**OPERATING SYSTEM (PRACTICALS) – FALL 2012**

**EXPERIMENT 2 – UBUNTU**

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| **DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Students Names: CPL Shehryar Sajid**  **NC Hamid Raza Ghazali** | |
| **Marks Obtained: \_\_\_\_\_** | **COURSE: BESE 16 A** | |
| **Deadline: 1400 hrs 28 Sep 2012** | **Instructor: Engr. Umar Mahmud** | |
|  | **Instructions**   * This lab is to be performed by a syndicate of at most **TWO** students. Write your remarks next to the space provided. * Plagiarism is strictly forbidden. * Submit hard copy of the report before deadline. Marks will be deducted for late submissions. |  |
| 1. | **Objectives:**   1. Using Ubuntu and beginner’s tasks in Ubuntu 2. Using Terminal Commands in Ubuntu. Setting up Proxy and Network in Ubuntu. 3. Creating Java codes in Ubuntu and analysing Java codes over multiple platforms. |  |
| 2. | **Time Required:** 3 hrs |  |
| 3. | **Software Required:**   1. Ubuntu OS/Windows OS 2. NetBeans 7.2 |  |
| 4. | **Change Themes:** Change the theme.   1. Right-click on the desktop and select change desktop background 2. Select a Wall paper that best describe you. What is the name of the image? **Abstract.jpg** 3. Change the Theme.   **Theme Changed to 'Radiance'** | (1) |
| 5. | **Updating Software:** Go to System Settings and then Software Sources   1. On the Ubuntu Software tab is where you specify Ubuntu Software Sources. All [software](http://en.wikipedia.org/wiki/Computer_software) from Ubuntu is stored in this location. Select the [check boxes](http://en.wikipedia.org/wiki/Check_box) to enable. If you need to add software from other sources, select other.   A description...   1. On the Updates tab, check the types of updates to install. The first two are recommended. You can also choose to alert you when there’s a new upgrade available by choosing Normal releases in the Release upgrade option.   A description...  More information at <http://www.liberiangeek.net/2010/03/linux-beginner-an-introduction-to-ubuntu-linux/> |  |
| 6. | **Establish Network and Proxy:** You need to know the IP of the system you are using from Windows.   1. Go to Windows, Select Run, Type cmd. Type IPCONFIG/all. Write the IP of your machine here; **172.23.19.150** 2. In Ubuntu Go to System Settings and then Network. In Wired tab select Configure. Type Connection Name as CSDept. 3. Under IPv4 Settings, Add under address your IP, Netmask is 255.255.252.0, Gateway is 172.23.19.250 4. DNS Servers are 172.23.16.1 and 172.23.5.12 5. Select Save. 6. Which is the browser provided with Ubuntu? **Firefox Web Browser** 7. Open FireFox, Go to Edit and Preferences. 8. In Network Tab , Select Settings 9. Type Manual Proxy as 192.168.50.10 and port 8080 10. Check the Internet and write the top news at [www.bbc.com](http://www.bbc.com/) here **“Marikana miners to return to work”** 11. Downloads this experiment document from LMS. 12. ***Note:*** *This configuration only works in MCS.* 13. Help can be found here<http://www.howtogeek.com/howto/17012/how-to-find-your-ip-address-in-ubuntu/> |  |
| 7. | **Using Terminal:** Terminal is Command Line Interface of Ubuntu.   1. Methods to load terminal are : - 2. Dash -> Search for Terminal 3. Dash -> More Apps -> 'See More Results' -> Terminal 4. Dash -> More Apps -> Accessories -> Terminal 5. Keyboard Shortcut: Ctrl + Alt + T 6. Type **help** to view commands 7. What is the CLI interface provided in Windows?   **Command Prompt** (MS DOS)   1. **File and Directory Commands** 2. The tilde (~) symbol stands for your home directory. If you are *user*, then the tilde (~) stands for /home/*user* 3. **pwd**: The **pwd** command will allow you to know in which directory you're located (**pwd** stands for "print working directory"). 4. **ls**: The **ls** command will show you ('list') the files in your current directory. Used with certain options, you can see sizes of files, when files were made, and permissions of files. 5. **cd**: The **cd** command will allow you to change directories. 6. **cp**: The **cp** command will make a copy of a file for you. Example: **"cp file foo"** will make an exact copy of "file" and name it "foo", but the file "file" will still be there. If you are copying a directory, you must use **"cp -r directory foo"**. 7. **mv**: The **mv** command will move a file to a different location or will rename a file. 8. **rm**: Use this command to remove or delete a file in your directory. 9. **rmdir**: The **rmdir** command will delete an *empty* directory. 10. **mkdir**: The **mkdir** command will allow you to create directories. 11. **sudo**: The **sudo** command is used to perform file operations on files that the **Root User** would only be allowed to change. 12. **System Information Commands** 13. **df**: The **df** command displays filesystem disk space usage for all mounted partitions. 14. **du**: The **du** command displays the disk usage for a directory. It can either display the space used for all subdirectories or the total for the directory you run it on. Example: 15. **ip addr** reports on your system's network interfaces. |  |
| 8. | Type ifconfig in terminal. What does ifconfig show?  **As there is ipconfig command in widows this command “ifconfig” shows all the networks' configurations i.e. ip address, mac address, subnet mask etc...** | (1) |
| 9. | More info here <https://help.ubuntu.com/community/UsingTheTerminal>  and <http://linuxpoison.blogspot.com/2008/10/useful-commands-in-ubuntu.html> Further Guide can be found here <http://ubuntuguide.org/wiki/Ubuntu_Precise> |  |
| 10. | **Using NetBeans:** Netbeans is a editor and compiler suite that allows to do development in multiple languages. The latest version is 7.2 which can be downloaded here <http://netbeans.org/index.html> |  |
| 11. | Download NetBeans for Linux 32 bit platform and when downloading select the ‘All’ Bundle. |  |
| 12. | **Installing NetBeans on Ubuntu:** The downloaded file has a **.sh** extension for shell. In terminal go to the folder where the installer is located using cd command. Then type the command *chmod +x <installer-file-name>.*  Double click the icon in explorer and install NetBeans. Installation help can be found here <http://netbeans.org/community/releases/72/install.html> |  |
| 13. | **Creating Java Application:** Select File and then New Project and Select Java Application. Create a Java Code that Displays your name. Show the output here.  **run:**  **CPL Shehryar Sajid**  **BUILD SUCCESSFUL (total time: 0 seconds)** | (2) |
| 14. | Where is the output displayed?  A description...  **The Output is displayed in the bottom on the console window.** | (0.5) |
| 15. | What is the total build time? **0 seconds** | (0.5) |
| 16. | Performance Analysis: In this section the performance analysis of the standard insertion sort algorithm will be judged on an Ubuntu and a Windows platform. The insertion sort Java implementation using arrays is given here <http://www.roseindia.net/java/beginners/arrayexamples/insertionsort.shtml> |  |
| 17. | For the task we will select the array size to be 10, 15 and 20 so that the comparison is made on same array sizes.   |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **|-----** | | **Windows** | | **-----|** | | **|-----** | | **Ubuntu** | | **-----|** | | **Code Length** | **Algorithm Time**  **(nano-sec)** | | **Build Time**  **(sec)** | | **Code Length** | | **Algorithm Time**  **(nano-sec)** | | **Build Time**  **(sec)** | | | **5** | **3080** | | **0** | | **5** | | **3080** | | **0** | | | **10** | **6159** | | **0** | | **10** | | **4819** | | **0** | | | **15** | **11805** | | **1** | | **15** | | **7822** | | **0** | | | **20** | **14884** | | **1** | | **10** | | **11733** | | **0** | | |  |
| 18. | The syndicate will select an array for sorting and write it down. |  |
| 19. | Execute the algorithm on Ubuntu platform and record the Build Time. Additionally you may record time of start of algorithm and time of exit algorithm and then displaying the difference as the execution time. |  |
| 20. | Repeat steps 18 and 19 process on Windows with the same arrays. |  |
| 21. | Create a graph in LibreOffice calc. |  |
| 22. | Copy the graph and save it in Pinta (the MS Paint of Ubuntu). Save the image as JPEG. You will need to download and install Pinta. |  |
| 23. | Copy the saved image here  A description... | (1) |
| 24. | What is your conclusion form the graph?  **It can be clearly seen from the graph that in ubuntu it takes much less time to carry out same task compared to windows. So it is concluded that ubuntu is faster.** | (2) |
| 25. | What did you learn in this experiment?  **During this experiment I learnt how to use ubuntu. I learnt to use a number of ubuntu features. Furthermore its the first time that I have created line graph that too in libreOffice Calc. Other than this I used java netbeans for the first time and created my first java program. Furthermore, it takes much less time in ubuntu to perform a same task in windows. Etc.** | (2) |