Hands-On Session

1) List contents of home directory showing all files, i.e. showing hidden files (those that start with a .)
2) Find .bashrc and .bash_profile – Discuss difference.
    a. .bashrc is read and executed every time a new session (terminal) is opened
    b. .bash_profile is read and executed the first time user logins to computer.
3) As an example, look at various system variable:

    % echo $PS1
    % echo $PATH
    % echo $USER
    % echo <type anything>
    % echo \a
    % echo $HOME

    All system/shell variables can be accessed via: % printenv or %env

    Your own:
    % JUNK="Ciao"
    % echo $JUNK
    % bash
    % echo $JUNK (nothing should return – why?)
    % exit
    % export JUNK
    % bash
    % echo $JUNK (Should return Ciao)
    % JUNK="BYE"
    % echo $JUNK (Should return BYE)

    % PS1="hola"
    Your prompt should have changed. To add this permanently to your sessions, edit the file .bashrc and add the following line:

    PS1="hole % "

    What would happen if you added it only to .bash_profile?

4) Write a program that takes the square root of any number. To do this, we will start with a very basic introduction to python.

PYTHON

Start python in interactive mode by typing in the command line:
% python
>>> 4**(1/2)
>>> 4**(1./2)
>>> 4**(0.5)
Discuss the differences.
Discuss different types of variables.

Types of Variables:
Integers (positive & negative)
float (real with varying precission)
complex (e.g 2+3j – use j instead of i)
string x="This is a word" (spaces are acceptable)

E.g. x=3
print (x)
y=5
print (The value of x = ",x, and y = ", y)

To input variables from the user's terminal:
x = input()
x = input("Enter value of x: ")
x = input("Enter number of want to calculate its square-root: ")

Say that you want the input to be float (instead of integer or whatever user inputs):
x = float(x)

One could do all in one line:
x = float(input("Enter value to compute square-root"))

Mathematical operators:
+ - * / ** (addition, subtraction, multiplication, division, power)
// e.g. x//y will return the integer part of the division x/y rounded down
% modulo e.g. x%y will return the remainder of the division.

+= e.g. x += N change value of x by adding N. Similarly, can change value of variable by subtracting (-=) or multiplying (*=) or dividing (/=) by N.

Use native algorithms from packages.
Instead of using **, use the function sqrt from the math package.

Write a python program:
Edit file e.g. mys.py

```
# Comment – author, ID, title, description of program, version, etc.
from math import sqrt

x = float(input("Enter number"))

y = sqrt(x)

print("Square root of ",x," is ",y)
```

OR

```
# Comment – author, ID, title, description of program, version, etc.
import math

x = float(input("Enter number"))

y = math.sqrt(x)

print("Square root of ",x," is ",y)
```