

3. What is the difference between `readline()` and `readlines()` function?

Solution. The `readline()` function reads from a file in read mode and returns the next line in the file or a blank string if there are no more lines. (The returned data is of string type)

The `readlines()` function, also reads from a file in read mode and returns a list of all lines in the file. (The returned data is of list type)

4. Write a single loop to display all the contents of a text file `e:\poem.txt` after removing leading and trailing whitespaces.

Solution.

```
for line in file("poem.txt") :
    print(line.strip())
```

5. Write a function `stats()` that accepts a filename and reports the file's longest line.

Solution.

```
def stats(filename) :
    longest = ""
    for line in file(filename) :
        if len(line) > len(longest) :
            longest = line
    print("Longest line's length =", len(longest))
    print(longest)
```

6. What is the output of following code fragment ? Explain.

```
out = file("output.txt", "w")
out.write("Hello, world!\n")
out.write("How are you?")
out.close()
file("output.txt").read()
```

Solution. The output will be :

```
'Hello, world!\nHow are you?'
```

The first line of the code is opening the file in write mode ; the next two lines write text to the file. The last line opens the file and from that reference reads the file-content. Function `file()` does the same as that of `open()`. Thus `file("output.txt")` will give the reference to open file, on which `read()` is applied.

7. Write a function `remove_lowercase()` that accepts two filenames, and copies all lines that do not start with a lowercase letter from the first file into the second.

Solution.

```
def remove_lowercase(infile, outfile) :
    output = file(outfile, "w")
    for line in file(infile) :
        if not line[0] in "abcdefghijklmnopqrstuvwxyz" :
            output.write(line)
    output.close()
```

8. What is the output of following code ?

```
file("e:\\poem.txt", "r").readline().split()
```

Recall that `poem.txt` has some leading and trailing whitespaces.

Solution. [WHY?]

9. What is the output of following code ?
`file("e:\\poem.txt", "r").readline()`

Solution. `WHY?\n'`

10. What is the output of following code ?
`fh = file("poem.txt", "r")`
`size = len(fh.read())`
`print(fh.read(5))`

Solution. No output

Explanation. The `fh.read()` of line 2 will read the entire file content and place the file pointer at end of file. For the `fh.read(5)`, it will return nothing as there are no bytes to be read from EOF thus `print()` statement prints nothing.

11. Write a program to display all the records in a file along with line/record number.

Solution.

```
fh = open("Result.det", "r")
count = 0
rec = " "
while True :
    rec = fh.readline()
    if rec == " " :
        break
    count = count + 1
print(count, rec, end = '')           # to suppress extra newline by print
fh.close()
```

12. What is the output produced by following code ?

```
obj = open("New.txt", "w")
obj.write("A poem by Paramhansa Yogananda) ")
obj.write("Better than Heaven or Arcadia")
obj.write("I love thee, O my India!")
obj.write("And thy love I shall give")
obj.write("To every brother nation that lives.")
obj.close()
obj1=open("New.txt", "r")
s1 = obj1.read(48)
print(s1)
obj1.close()
```

Solution. The output produced by above code will be :

A poem by Paramhansa Yogananda Better than Heaven

13. The file "New.txt" contains the following :

```
Better than Heaven or Arcadia
I love thee, O my India!
And thy love I shall give
To every brother nation that lives.
```

Considering the given file, what output will be produced by the following code ?

```
obj1=open("New.txt", "r")
s1 = obj1.readline()
s2 = obj1.readline()
s3 = obj1.readline()
s4 = obj1.read(15)
print(s4)
obj1.close()
```

Solution. The output produced by above code is : **And thy love I**

14. Two identical files (p1.txt and p2.txt) were created by following two codes (carefully go through the two codes given below)

- (a) `obj = open("p1.txt", "w")`
`obj.write("Better than Heaven or Arcadia")`
`obj.write("I love thee, O my India!")`
`obj.write("And thy love I shall give")`
`obj.write("To every brother nation that lives.")`
`obj.close()`
- (b) `obj = open("p2.txt", "w")`
`obj.write("Better than Heaven or Arcadia\n")`
`obj.write("I love thee, O my India!\n")`
`obj.write("And thy love I shall give\n")`
`obj.write("To every brother nation that lives.\n")`
`obj.close()`

What would be the output produced if the files are read and printed with following code.

Solution. The output produced by code (a) will be :

```
Better than Heaven or ArcadiaI love thee, O my India!And thy love
I shall giveTo every brother nation that lives.
```

The output produced by code (b) will be :

```
A poem by Paramhansa Yogananda
Better than Heaven or Arcadia
I love thee, O my India!
And thy love I shall give
To every brother nation that lives.
```

15. Considering the two files p1.txt and p2.txt created in previous question, what output will be produced by following code fragments ?

- (a) `obj1 = open("p1.txt", "r")`
`s1 = obj1.readline()`
`s2 = obj1.read(15)`
`print(s2)`
`obj1.close()`
- (b) `obj1 = open("p2.txt", "r")`
`s1 = obj1.readline()`
`s2 = obj1.read(15)`
`print(s2)`
`obj1.close()`

Solution. No output or blank output will be produced by code (a).
 For code(b), the output produced will be :

Better than Hea

16. Consider the file `p2.txt` created above. Now predict the output of following code that works with `p2.txt`. Explain the reason behind this output.

```
fp1 = open("p2.txt", "r")
print(fp1.readline(20))
s1 = fp1.readline(30)
print(s1)
print(fp1.readline(25))
```

Solution. The output produced by above code will be :

```
A poem by Paramhansa
  Yogananda
  better than Heaven or Arc
```

The reason behind this output is that the first file-read line (i.e., `fp1.readline(20)`) read 20 bytes from the file pointer. As just after opening the file, the file-pointer is at the beginning of the file, the 20 bytes are read from the beginning of the file which returned string as "A poem by Paramhansa\n" – this is because `readline()` returns the read string by adding an end-line character to it (\n).

So the first line of output was printed as : `A poem by Paramhansa`

After the first `readline()`, the file pointer was at the space following word 'Paramhansa', so the next `readline()` started reading from there and read 15 character or end-of the-line, whichever is earlier. So the read string was "`Yogananda\n`" – notice the space before word Yogananda. Hence came the second line of the output.

Now the file-pointer was at the beginning of the third line and the next `readline` (i.e., `fp1.readline(25)`) read 25 characters from this line and gave the last line of output.

17. A text file contains alphanumeric text (say `an.txt`). Write a program that reads this text file and prints only the numbers or digits from the file.

Solution.

```
F = open("an.txt", "r")
for line in F:
    words = line.split()
    for i in words:
        for letter in i:
            if(letter.isdigit()):
                print(letter)
```

18. Read the code given below and answer the question :

```
fh = open("main.txt", "w")
fh.write("Bye")
fh.close()
```

If the file contains "GOOD" before execution, what will be the contents of the file after execution of this code ?

Solution. The file would now contain "Bye" only, because when an existing file is opened in write mode ("w"), it truncates the existing data the file.

19. A given text file "data.txt" contains :

```
Line 1\n
\n
Line 3
Line 4
\n
Line 6
```

What would be the output of following code?

```
fh = open("data.txt", "r")
lst = fh.readlines()
print(lst[0], end = '')
print(lst[2], end = '')
print(lst[5], end = '')
print(lst[1], end = '')
print(lst[4], end = '')
print(lst[3])
```

Solution.

```
Line 1
Line 3
Line 6 Line 3

Line 4
```

20. Write code to print just the last line of a text file "data.txt".

Solution.

```
fin = open("data.txt", "r")
lineList = fin.readlines()
print("Last line =", lineList[-1])
```

21. Write a program that copies a text file "source.txt" onto "target.txt" barring the lines starting with a "@" sign.

Solution.

```
def filter(oldfile, newfile):
    fin = open(oldfile, "r")
    fout = open(newfile, "w")
    while True:
        text = fin.readline()
        if len(text) == 0:
            break
        if text[0] == "@":
            continue
        fout.write(text)
    fin.close()
    fout.close()
filter("source.txt", "target.txt")
```

GLOSSARY

File	A bunch of bytes stored on some storage device.
File mode	A constant describing how a file is to be used.
Stream	A sequence of bytes.

Assignment

Type A : Short Answer Questions/Conceptual Questions

1. What is the difference between "w" and "a" modes ?
2. What is the significance of file-object ?
3. How is file open() function different from close() function ?
4. Write statements to open a binary file C:\Myfiles\Text1.txt in read and write mode by specifying the file path in two different formats.
5. When a file is opened for output, what happens when
 - (i) the mentioned file does not exist
 - (ii) the mentioned file does exist ?
6. What role is played by file modes in file operations ? Describe the various file mode constants and their meanings.
7. What are the advantages of saving data in : (i) binary form (ii) text form ?
8. When do you think text files should be preferred over binary files ?
9. Write a statement in Python to perform the following operations :
 - (a) To open a text file "BOOK.TXT" in read mode
 - (b) To open a text file "BOOK.TXT" in write mode

7. Consider the file "contacts.csv" created in above question and figure out what the following code is trying to do?
- ```
name = input("Enter name :")
file = open("contacts.csv", "r")
for line in file:
 if name in line:
 print(line)
```
8. Consider the file poemBTH.txt and predict the output of following code fragment. What exactly is following code fragment doing ?
- ```
f = open("poemBTH.txt", "r")
nl = 0
for line in f:
    nl += 1
print(nl)
```
9. If you use the code of Q.8 with p1.txt created in solved problem 14, what would be its output ?
10. Write a method in python to read the content from a text file diary.txt line by line and display the same on screen. [CBSE D 2015]
11. Write a method in python to write multiple line of text contents into a text file mylife.txt.line. [CBSE D 2016]

Type C : Programming Practice/Knowledge based Questions

- Write a program that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by a single space.
- A file sports.dat contains information in following format : **Event ~ Participant**
Write a function that would read contents from file *sports.dat* and creates a file named *Atheletic.dat* copying only those records from *sports.dat* where the event name is "Atheletics".
- A file contains a list of telephone numbers in the following form :
Arvind 7258031
Sachin 7259197
The names contain only one word the names and telephone numbers are separated by white spaces. Write program to read a file and display its contents in two columns.
- Write a program to count the words "to" and "the" present in a text file "Poem.txt".
- Write a program to count the number of upper- case alphabets present in a text file "Article.txt".
- Write a program that copies one file to another. Have the program read the file names from user ?
- Write a program that appends the contents of one file to another. Have the program take the filenames from the user.
- Write a program that reads characters from the keyboard one by one. All lower case characters get stored inside the file LOWER, all upper case characters get stored inside the file UPPER and all other characters get stored inside file OTHERS.
- Write a function in Python to count and display the number of lines starting with alphabet 'A' present in a text file " LINES.TXT". e.g., the file "LINES.TXT" contains the following lines :
A boy is playing there.
There is a playground.
An aeroplane is in the sky.
Alphabets & numbers are allowed in password.

the function should display the output as 3.