Input/Output in R

Input - R is able to accept input from the keyboard or from files.

I. Keyboard input
   a. *readline()*: this takes user input from the keyboard as a single string variable
      i. Key arguments
         -prompt: any text to prompt user for keyboard input
   b. *scan()*: this function generates a vector of values entered using the keyboard
      i. Key arguments
         -what: mode of data expected from user entry; default is numeric

II. File input
   a. *scan()*: this function can also read from files
      i. Key arguments
         -what: mode of data expected from user entry; default is numeric
         -sep: delimiter for elements of vector; default is any whitespace
   b. *read.csv()*: this function specializes in reading comma delimited files into R's workspace as a data frame
      i. Key arguments
         -file: what file to read from
         -header: are there column names; defaults to FALSE
         -row.names: what column holds the row names; defaults to none
         -stringsAsFactors: should strings be treated as factors; defaults to TRUE
   c. *read.table()*: this function is very similar to *read.csv()*, but can read a matrix-shaped file with any character as delimiter; to read a text file into R as a matrix you must use *read.table()* and then convert the data frame to a matrix with *as.matrix()*.
      i. Key arguments
         -file: what file to read from
         -header: are there column names; defaults to FALSE
         -row.names: what column holds the row names; defaults to none
         -sep: specifies the file delimiter; defaults to space delimited
         -stringsAsFactors: should strings be treated as factors; defaults to TRUE

Output - R is also capable of outputting information to the screen or file.

I. Screen output
   a. *print()*: This is a general function that refers to a print function specific to whatever object type you include as an argument
      -outside of a function, users can print an object simply by typing the variable name
      -line numbers are printed along with the variable contents
   b. *cat()*: this function prints to the screen, but without line numbers
      -this function only prints the variable contents and therefore requires the inclusion of a newline character in the function call

```
> x=c(1,2,3)
> cat(x,"4,5,6","\n")
1 2 3 4 5 6
```

i. Key arguments
-sep: what should each argument be separated by when printing; default is a space

II. File output
a. *cat()*: this function can also write to files
i. Key arguments
-sep: what should each argument be separated by when printing; default is a space
-file: specifies file name to write to
b. *write.table()*: this function writes a matrix or data frame to a delimited text file
i. Key arguments
-row.names: include row names in file; defaults to TRUE
-col.names: include column names in file; defaults to TRUE
-sep: delimiter for text file; defaults to space delimited
-append: append to the file if it exists or overwrite; defaults to FALSE

File directory navigation – A number of functions in R allow for interaction with the operating system's file directories.

-*dir()* or *list.files()*: lists files present in working directory
-*file.info()*: provides information about a file, including file size
-*getwd()*: provides path of working directory
-*setwd()*: sets path for working directory
-*file.exists()*: logical test for the presence of a given file in the working directory
-*file.choose()* OR *choose.files()*: opens a graphical user interface file dialogue box
*this allows for visual navigation of the file system and selection of a file
**file.choose()* works for Macs and *choose.files()* is R in Windows command