online Docs:

<https://docs.google.com/document/d/1tk0quctY1kADyTeRR6axH119Y-aL6_FnGvtfyc-UuWg/edit#>

GidHub:

<https://github.com/ID00010443/CSF.CW1.00010443>

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