Objective Type Questions

OTQs

Multiple Choice Questions

1. Information stored on a storage device with a specific name is called a _____ .
   - (a) array
   - (b) dictionary
   - (c) file
   - (d) tuple

2. Which of the following format of files can be created programmatically through Python to store some data ?
   - (a) Data files
   - (b) Text files
   - (c) Video files
   - (d) Binary files

3. To open a file c:\ss.txt for appending data, we use
   - (a) file = open("c:\\ss.txt", "a")
   - (b) file = open("c:\\ss.txt", "rw")
   - (c) file = open(r"c:\ss.txt", "a")
   - (d) file = open(file = "c:\ss.txt", "w")
   - (e) file = open(file = "c:\\ss.txt", "w")
   - (f) file = open("c:\res.txt")

4. To read the next line of the file from a file object *infi*, we use
   - (a) infi.read(all)
   - (b) infi.read( )
   - (c) infi.readline( )
   - (d) infi.readlines( )

5. To read the remaining lines of the file from a file object *infi*, we use
   - (a) infi.read(all)
   - (b) infi.read( )
   - (c) infi.readline( )
   - (d) infi.readlines( )

6. The readlines( ) method returns
   - (a) str
   - (b) a list of lines
   - (c) a list of single characters
   - (d) a list of integers

7. Which of the following mode will refer to binary data ?
   - (a) r
   - (b) w
   - (c) +
   - (d) b

8. In file handling, what does this term means "r, a"?
   - (a) read, append
   - (b) append, read
   - (c) all of the mentioned
   - (d) none of these

9. Which function is used to read all the characters ?
   - (a) read( )
   - (b) readcharacters( )
   - (c) readall( )
   - (d) readchar( )

10. Which function is used to read a single line from file ?
    - (a) readline( )
    - (b) readlines( )
    - (c) readstatement( )
    - (d) readfullline( )

11. Which function is used to write all the characters ?
    - (a) write( )
    - (b) writecharacters( )
    - (c) writeall( )
    - (d) writechar( )

12. Which function is used to write a list of strings in a file ?
    - (a) writeline( )
    - (b) writelines( )
    - (c) writestatement( )
    - (d) writefullline( )

13. Which of the following represents mode of both writing and reading in binary format in file?
    - (a) wb+
    - (b) w
    - (c) wb
    - (d) w+

14. Which of the following is not a valid mode to open a file ?
    - (a) ab
    - (b) rw
    - (c) r+
    - (d) w+

15. What is the difference between r+ and w+ modes ?
    - (a) No difference.
    - (b) In r+ mode, the pointer is initially placed at the beginning of the file and for w+, the pointer is placed at the end.
    - (c) In w+ mode, the pointer is initially placed at the beginning of the file and for r+, the pointer is placed at the end.
    - (d) Depends on the operating system.

16. Which of the following command is used to open a file "c:\pat.txt" in read-mode only ?
    (a) fin = open("c:\pat.txt", "r")
    (b) fin = open("c:\\pat.txt", "r")
    (c) fin = open(file = "c:\pat.txt", "r+")
    (d) fin = open(file = "c:\\pat.txt", "r+")

17. Which of the following statements are true regarding the opening modes of a file ?
    (a) When you open a file for reading, if the file does not exist, an error occurs.
    (b) When you open a file for writing, if the file does not exist, an error occurs.
    (c) When you open a file for reading, if the file does not exist, the program will open an empty file.
    (d) When you open a file for writing, if the file does not exist, a new file is created.
    (e) When you open a file for writing, if the file exists, the existing file is overwritten with the new file.

18. Which of the following command is used to open a file "c:\pat.txt" for writing in binary format only ?
    (a) fout = open("c:\pat.txt", "w")
    (b) fout = open("c:\\pat.txt", "wb")
    (c) fout = open("c:\pat.txt", "w+")
    (d) fout = open("c:\\pat.txt", "wb+")

19. Which of the following command is used to open a file "c:\pat.txt" for writing as well reading in binary format only ?
    (a) fout = open("c:\pat.txt", "w")
    (b) fout = open("c:\\pat.txt", "wb")
    (c) fout = open("c:\pat.txt", "w+")
    (d) fout = open("c:\\pat.txt", "wb+")

20. Which of the following functions do you use to write data in the binary format ?
    (a) write( )   (b) output( )   (c) dump( )   (d) send( )

Fill in the Blanks

1. The default file-open mode is _____ mode.
2. A _____ governs the type of operations (e.g., read/write/append) possible in the opened file.
3. The two types of data files can be _____ files and _____ files.
4. The other name for file object is _____ .
5. The _____ file mode will open a file for read and write purpose.
6. The _____ file mode will open a file for write and read purpose.
7. To close an open file, _____ method is used.
8. To read all the file contents in the form of a list, _____ method is used.
9. To write a list in a file, _____ method may be used.
10. To force Python to write the contents of file buffer on to storage file, _____ method may be used.
11. To read and write into binary files, _____ module of Python is used.
12. The _____ method of pickle module writes data into a binary file.
13. The _____ method of pickle module reads data from a binary file.
14. The conversion of an object hierarchy in byte stream is called _____ or _____ .
15. The character that separates the values in csv files is called the _____ .
16. The default delimiter of csv files is _____ .
17. The csv files are actually _____ files .
18. We can suppress EOL translation is text file by giving _____ argument in open( ).
19. The file mode to open a binary file for reading as well writing is _____ .
20. The file mode to open a text file for reading as well writing is _____ .

21. The file mode to open a text file for writing as well reading is _____ .
22. The file mode to open a binary file for writing as well reading is _____ .
23. The file mode to open a csv file for reading as well writing is _____ .
24. The file mode to open a csv file for appending as well reading is _____ .
25. To specify a different delimiter while writing into a csv file, _____ argument is used with csv.writer( ).

True/False Questions

1. When you open a file for reading, if the file does not exist, an error occurs.
2. When you open a file for writing, if the file does not exist, an error occurs.
3. When you open a file for writing, if the file exists, the existing file is overwritten with the new file.
4. The absolute paths are from the topmost level of the directory structure.
5. The relative paths are relative to the current working directory.
6. The relative path for a file always remains the same even after changing the directory.
7. The types of operations that can be carried out on a file depend upon the file mode a file is opened in.
8. If no path is given with a file name in the file open( ), then the file must exist in the current directory.
9. Functions readline( ) and readlines( ) are essentially the same.
10. Python automatically flushes the file buffers before closing a file with close( ) function.
11. When you open a file for writing, if the file does not exist, a new file is created.
12. When you open a file for appending, if the file exists, the existing file is overwritten with the new file.
13. Conversion of an object hierarchy in byte stream is called Serialisation.
14. Serialisation process is also called pickling.
15. The load( ) function of the pickle module performs pickling.
16. The dump( ) function of the pickle module performs unpickling.
17. The csv files can only take comma as delimiter.
18. The csv files are text files.

NOTE : Answers for OTQs are given at the end of the book.

Solved Problems

1. *What is the difference between a text file and a binary file ?*

   Solution. A *text file* is a file that stores information in the form of a stream of ASCII or Unicode characters. In text files, each line of text is terminated with a special character (as per the Operating System) known as EOL (End of Line) character.

   A *binary file* is a file that stores the information in the form of a stream of bytes. In a binary file, there is no delimiter for a line and no character translations occur here.

2. *What is the difference between read( ) and readlines( ) function?*

   Solution. The read( ) reads from a file in read mode, and stores its contents in a string type variable.
   The readlines( ) function, reads from a file in read mode and returns a list of all lines in the file.

3. *Differentiate between the following :*   [CBSE D 2015]

    (*i*) `f = open('diary.txt', 'r')`   (*ii*) `f = open('diary.txt', 'w')`

Solution. (*i*) File has been opened in *read mode* with file handle *f*.

       (*ii*) File has been opened in *write mode* with file handle *f*.

4. *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).

5. *What is the difference between write( ) and writelines( ) functions ?*

Solution. Both write( ) and writelines( ) work on text files. The **write( )** function takes argument of string type and writes it to the file. The **writelines( )** function, on the other hand, takes an iterable (tuple/list/string/a python sequence) as argument and writes it to the file.

6. *Write a single loop to display all the contents of a text file poem.txt after removing leading and trailing whitespaces.*

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

7. *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)
```

8. *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.

9. *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()
```

10. *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?]

11. *What is the output of following code ?*

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

Solution.   '   WHY?\n'

12. *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 the 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.

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

Solution.

```
fh = open("Result.txt", "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()
```

14. *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

15. 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

16. 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.

17. 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

18. *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.

19. *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)
```

20. *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.

21. Write a function in Python to count the number of lines in a text file 'STORY.TXT' which is starting with an alphabet 'A' . [CBSE Sample Paper 2019-20]

Solution.

```python
def COUNTLINES():
    file = open('STORY.TXT','r')
    lines = file.readlines()
    count = 0
    for w in lines:
        if w[0] == "A" or w[0] == "a":
            count = count + 1
    print("Total lines started with 'A' or 'a'", count)
    file.close()
```

22. Write a function in Python that counts the number of "Me" or "My" words present in a text file "STORY.TXT". If the "STORY.TXT" contents are as follows : [CBSE Sample Paper 2020-21]

> My first book
> was Me and
> My Family. It
> gave me
> chance to be
> Known to the
> world.

The output of the function should be :

```
Count of Me/My in file :
```

Solution.

```python
def displayMeMy():
    num = 0
    f = open("story.txt","rt")
    N = f.read()
    M = N.split()
    for x in M:
        if x== "Me" or x == "My":
            print(x)
            num = num+1
    f.close()
    print("Count of Me/My in file:",num)
```

23. 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?

```python
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\n
Line 3
Line 6  \n
\n
Line 4
```

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

Solution.

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

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

Solution.

```python
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")
                # calling the function
```

26. Consider the following statement. In which file mode is the file opened ? Justify your answer.

```python
with open('poem.txt') as f:
```

Solution. **Read mode**, because the file mode has not been specified and the default file mode is the read mode.

27. *What is pickling process ? What is its need ?*

Solution. Objects have a specific structure which must be maintained while storing or accessing them. Python provides a special module – the pickle module to take care of that. The pickling process serializes the objects and converts them into byte stream so that they can be stored in binary file.

28. *What is unpickling ?*

Solution. The **"unpickling"** is the inverse operation of pickling, whereby a byte stream (often read from a binary file) is converted back into an object hierarchy.

29. *What is the difference between a regular text file and a delimited text file ?*

Solution. *Regular Text files* are the files which store the text in the same form as typed (ASCII or Unicode). Here the newline character ends a line and the text translations take place. These files have a file extension as **.txt**.

Delimited Text files are also text files where a specific character is stored to separate the values, i.e., after each value, *e.g.*, a tab or a comma after every value, *e.g.*, TSV files (*Tab Separated Values files*) or CSV files (*Comma Separated Values files*).

30. *What are csv files ?*

Solution. CSV files are *Comma Separated Values files*. These are the delimited files when most **comma** (**delimiter** character which separates the values) is used to separate the values stored. The CSV files can also a delimiter other than comma but comma is the default delimiter. These files take the extension as .csv.

31. *What is the significance of newline = " argument in file open() function ?*

Solution. When **newline = "** ensures that no end of line (EOL) translation would take place while storing the file contents on the disk. By default text files are stored with some text translations, EOL translation is one of these. By specifying **newline = "** as argument to file open( ) function, we ensure that no EOL translation takes place. This is useful when we use the files on different platforms.

32. *What does csv.writer object do ?*

Solution. The csv.writer object adds delimitation to the user data prior to storing data in the csv file on storage disk.

33. *What is the function of csv.reader object ?*

Solution. The csv.reader object reads data from a csv file on storage disk, parses it, *i.e.*, removes the delimitation and loads the parsed data into a Python iterator wherefrom we can fetch the data row by row.

34. *What will be stored in the file school.csv after the following code is executed?*

```
data = [  [ 'DRS Delhi', 'Esha', 'Badminton'],
          ['BTS Patna', 'Abhi', 'Tennis'] ]
import csv
with open('schoo;.csv', 'w', newline =") as csvfile:
    writer = csv.writer(csvfile, delimiter = ',')
    writer.writerow(['School', 'Nickname', 'Sport'])
    writer.writerows(data)
```

Solution.   'School', 'Nickname', 'Sport'
            'DRS Delhi', 'Esha', 'Badminton'
            'BTS Patna', 'Abhi', 'Tennis'

35. *A file Answer.txt contains the text as shown in Fig. 5.5 in the chapter. Write a program to remove all the lines that contain the character 'a' in this file and write other lines into another file.*

Solution.

```
myfile = open("Answer.txt", "r")
newfile = open("nswer.txt", "w")
line = " "                          # initially stored a space (a non-None value)
while line :
    line = myfile.readline()   # one line read from file
    if 'a' not in line:
        newfile.write(line)
myfile.close()
newfile.close()

print("Newly created file contains")
print("———————————————")
newfile = open("nswer.txt", "r")
line = ""
while line :
    line = newfile.readline()                # one line read from file
    print(line)
newfile.close()
```

The output produced by above program is

```
Newly created file contains
-----------------------------
we know this will never occur.
How mediocre our world would be without this single most powerful letter.
```

(Delhi 2015)

36. *Differentiate between the following :*

(i) f = open ('diary. txt', 'r')

(ii) f = open ('diary. txt', 'w')

Solution.

(i) The text file diary.txt is opened in read mode.

(ii) The text file diary.txt is opened in write mode.

37. *What will be displayed by the following code ?*

```
import pickle
Names = ['First', 'second', 'third', 'fourth', 'Fifth']
lst = []
for i in range(-1, -5, -1) :
    lst.append(Names[i])
with open('test.dat', 'wb') as fout:
    pickle.dump(lst, fout)
with open('test.dat', 'rb') as fin:
    nlist = pickle.load(fin)
print(nlist)
```

Solution.   ['Fifth', 'fourth', 'third', 'second']

38. *Following code is written to update a record in a file opened with following code :*

```python
import pickle
fin = open('Stu.dat', 'rb+')
try:
    while True :
        _____ = fin.tell()   # Line 1 : store file-pointer position before reading the record
        stu = pickle.load(fin)
        if stu['Marks'] in [92, 93, 94] :
            stu['Marks'] += 3        # changes made in the record
            fin.____ (_____) # Line 2 :place the file-pointer at the exact location of the record
            pickle.dump(stu, fin) # now write the updated record on the exact location
except :
    :
```

Fill in the blanks in Lines 1 and 2 to complete the code.

Solution. Line 1 : **position = fin.tell( )**   # can use any identifier in place of position

Line 2: **fin.seek (position)**

39. *Identify the error in the following code:*

```python
1.    import pickle
2.    data = ['one', 2, [3, 4, 5]]
3.    with open('data2.dat', 'rb') as f:
4.        pickle.dump(data, f)
```

Solution. The file is opened in read mode and dump() function tries to write onto file, hence the error.

So the line 3 should be changed to L :   `with open('data2.dat', 'wb') as f:`

40. *Identify the error in the following code.*

```python
1.    f = open('/tmp/workfile', 'r+')
2.    f.write('0123456789abcdef')
3.    f.write('xyz8466')
4.    f.close()
5.    f.seek(0)
6.    f.read()
```

Solution. The lines 5 and 6 will raise the error as no operation can take place in a closed file – file is closed at line4. Since the file is opened in read as well write mode, we just need to bring line 4 at the end of the code.

41. *Identify the error in the following code ?*

```python
1.    import csv
2.    line = [ [1, 2,3], [4, 5, 6] ]
3.    with open(path, "w", newline ='') as csv_file :
4.        writer = csv.writer(csv_file, delimiter = |')
5.        for line in data:
6.            writer.writerow (line)
```

Solution. The give code is trying to write a nested list with *writerow( )*.

It should be replaced with *writerows( ), i.e.,* line 6 should be :

`writer.writerows(line)`

42. *Write a program to read a text file and display the count of lowercase and uppercase letters in the file. (Note : use text file Answer.txt given in Fig. 5.5 in the chapter)*

Solution.
```
myfile = open("Answer.txt", "r")
ch = " "                    # initially stored a space ( a non-None value)
lcount = 0                  #variable to store count of lowercase letters
ucount = 0
while ch :                  # while ch stores a Non-None value
    ch = myfile.read(1)     # one character read from file
    if ch.isupper() == True:
        ucount = ucount + 1
    else :
        lcount = lcount + 1
print("Uppercase letters in the file :", ucount)
print("Lowercase letters in the file :", lcount)
# close the file
myfile.close()
```

43. *Your recipe uses some ingredients. Write a program to store the list of ingredients in a binary file.*

Solution.
```
import pickle
ingredients = ['cucumber', 'pumpkin', 'carrot', 'peas']
with open('recipe.dat', 'wb') as fout:
    pickle.dump(ingredients, fout)
```

44. *Write a method in python to read the content from a text file story.txt line by line and display the same on screen.*   (Outside Delhi 2015)

Solution.
```
def read_file () :
    inFile = open('story.txt','r')
    for line in inFile:
        print(line)
```

45. *Write a method in python to read lines from a text file INDIA.TXT, to find and display the occurrence of the word "India".*   (Delhi 2018)

_____INDIA.TXT_____

```
"India is the fastest growing economy.
India is looking for more investments around the globe.
The whole world is looking at India as a great market.
Most of the Indians can foresee the heights that India is
capable of reaching."
```

The output should be 4

Solution.
```
def display1( ):
    count = 0
    file = open('INDIA.TXT','r')
    for LINE in file:
        Words = LINE.split()
        for W in Words:
            if W == "India":
                count = count +1
    print ( count )
    file.close()
```

46. *Write a method in python to read lines from a text file MYNOTES.TXT, and display those lines, which are starting with an alphabet 'K'.*

Solution.

```python
def display():
    file = open('MYNOTES.TXT','r')
    line = file.readline()
    while line:
        if line[0]=='K' :
            print ( line )
        line = file.readline()
    file.close()
```

47. *Considering the following definition of dictionary MULTIPLEX, write a method in python to search and display all the content in a pickled file CINEMA.DAT, where MTYPE key of the dictionary is matching with the value 'Comedy'.*

MULTIPLEX = {'MNO':____, 'MNAME':_____ , 'MTYPE':_____ }

Solution.
```python
def Search():
    file = open('CINEMA.DAT','rb')
    try:
        while True:
            MULTIPLEX = pickle.load(file)
            if MULTIPLEX ['MTYPE']=="Comedy":
                print(MULTIPLEX)
    except EOFError:
        file.close()
```

48. *A binary file "STUDENT.DAT" has structure (admission_number, Name, Percentage). Write a function countrec() in Python that would read contents of the file "STUDENT.DAT" and display the details of those students whose percentage is above 75. Also display number of students scoring above 75%.* [CBSE SP 2020-21]

Solution..
```python
import pickle
def CountRec():
    fobj = open("STUDENT.DAT","rb")
    num = 0
    try:
        while True:
            rec = pickle.load(fobj)
            if rec[2] > 75:
                print(rec[0], rec[1], rec[2], sep= "\t")
                num = num + 1
    except:
        fobj.close()
    return num
```

49. *Write a function Show_words( ) in python to read the content of a text file 'NOTES.TXT' and display the entire content in capital letters. Example, if the file contains :* [CBSE 2020C]

```
This is a test file
```

Then the function should display the output as :

```
THIS IS A TEST FILE
```

Solution.
```
def Show_words():
        file = open('NOTES.TXT', 'r')
        Lines = file.readlines()
        for L in Lines:
            print(L.upper())
        file.close()
```

50. *Write a program to increase the salary by Rs. 2000/- of the employee having empno as 1251 in the file empl.dat.*

Solution.
```
import pickle

# declare empty dictionary object to hold read records
emp = {}
found = False

# open binary file in read and write mode
fin = open('empl.dat', 'rb+')
fin.seek(0)
# read from the file
try:
  while True :
      rpos = fin.tell()      # store file-pointer position before reading the record
      emp = pickle.load(fin)    # read record in emp dictionary from fin file handle
      if emp['Empno'] == 1251 :
          emp['Salary'] = emp['Salary'] + 2000     # changes made in the record
          fin.seek(rpos)   #place the file-pointer at the exact location of the record
          pickle.dump(emp, fin) # write the modified record
          print(emp)
          found = True
except EOFError:
   if found == False:
      print("Sorry, no matching record found.")
   else:
      print("Record(s) successfully updated.")
   fin.close()                  # close file
```

51. *Take a sample text file and find the most commonly occurring word. Also, list the frequencies of words in the text file.*

Solution
```
with open ("nanthem.txt", "r") as fh :
   contents = fh.read()

wordlist = contents.split()
wordfreq = []
high = 0
word = ''
existing =[]
for w in wordlist:
   wcount = wordlist.count(w)
   if w not in existing:
       wordfreq.append( [w,wcount])
       existing.append(w)
```

```
    if wcount > high:
        high = wcount
        word = w
print("The word '"+ word+"' occurs maximum number of times,", high, "times. ")
print("\nOther words have these frequencies :")
print(wordfreq)
```

For the text file *nanthem.txt* shown below, the above program produced the following output:

```
Jan gan man adhinayaka jaya he
Bharat bhagya vidhata
Panjab Sindh Gujarat Maratha
Dravid Utkal Banga
Vindhye Himachal Yamuna Ganga
Uchchal jaladhi tarang
Tava shubh name jage,
Tava shubh ashish mange,
Gahe tava jaya gatha.
Jan gan mangal dayak jaya he
```

Output :

The word 'Jaya' occurs maximum number of times, 7 times. Other words have these frequencies :

```
[['Jan', 2], ['gan', 2], ['man', 1], ['adhinayaka', 1], ['jaya', 3], ['he', 6],
['Bharat', 2], ['bhagya', 2], ['vidhata', 2], ['Panjab', 1], ['Sindh', 1], ['Gujarat', 1],
['Maratha', 1], ['Dravid', 1], ['Utkal', 1], ['Banga', 1], ['Vindhye', 1],['Himachal', 1],
['Yamuna', 1], ['Ganga', 1], ['Uchchal', 1], ['jaladhi', 1], ['tarang', 1], ['Tava', 2],
['shubh', 2], ['name', 1], ['jage,', 1], ['ashish', 1], ['mange,', 1], ['Gahe', 1],
['tava', 1], ['gatha.', 1], ['mangal', 1], ['dayak', 1], ['Jaya', 7]]
```

52. *Write a program to read following details of sports' performance (sport, competitions, prizes-won) of your school and store into a csv file delimited with tab character.*

Solution.

```
import csv
fh = open("Sport.csv", "w")
swriter = csv.writer(fh, delimiter='\t')
swriter.writerow( ['Sport', 'Competitions', 'Prizes won'])    #write header row
ans = 'y'
i = 1
while ans == 'y':
    print("Record", i )
    sport= input("Sport name:")
    comp = int(input("No. of competitions participated:"))
    prizes = int(input("Prizes won:"))
    srec = [ sport, comp, prizes ] # create sequence of user data
    swriter.writerow(srec)
    i = i+1
    ans = input("Want to enter more records? (y/n)..")
fh.close()
```

Sample run :

```
Record 1
Sport name:Tennis
No. of competitions participated:14
Prizes won:9
Want to enter more records? (y/n)..y
Record 2
Sport name:Football
No. of competitions participated:22
Prizes won:16
Want to enter more records? (y/n)..y
Record 3
Sport name:Chess
No. of competitions participated:25
Prizes won:15
Want to enter more records? (y/n)..n
```



```
Sport - Notepad
File Edit Format View Help
Sport     Competitions     Prizes won
Tennis  14        9
Football          22        16
Chess   25        15
```
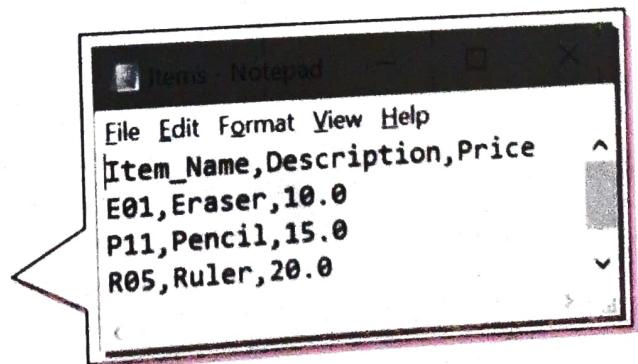
53. *Write a program to get item details (code, description and price) for multiple items from the user and create a csv file by writing all the item details in one go.*

Solution.
```python
import csv
fh = open("Items.csv", "w")
iwriter = csv.writer(fh)
ans = 'y'
itemrec= [['Item_Name', 'Description', 'Price']]
print("Enter item details")
while ans =='y' :
    iname = input("Enter Item code :")
    desc = input("Enter description :")
    price = float(input("Enter price:"))
    itemrec.append( [iname, desc, price])
    ans = input("Want to enter more items? (y/n)...")
else:
    iwriter.writerows(itemrec)
    print("Records written successfully.")
fh.close()
```

Sample run of the program :

```
Enter item details
Enter Item code :E01
Enter description :Eraser
Enter price:10
Want to enter more items? (y/n)...y
Enter Item code :P11
Enter description :Pencil
Enter price:15
Want to enter more items? (y/n)...y
Enter Item code :R05
Enter description :Ruler
Enter price:20
Want to enter more items? (y/n)...n
Records written successfully.
```



```
Items - Notepad
File Edit Format View Help
Item_Name,Description,Price
E01,Eraser,10.0
P11,Pencil,15.0
R05,Ruler,20.0
```

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 a 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 in write mode, 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 (iii) csv files ?
8. When do you think text files should be preferred over binary files ?
9. Write a statement in Python to perform the following operations :   [CBSE D 16]

   (a) To open a text file "BOOK.TXT" in read mode

   (b) To open a text file "BOOK.TXT" in write mode
10. When a file is opened for output in append mode, what happens when

    (i) the mentioned file does not exist   (ii) the mentioned file does exist.
11. How many file objects would you need to create to manage the following situations ? Explain.

    (i) to process three files sequentially   (ii) to merge two sorted files into a third file.
12. Is csv file different from a text file ? Why/why not ?
13. Is csv file different from a binary file ? Why/why not ?
14. Why are csv files popular for data storage ?
15. How do you change the delimiter of a csv file while writing into it ?
16. When and why should you suppress the EOL translation in csv file handling ?
17. If you rename a text file's extension as .csv, will it become a csv file ? Why/why not ?
18. Differentiate between "w" and "r" file modes used in Python while opening a data file. Illustrate the difference using suitable examples.

    [CBSE 2020C]

Type B : Application Based Questions

1. How are following codes different from one another ?

   (a)
   ```
   my_file = open('poem.txt','r')
   my_file.read()
   ```
   (b)
   ```
   my_file = open('poem.txt','r')
   my_file.read(100)
   ```

2. If the file 'poemBTH.txt' contains the following poem (by Paramhans Yoganand) :

> *God made the Earth;*
> *Man made confining countries*
> *And their fancy-frozen boundaries.*
> *But with unfound boundless love*
> *I behold the borderland of my India*
> *Expanding into the World.*
> *Hail, mother of religions, lotus, scenic beauty, and sages!*

Then what outputs will be produced by both the code fragments given in question1.

3. Consider the file poemBTH.txt given above (in previous question). What output will be produced by following code fragment ?

```python
obj1 = open("poemBTH.txt","r")
s1 = obj1.readline()
s2.readline(10)
s3 = obj1.read(15)
print(s3 )
print(obj1.readline())
obj1.close()
```

4. Write code to open file contacts.txt with shown information and print it in following form :

      Name : <name>   Phone :<phone number>

5. Consider the file "poemBTH.txt" and predict the outputs of following code fragments if the file has been opened in filepointer *file1* with the following code :

```python
file1 = open("E:\\mydata\\poemBTH.txt","r+")
```

(a)
```python
print("A. Output 1")
print(file1.read())
print()
```

(b)
```python
print("B. Output 2")
print(file1.readline() )
print()
```

(c)
```python
print("C. Output 3")
print(file1.read(9))
print()
```

(d)
```python
print("D. Output 4")
print(file1.readline(9) )
```

(e)
```python
print("E. Output of Readlines function is")
print(file1.readlines() )
print()
```

NOTE. Consider the code fragments in succession, *i.e.,* code (b) follows code (a), which means changes by code (a) remain intact when code (b) is executing. Similarly, code (c) follows (a) and (b), and so on.

6. What is the following code doing ?

```python
file = open("contacts.csv", "a")
name = input("Please enter name.")
phno = input("Please enter phone number.")
file.write(name + "," + phno + "\n")
```

7. Consider the file "contacts.csv" created in above Q. and figure out what the following code is trying to do?

```python
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 the 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.*   [D 2016]

12. What will be the output of the following code ?

```
import pickle
ID = {1:"Ziva",2:"53050",3:"IT",4:"38",5:"Dunzo"}
fin = open("Emp.pkl","wb")
pickle.dump(ID, fin)
fin.close()
fout = open("Emp.pkl",'rb')
ID = pickle.load(fout)
print( ID [5] )
```

13. What will be the output of the following code ?

```
import pickle
List1 = ['Roza', {'a': 23, 'b': True}, (1, 2, 3), [['dogs', 'cats'], None] ]
List2 = ['Rita', {'x': 45, 'y': False}, (9, 5, 3), [['insects', 'bees'], None] ]
with open('data.pkl', 'wb') as f:
    f.write(List1)
with open('data.pkl', 'wb') as f:
    f.write(List2)
with open('data.pkl', 'rb') as f:
    List1 = pickle.load(f)
print(List1)
```

14. What is the output of the following considering the file *data.csv* given on the right.

```
import csv
with open('C:\data.csv','r+') as f:
    data = csv.reader(f)
    for row in data:
        if 'the' in row :
            print(row)
```

```
File data.csv contains:

Identifier;First name;Last name
901242;Riya;Verma
207074;Laura;Grey
408129;Ali;Baig
934600;Manit;Kaur
507916;Jiva;Jain
```

15. Identify the error in the following code.

```
(a) import csv
    f = open('attendees1.csv')
    csv_f = csv.writer(f)
```

```
(b) import csv
    f = open('attendees1.csv')
    csv_f = csv.reader()
    for row in csv_f:
        print(row)
```

16. Identify the error in the following code.

```
import pickle
data = ['one', 2, [3, 4, 5]]
with open('data.dat', 'wb' :
    pickle.dump(data)
```

Type C : Programming Practice/Knowledge based Questions

1. 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.

2. 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".

3. 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.

4. Write a program to count the words "to" and "the" present in a text file "Poem.txt".

5. Write a function AMCount( ) in Python, which should read each character of a text file STORY.TXT, should count and display the occurrence of alphabets A and M (including small cases a and m too).

   [CBSE Sample Paper 2020-21]

   Example : If the file content is as follows :

   Updated information

   As simplified by official websites.

   The EUCount( ) function should display the output as :

   A or a : 4

   M or m : 2

6. Write a program to count the number of upper-case alphabets present in a text file "Article.txt".

7. Write a program that copies one file to another. Have the program read the file names from user ?

8. Write a program that appends the contents of one file to another. Have the program take the filenames from the user.

9. Write a method/function **DISPLAYWORDS( )** in python to read lines from a text file **STORY.TXT**, and display those words, which are less than 4 characters. [CBSE Sample Paper 2020]

10. 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.

11. 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.

12. Write a program that counts the number of characters up to the first $ in a text file.

13. Write a program that will create an object called filout for writing, associate it with the filename STRS.txt. The code should keep on writing strings to it as long as the user wants.

14. Consider the following definition of a dictionary Member, write a method in python to write the content in a pickled file member.dat. *(similar to Delhi 2015)*

    Member = { 'MemberNo.': _____, 'Name':_____ }

15. Consider the following definition of dictionary Staff, write a method in python to search and display the content in a pickled file staff.dat, where Staffcode key of the dictionary is matching with 'S0105'. *(similar to Delhi 2016)*

    Staff ={'Staffcode': _____, 'Name'= _____ }

16. Considering the following definition of dictionary COMPANY, write a method in Python to search and display the content in a pickled file COMPANY.DAT, where CompID key of the dictionary is matching with the value '1005'. *(similar to Delhi 2017)*

    Company = {'CompID' = _____, 'CName' = _____, 'Turnover' = _____ }

17. Write a function in to search and display details of all trains, whose destination is "Delhi" from a binary file "TRAIN.DAT". Assuming the binary file is containing the objects of the following dictionary type:

    Train = { 'Tno' : _____, 'From': _____ , 'To' : _____ }

18. A binary file "Book.dat" has structure [BookNo, Book_Name, Author, Price].

    (i) Write a user defined function **CreateFile( )** to input data for a record and add to Book.dat .

    (ii) Write a function **CountRec(Author)** in Python which accepts the Author name as parameter and count and return number of books by the given Author are stored in the binary file "Book.dat"

    [CBSE Sample Paper 2020-21]

19. Write a function Show_words() in python to read the content of a text file 'NOTES.TXT' and display only such lines of the file which have exactly 5 words in them.

    Example, if the file contains :

    This is a sample file.

    The file contains many sentences.

    But need only sentences which have only 5 words.

    Then the function should display the output as :

    This is a sample file.

    The file contains many sentences.

    [CBSE 2020C]

20. Write a Python program to read a given CSV file having tab delimiter.

21. Write a Python program to write a nested Python list to a csv file in one go. After writing the CSV file read the CSV file and display the content.

22. Write a function that reads a csv file and creates another csv file with the same content, but with a different delimiter.

23. Write a function that reads a csv file and creates another csv file with the same content except the lines beginning with 'check'.