**Linux**

* Just like windows and mac, linux is also another operating system
* Linux is also distributed under an open source license.
* Main parts of a linux system includes  
  + **Bootloader** : The software that manages the boot process of your computer
  + **Kernel** : The kernel is the core of the system and manages the CPU, memory, and peripheral devices. The kernel is the “lowest” level of the OS.
  + **Shell** : linux command line : using shell, you can control the computer via commands typed into a text interface
  + **Graphical server** : which helps to provide graphic support to your monitor, often referred as x-server
  + **Desktop :** allows users to interact with the system using the interface. (ex: GNOME, Unity)
* Linux has a number of different versions to suit nearly any type of user.
* From new users to hard-core users, you’ll find a “flavor” of Linux to match your needs. These versions are called distributions
* Most famous distributions are   
  + Ubuntu
  + Fedora
  + Centos
  + Redhat

**Basic commands**

* ls : list all the files / directory
* ls -a : list even the hidden files
* ls -al : list all the files with the details
* ls -R : recursively list all the file / directories
* Create variables using variable\_name=”value”  
  + **uname=”Arun”**, will create a variable uname and assigns “Arun” as the value
  + To print the value use **echo $uname**
* **env :** command will list all the shell variables
* **bash** : command will create a new shell which will be the child of the current shell
* **export :** will export a variable to all child shell  
  + export uname;
* **pwd** : present working directory
* **mkdir :** make directory
* **touch filename :** creates an empty file  
  + touch new folder : will create 2 folder
  + touch “new folder” : will create 1 folder
* **cp source destination :** copies files from src to destination directory
* **rm filename :** deletes a file  
  + rm file? : removes all the files which has the file as the filename with only one extra character
  + rm file\* : will remove all the files which starts with name file
* **mv src destination :** moves file from source to destination directory

**Directories**

* **cd /** : command will take to the root directory
* /home : contains directories and files belonging to individual users
* /bin : essential user command binaries, commands used by all the users of the system are located here. Example ls, cp, ping etc
* /etc : contains configuration files required by all programs
* /var : variable files : Content of the files that are expected to grow can be found under this directory. Example : system log files, database files etc
* /tmp : Temporary Files : Directory that contains temporary files created by system and users. Files under this directory are deleted when system is rebooted.
* /usr : Contains executable binaries, documentation, source code, libraries for second level program.
* /boot – Boot Loader Files : Contains boot loader related files. (kernel)

**Archiving**

* All the archived file in linux generally has double extension **tar.gz**
  + tar tells the file is actually a tar archive
  + gz tells us, the file is compressed using gzip algorithm
* To extract the files use the following command  
  + tar xzf filename.tar.gz  
    - X : extract files from the archive
    - Z : compressed or zipped
    - F : filename will follow immediately
* To create an archive  
  + tar czf filename.tar.gz directory\_to\_archive

**Cat | head | tail**

* To display contents of a file use the following command  
  + cat filename
  + cat /etc/group : reads all the contents in group file and displays
  + cat /etc/group | less : reads one page at a time and displays, use **spacebar** to show the next page of content and **b** to move backwards and **q** to quit reading
  + cat /etc/group > /var/www/user1/file2 : reads the content of one file and copies to the next file
  + cat file1 file2 > file3 : concat the content from both file1 and file2 and writes to file3
* cat file3 | grep proxy : only shows the lines that have the work proxy in it
* head /etc/group : displays the first 10 lines
* tail /etc/group : displays the last 10 lines

**Bash scripting**

* Create a file with **.sh extension** to identify as a script
* First line of every script has to tell linux that it is an executable script and which shell interpreter we are going to use.  
  + #!/bin/bash
* #!/bin/bash  
  declare -i number1  
  declare -i number2  
  declare -i total  
    
    
  echo "enter first number"  
  read number1  
  echo "enter second number"  
  read number2  
    
  #total=$number1+$number2  
    
  total=number1\*number2  
    
  echo "total = " $total  
  exit 0
* #!/bin/bash  
    
  for i in {0..10..2}  
  do  
  echo "Value is"$i  
  done
* #!/bin/bash  
  echo "first color"  
  read color1  
  echo "second color"  
  read color2  
  if test $color1!=$color2; then  
  echo "Equal color"  
  else  
  echo "Different color"  
  fi  
  exit 0
* #!/bin/bash  
  declare -i counter  
  counter = 10  
  while [ $counter -gt 2 ]; do  
  echo "The counter is " $counter  
  counter = counter - 1  
  done  
  exit0
* #!/bin/bash  
  echo "Enter car model"  
  read car  
  case $car in   
   bmw | maserati ) echo 'Rank 1'  
   ;;  
   Honda | Nissan ) echo 'Rank 2'  
   ;;  
   Toyota | mazda ) echo 'Rank 3'  
   ;;  
  esac  
  exit 0
* #!/bin/bash  
  echo "Enter car model"  
  read car  
  case $car in   
   bmw | maserati ) echo 'Rank 1'  
   ;;  
   Honda | Nissan ) echo 'Rank 2'  
   ;;  
   Toyota | mazda ) echo 'Rank 3'  
   ;;  
   \* ) echo 'No ranking found for this model'  
  esac  
  exit 0

**File permissions**

* To change file permission  
  + chmod -Rf 777 /var/www/user
  + 777 => full rights for owner | group | everyone using the file
  + 7 = 0 + 1 + 2 + 4
  + 0 => no permission
  + 1 => execute permission
  + 2 => write permission
  + 4 => read permission
  + 4+2+1 = 7 => full permission
  + 4 + 1 = 5 => read and execute permission

**CRON**

* Cron is the name of program that enables unix users to execute commands or  
  scripts (groups of commands) automatically at a specified time/date.
* \* \* \* \* \* /var/www/html/4aMailer/4aMailer/app/Console/cake ParseMail parseMail
* **Timing Syntax**
  + Minute
  + Hour
  + day of month
  + Month
  + Day of week
* Different possibilities  
  + \* \* \* \* \* [command] ,
    - This cron job will run every minute, all the time:
  + 0 \* \* \* \* [command]
    - This cron job will run at minute zero, every hour
  + 15 \* \* \* \* [command]
    - This is also an hourly cron job but run at minute 15 instead
  + 30 2 \* \* \* [command]
    - This will run once a day, at 2:30am:
  + 0 0 2 \* \* [command]
    - This will run once a month, on the second day of the month at midnight (i.e. January 2nd 12:00am, February 2nd 12:00am etc.):
  + 0 \* \* \* 1 [command]
    - This will run on Mondays, every hour (i.e. 24 times in one day, but only on Mondays):
  + 0,10,20 \* \* \* \* [command]
    - This will run three times every hour, at minutes 0, 10 and 20:
  + \*/5 \* \* \* \* [command]
    - This will run 12 times per hour, i.e. every 5 minutes:
  + 0 5-10 \* \* \* [command]
    - This will run once every hour between 5:00am and 10:00am: