**Section 6**

**Mastering open source software Duration- 1hr 38min**

1.The GNU Project

* 4 freedoms
  + Freedom to run program
  + Freedom to study how the program works, and change it.
  + The freedom to redistribute
  + The freedom to distribute copies
* "uname - o" command gives information regarding OS.

2.Compiling software from source code

* Download a program from GNU.org and extract it.
* "make" command to configure the installation file according to the system.
* "sudo apt-get install <name>" command to install the name from repository.
* "bash configure" will create a make file to compile.
* "sudo apt-get install make" to compile and install the program.
* "sudo make install" to install the make file.

3.Software Repositories

* Four types of repositories
  + Main - Canonical-supported free and open-source software.
  + Universe - Community-maintained free and open-source software.
  + Restricted - Proprietary drivers for devices.
  + Multiverse - Software restricted by copyright or legal issues.
* Package list available at packages.ubuntu.com
* "lsb\_release -a" used to see the description of distribution. After that we can install software under the codename.
* "uname -m" command gives architecture of system.
* Package manager for ubuntu is apt (advanced packaging tool).

4.The apt cache

* To search for packages use "apt-cahe search <search-key>" command.
* Use grep to filter content.

Example: apt-cache search docx | grep text.

* "apt-cache show <package> | less" command will show details about the package in readable format.
* Path of package - "/var/lib/apt/lists".

5.Updating the cache and upgrading software

* "sudo apt-get update" command to update the package manager.
* "sudo apt-get upgrade" command to upgrade the the package manager.

6.Installing new packages

* "sudo apt-get install <package-name>" command to install the package.
* "xman" command is used to open GUI of manual page.

7.Downloading soure code

* Uncomment all the codes with "deb" in /etc/apt/sources.list to download source code.
* To install source code we need to have "dpkg-dev" package installed.
* "sudo apt-get source <package-name>" command to download the source code of package.

8.Uninstalling packages

* "sudo apt-get remove <package name>" command to remove the package but will leave behind the config file.
* "sudo apt-get purge <package name>" command to remove the package with all the config file with it.
* "sudo apt-get autoremove" command will automatically remove the files which are no longer required.
* "sudo apt-get clean" to clean the archives "/var/cache/apt/archives".
* "sudo apt-get autoclean" to clean the archives that are no longer accessible "/var/cache/apt/archives".