Indian Institute of Technology Mandi
IC150: Computation for Engineers
Tutorial 4 File IO

1) Fill in the blanks

   (a) The Linux OS provides a stream as an _____ of different I/O devices.

   (b) Most C programs should include the _____ header file that contains basic information required for all stream I/O operations.

   (c) The standard I/O streams for normal I/O are _____ and _____.

   (d) The standard output stream for error messages is _____.

   (e) Opening a file in _____ mode destroys the existing contents of the file.

2) The file `marks.list` contains the marks of students in a batch. The information for each student is on two lines: the first line contains his/her name, the 2nd line contains his/her marks. Eg:

```
A.N. Aardvark
43
Eager Beaver
98
```

   Write a C program that read `marks.list` and creates two output files, `marks.only` and `name.only`. These contain only the `marks` and `name` respectively, all on one line separated by `':'`. There is no `':'` after the last entry on the line. Eg:

   marks.only – `43:98`
   name.only – `A.N. Aardvark:Eager Beaver`

3) It is desired to read an integer from a file `input.data` into the variable `n`. C has several I/O mechanisms and functions that could be used for this purpose. Give 6 different methods (C code and/or shell command) that equivalently accomplish this purpose.

4) Write a program `tcalc.c` that implements a trignometric calculator. The first command line argument is the name of the function to be computed: `sin`, `cos`, `tan`. The next argument is the angle as a floating point number. The last argument is either `'r'` or `'d'` indicating that the angle is in radians or degrees respectively. In case the program is run with the wrong number of arguments it should print an error message. The computed number should be written to the display.

5) Design an algorithm to find the size of one or more files. The file names are given on the command line. To find the size of the file, open it in `"r"` mode and read the contents of the file character by character. Write pseudo-code for your algorithm. Convert this into C code.