



COMPUTER SCIENCE

with **PYTHON**



CLASS XII

Learn • Code • Innovate • Create



Python Programming

Fundamentals to advanced concepts with real-world examples



Object Oriented Programming

Build robust and scalable applications



Data Structures

Understand and implement efficient data structures using Python



Algorithms & Problem Solving

Strengthen logical thinking and problem-solving skills



File Handling & Modules

Work with files, modules and libraries effectively



Practical & Project Oriented Approach

Enhance coding skills through practical projects



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Computer Science

CLASS-XII

Code No. 083

2021-22

1. Prerequisites

Computer Science- Class XI

2. Learning Outcomes

Student should be able to

- apply the concept of function.
- explain and use the concept of file handling.
- use basic data structure: Stacks.
- explain basics of computer networks.
- use Database concepts, SQL along with connectivity between Python and SQL.

3. Distribution of Marks:

Unit No.	Unit Name	Marks	Periods	
			Theory	Practical
I	Computational Thinking and Programming - 2	40	50	25
II	Computer Networks	10	10	---
III	Database Management	20	20	15
	Total	70	80	40

Unit No	Unit Name	Term-1	Term-2
I	Computational Thinking and Programming - 2	35	5
II	Computer Networks	---	10
III	Database Management	---	20
	Total	35	35

4. Unit wise Syllabus

TERM 1:

Unit I: Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file
- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader()

TERM 2:

Unit I: Computational Thinking and Programming – 2

- Data Structure: Stack, operations on stack (push & pop), implementation of stack using list.

Unit II: Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)
- Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)
- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

Unit III: Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command
- Aggregate functions (max, min, avg, sum, count), group by, having clause, joins :Cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications

5. Practical

S.No		Marks (Total 30)	Term-1 (15 Marks)	Term-2 (15 Marks)
1	Lab Test:			
	1. Python program	8	6	2
	2. 3 SQL Queries based on one/two table(s), 2 output questions based on SQL queries	4	---	4
2	Report file: Term – 1 : Minimum 15 Python programs based on Term - 1 Syllabus Term – 2 : <ul style="list-style-type: none"> • Minimum 3 Python programs based on Term-2 Syllabus • SQL Queries – Minimum 5 sets using one table / two tables. • Minimum 2 programs based on Python - SQL connectivity. 	7	4	3
3	Project (using concepts learnt in Classes 11 and 12) Term – 1 : Synopsis of the project to be submitted by the students (documentation only, may not submit the code during Term - 1) Term - 2 : Final coding + Viva voce (Student will be allowed to modify their Term 1 document and submit the final executable code.)	8	3	5
4	Viva voce	3	2	1

6. Suggested Practical List:

Term-1

Python Programming

- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.
- Remove all the lines that contain the character 'a' in a file and write it to another file.
- Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
- Create a binary file with roll number, name and marks. Input a roll number and update the marks.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Create a CSV file by entering user-id and password, read and search the password for given user-id.

Term-2

Python Programming

- Write a Python program to implement a stack using list.

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
 - ALTER table to add new attributes / modify data type / drop attribute
 - UPDATE table to modify data
 - ORDER By to display data in ascending / descending order
 - DELETE to remove tuple(s)
 - GROUP BY and find the min, max, sum, count and average
 - Joining of two tables.
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
 - ALTER table to add new attributes / modify data type / drop attribute
 - UPDATE table to modify data
 - ORDER By to display data in ascending / descending order
 - DELETE to remove tuple(s)
 - GROUP BY and find the min, max, sum, count and average
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

7. Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (Class XII)
- Support Materials on the CBSE website.

8. Project

The aim of the class project is to create something that is tangible and useful using Python file handling/ Python-SQL connectivity. This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve.

Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their disabled fellow students, and mobile applications, of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves.

The students should be sensitised to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

1

Python Revision Tour-I

- Which of the following is an invalid variable?
(a) my_day_2 (b) 2nd_day (c) Day_two (d) _2
- Which of the following is not a keyword?
(a) eval (b) assert (c) nonlocal (d) pass
- Which of the following cannot be a variable?
(a) __init__ (b) in (c) it (d) on
- Which of these is not a core data type in Python?
(a) Lists (b) Dictionary (c) Tuples (d) Class
- How is the mathematical expression xy written in Python as an expression?
(a) x^y (b) $x**y$ (c) $x^^y$ (d) none of these
- What will be the value of the expression $14+13\%15$?
(a) 14 (b) 27 (c) 12 (d) 0
- Evaluate the expression $A\%B//A$, if $A = 16$ and $B = 15$.
(a) 0.0 (b) 0 (c) 1.0 (d) 1 8
- What will be the value of x in the expression: $x = \text{int}(13.25 \ 4/2)$
(a) 17 (b) 14 (c) 15 (d) 23 9.
- The expression $8/4/2$ will evaluate equivalent to which of the following expressions:
(a) $8/(4/2)$ (b) $(8/4)/2$
- Which among the following list of operators has the highest precedence?
 $+, -, **, \%, /, <<, >>, |$
(a) $<<, >>$ (b) $**$ (c) $|$ (d) $\%$
- Which of the following expressions will result in an error?
(a) `float('12')` (b) `int('12')` (c) `float('12.5')` (d) `int('12.5')`
- Which of the following statement prints the output as shown below?
hello\example\test.txt
(a) `print("hello\example\test.txt")` (b) `print("hello\\example\\test.txt")`
(c) `print("hello\"example \"test.txt")` (d) `print("hello\"example\"test.txt")`

13. Which of the following types of value does the input() function returns ?

- (a) Boolean (b) String (c) Int (d) Float

14. Which two operators can be used on numeric values in Python?

- (a) @ (b) % (c) + (d) #

15. Which of the following four code fragments will yield following output?

Eina

Mina

Dika

Select all of the function calls that will result in this output.

(a) print("""Eina
 \nMina
 \nDika""")

(b) print("EinaMinaDika")

(c) print('Eina\nMina\nDika')

(d) print('Eina
 Mina
 Dika')

16. Which of the following is valid arithmetic operator in Python?

- (a) // (b) ? (c) < (d) and

17. The numbered position of a letter in a string is called _____.

- (a) position (b) integer position (c) index (d) location

18. The operator _____ checks if an element is present in a sequence or not.

- (a) exists (b) in (c) into (d) inside

19. The keys of a dictionary must be of _____ types.

- (a) Integer (b) mutable (c) immutable (d) any of these

20. The following set of commands is executed in shell, what will be the output?

```
>>>str = "hello"
```

```
>>>str[:2] >>>
```

- (a) he (b) lo (c) olleh (d) hello



- 1. b
- 2. a
- 3. b
- 4. d
- 5. b
- 6. b
- 7. b

- 8. c
- 9. b
- 10. b
- 11. d
- 12. b
- 13. b
- 14. b, c

- 15. c
- 16. a
- 17. c
- 18. b
- 19. c
- 20. a



1. What is the data type of the object given below?

```
Tup=[1,40,20.5,'JNV']
```

- (a) Tuple (b) Dictionary (c) List (d) All of these
2. What is the data type of the object given below?

```
List1=(1,40,20.5,'JNV')
```

- (a) Tuple (b) Dictionary (c) List (d) All of these
3. To store values in terms of key and value, which core data type does python provide?
- (a) Tuple (b) Dictionary (c) List (d) All of these
4. Evaluate the following expression:

```
15+10.00, 2**4.0
```

- (a) 25 16 (b) 25.0 16 (c) 25.0 16.0 (d) 25,16.0
5. A List X is defined as X=[5,6,7,8,9].

Which of the following statements removes the middle element 7 from it so that the list X will be [5,6,8,9]?

- (a) del x[2] (b) a[2:3]=[] (c) X.remove(3) (d) None of these
6. Which two lines of code are valid strings in Python?
- (a) I am studying in Jawahar Navodaya Vidyalaya
(b) 'I am studying in Jawahar Navodaya Vidyalaya,
(c) "I am studying in Jawahar Navodaya Vidyalaya"
(d) (I am studying in Jawahar Navodaya Vidyalaya)

7. Consider the following code segment:

```
String1 = "my"
```

```
String2 = "work"
```

```
print(String1 + string2)
```

What will be the output of this code?

- (a) my work (b) work (c) mywork (d) my

8. Consider the following code segment:

```
String1 = "my"  
String2 = "work"  
print(String1 + String2.upper())
```

What is the output of this code?

- (a) mywork (b) MY Work (c) myWORK (d) My Work

9. Which of the following code will produce an error?

- (a) "Four"+"Five" (b) 'Four'+5" (c) "4"+"Five" (d) '4'+5

10. What is the output of the following code?

```
>>>int("7" + " 8")
```

- (a) "15" (b) "78" (c) 78 (d) 56

11. Which line of code will cause an error?

- 1. num = [5, 4, 3, [2], 1] 2. print(num [0]) 3. print(num[3][0]) 4. print (num[5])**
(a) Line 3 (b) Line 2 (c) Line 4 (d) Line 1

12. Which of the following is the correct form for declaring a dictionary?

- (a) Day = {1 : 'Monday', 2 : 'Tuesday', 3 : 'wednesday'}
(b) Day = {1 ; 'Monday', 2 ; 'Tuesday', 3 ; 'wednesday'}
(c) Day = [1 : 'Monday', 2 : 'Tuesday', 3 : 'wednesday']
(d) Day = {1 'Monday', 2 'Tuesday', 3 'wednesday'}

13. Identify the valid declaration of L:

```
L = [1, 23, 'hi', 6]
```

- (a) list (b) dictionary (c) array (d) Tuple

14. Which of the following is not considered a valid identifier in Python?

- (a) two2 (b) _main (c) hello_rsp1 (d) 2 hundred

15. What will be the output of the statement – print("100+200")?

- (a) 300 (b) 100200 (c) 100+200 (d) 200

16. Which amongst the following is a mutable data type in Python?

- (a) int (b) string (c) tuple (d) list

17. The pow() function belongs to which of the following libraries?

- (a) math (b) string (c) random (d) maths

18. Which of the following statements converts a tuple into a list?

- (a) len(string) (b) list(string) (c) tup(list) (d) dict(string)

19. The statement: `bval = str1 > str2` shall returns _____ as the output if two strings `str1` and `str2` contains "Delhi" and "New Delhi".

- (a) True (b) Delhi (c) New Delhi (d) False

20. What will be the output generated by the following snippet?

```
a = [5, 10, 15, 20, 25]
k = 1
i = a[1] + 1
j = a[2] + 1
m = a[k+1]
print (i, j, m)
```

- (a) 11 15 16 (b) 11 16 15 (c) 11 15 15 (d) 16 11 15

21. The process of arranging the array elements in a specified order is termed as:

- (a) Indexing (b) Slicing (c) Sorting (d) Traversing

22. Which of the following Python functions is used to iterate over a sequence of number by specifying a numeric end value within its parameters?

- (a) `range()` (b) `len()` (c) `substring()` (d) `random()`

23. What is the output of the following code snippet?

```
d = {0: 'a', 1: 'b', 2: 'c'}
for i in d:
    print(i)
```

- (a) 0 (b) a (c) both a and b (d) Neither a nor b
1 b
2 c

24. What is the output of the following code snippet?

```
X=456
for i in x:
    print(i)
```

- (a) 123 (b) 1 2 3 (c) infinite loop (d) produce error

25. What will be the output when the following code is executed?

```
>>>str1="helloworld"
>>>str1[:-1]
```

- (a) dlrowolleh (b) hello (c) helloworl (d) helloworld

26. What is the output of the following code?

```
print ("xyyzxyzxxyy".count ('yy', 1))
```

- (a) 2 (b) 0 (c) 1 (d) Error
27. Suppose `list1 = [0.5 * x for x in range(0, 4)]`, list1 is:
 (a) [0, 1, 2, 3] (b) [0, 1, 2, 3, 4]
 (c) [0.0, 0.5, 1.0, 1.5] (d) [0.0, 0.5, 1.0, 1.5, 20]
28. Identify the correct function to get the datatype of a variable or a literal in python:
 (a) `help()` (b) `ID()` (c) `type()` (d) `dir()`
29. The token in a python is also known as:
 (a) smallest unit (b) lexical unit (c) fundamental unit (d) All of these
30. What is the output of expression `3 * 1 ** 3` ?
 (a) 27 (b) 9 (c) 3 (d) 1



- | | | |
|------------|-------|-------|
| 1. a | 11. c | 21. c |
| 2. d | 12. a | 22. a |
| 3. d | 13. a | 23. a |
| 4. a | 14. d | 24. c |
| 5. a, b, c | 15. b | 25. c |
| 6. b, c | 16. d | 26. a |
| 7. c | 17. a | 27. a |
| 8. c | 18. b | 28. c |
| 9. d | 19. d | 29. a |
| 10. c | 20. b | 30. a |



1. Identify the correct statement for functions created in Python from the following:
 - a) A Python function can return only a single value
 - b) A function can take an unlimited number of arguments.
 - c) A Python function can return multiple values
 - d) Python function doesn't return anything unless and until you add a return statement
2. Python function always returns a value
 - a) False
 - b) True

3. What is the output of the `add()` function call

```
def add(a, b):  
    return a+5, b+5  
  
result = add(3, 2)  
  
print(result)
```

- a) 15
 - b) (8, 7)
 - c) 8
 - d) Syntax Error
4. What is the output of the following function call

```
def fun1(name, age=20):  
    print(name, age)  
  
fun1('Abhi', 25)
```

1. Name age
 2. Abhi 20
 - c) Abhi 25
 - d) None of the above
5. What is the output of the following code

```
def outerFun(a, b):  
    def innerFun(c, d):  
        return c + d
```

```
    return innerFun(a, b)
res = outerFun(5, 10)
print(res)
```

- a) 15
 - b) (5, 10)
 - c) Syntax Error
 - d) None of the above
6. What is the output of the following function call

```
def fun1(num):
    return num + 25
fun1(5)
print(num)
```

- a) 25
 - b) NameError
 - c) 5
 - d) 30
7. Select which true for Python function
- a) A function is a code block that only executes when called and always returns a value.
 - b) A function only executes when it is called and we can reuse it in a program
 - c) Python doesn't support nested function.
 - d) All of the above.
8. What is the default return value for a function that does not return value explicitly?
- a) None
 - b) Double
 - c) int
 - d) null
9. What is the name given to that area of memory, where the system stores the parameters and local variable of a function call?
- a) A heap
 - b) A stack
 - c) storage area
 - d) an array
10. Which keyword is used to mark the beginning of a function in python?
- a) func
 - b) define
 - c) def
 - d) function
11. Which of the following items are present in the function header?
- a) Function name only

- b) function name and parameter list
- c) parameter list only
- d) argument only

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

```
f = None
for i in range(5):
    with open("data.txt", "w") as f:
        if i > 2:
            break
print(f.closed)
```

- (a) True
- (b) False
- (c) None
- (d) Error

13. Abhi write a list program as shown below. Based on the code answer the questions

```
data = [[1, 2], [3, 4]], [[5, 6], [7, 8]] #1
def fun(m):
    print(m) #2
    v = m[0][0]
    print(v) #3
    for row in m:
        for element in row:
            if v < element:
                v = element
    return v
print(fun(data[0]))
```

The declaration of the LIST data is called

- (i) Local
- (ii) Global
- (iii) local and global
- (iv) none of the above

14. What will be printed after execution of the line #2 ?

```
data = [[1, 2], [3, 4]], [[5, 6], [7, 8]] #1
def fun(m):
    print(m) #2
    v = m[0][0]
    print(v) #3
    for row in m:
        for element in row:
            if v < element:
                v = element
    return v
print(fun(data[0]))
```

- a) [1,2]
- b) [[5, 6], [7, 8]]
- (c) [[1, 2], [3, 4]]
- (d) [5,6]

15. What will be printed after execution of the line #3 ?

```
data = [[[1, 2], [3, 4]], [[5, 6], [7, 8]]] #1
def fun(m):
    print(m) #2
    v = m[0][0]
    print(v) #3
    for row in m:
        for element in row:
            if v < element:
                v = element
    return v
print(fun(data[0]))
```

- a. 4
- b. 2
- (c) 5
- (d) 1

16. What will be the last line of the output of the below code, if line #4 is replaced with print(func(data[1])) ?

```
data = [[[1, 2], [3, 4]], [[5, 6], [7, 8]]] #1
def fun(m):
    print(m) #2
    v = m[0][0]
    print(v) #3
    for row in m:
        for element in row:
            if v < element:
                v = element
    return v
print(fun(data[1])) #4
```

- (a) 8
- (b) 5
- (c) 2
- (d) 1

17. Consider the following program. What is the correct flow of execution of statements?

```
1 def func(m, n):
2     c=m+n
3     print(c)
4     return c
5 x = 10
6 y = 20
7 func(x, y)
8 print('OK')
```

- a) 1,2,3,4,5,6,7,8
- (b) 5,6,7,1,2,3,4,8
- (c) 5,6,1,2,3,4,7,8
- d) 7,8,1,2,3,4,5,6

18. What is the maximum and minimum value of z in following program?

```
1 import random
2 x = random.randint(2, 6)
3 y = random.randint(1, 2)
4 z = x + y
5 print(z)
```

- (a) min: 1 max: 2 (b) min: 2 max: 6
(c) min: 1 max: 8 (d) min: 3 max: 8

19. What is the output of following program:

```
import math
a=math.ceil(20.5)
b=a/5
c=math.floor(b)
print(c)
```

- (a) 5 (b) 4
(c) 6 (d) None of the above

20. What is the output of following program:

```
num1=0
def func(num2, num3):
    global num1
    num1=num2+num3
    return num1
def func1(a, b):
    global num1
    num1=a-b
    return num1
k=func(2, 3)
func1(k, 7)
print(num1)
```

- (a) 2 (b) -2
(c) 12 (d) 5



1. C
2. B
3. B
4. C
5. A
6. B
7. D

8. A
9. C
10. C
11. B
12. A
13. B
14. C

15. D
16. A
17. B
18. D
19. B
20. B



Multiple Choice

- To open a file `c:\student.txt` for reading, we should give the statement:
 - `fin = open("c:\ student.txt", "r")`
 - `fin = open("c:\\ student.txt", "r")`
 - `fin = open(file = "c:\ student.txt", "r")`
 - `fin = open(file = "c:\\s student.txt", "r")`
- To open a file `c:\ student.txt` for writing, we should use the statement:
 - `fout = open("c:\student.txt", "w")`
 - `fout = open("c:\\ student.txt", "w")`
 - `fout = open(file = "c:\ student.txt", "w")`
 - `fout = open(file = "c:\\ student.txt", "w")`
- To open a file `c:\ result.txt` for appending data, we can give the statement:
 - `fout = open("c:\\ result.txt", "a")`
 - `fout = open("c:\\ result.txt", "rw")`
 - `fout = open(file = "c:\result.txt", "w")`
 - `fout = open(file = "c:\\ result.txt", "w")`
- Which of the following statements is/are true?
 - When you open a file for reading and file does not exist, error will occur.
 - When you open a file for writing, if the file does not exist, a new file is created.
 - When you open a file for writing, if the file exists, the existing file is overwritten with the new file.
 - All of the above.
- To read two characters from a file object `fobj`, the command should be:

(a) <code>fobj.read(2)</code>	(b) <code>fobj.read()</code>
(c) <code>fobj.readline()</code>	(d) <code>fobj.readlines()</code>
- To read the entire contents of the file as a string from a file object `fobj`, the command should be:

(a) <code>fobj.read(2)</code>	(b) <code>fobj.read()</code>
(c) <code>fobj.readline()</code>	(d) <code>fobj.readlines()</code>
- What will be the output of the following code snippet?

```
f = None
for i in range (5):
    with open ("data.txt", "W") as f:
        if i > 2:
            break
print (f.closed)
```

- (a) True (b) False
(c) None (d) Error
8. To read the next line of the file from a file object fobj, we use:
(a) fobj.read(2) (b) fobj.read()
(c) fobj.readline() (d) fobj.readlines()
9. To read the remaining lines of the file from a file object fobj, we use:
(a) fobj.read(2) (b) fobj.read()
(c) fobj.readline() (d) fobj.readlines
10. The readlines() method returns:
(a) String (b) A list of integers
(c) A list of single characters (d) A list of lines
11. Which module is required to use the built-in function dump()?
(a) math (b) flush
(c) pickle (d) unpickle
12. Which of the following functions is used to write data in the binary mode?
(a) write (b) output
(c) dump (d) send
13. Which is/are the basic I/O (input-output) stream(s) in file?
(a) Standard Input (b) Standard Output
(c) Standard Errors (d) All of the above
14. Which of the following is the correct syntax of file.writelines()?
(a) file.writelines(sequence) (b) fobj.writelines()
(c) fobj.writelines(sequence) (d) fobj.writeline()
15. In file handling, what do the terms "r" and "a" stand for?
(a) read, append (b) append, read
(iii) write, append (d) None of the above
16. Which of the following is not a valid mode to open a file?
(a) ab (b) rw
(c) r+ (d) w+

17. Which statement is used to change the file position to an offset value from the start?
- (a) `fp.seek(offset, 0)` (b) `fp.seek(offset, 1)`
(c) `fp.seek(offset, 2)` (d) None of the above
18. The difference between `r+` and `w+` modes is expressed as?
- (a) No difference
- (b) In `r+` mode, the pointer is initially placed at the beginning of the file and the pointer is at the end for `w+`
- (c) In `w+` mode, the pointer is initially placed at the beginning of the file and the pointer is at the end for `r+`
- (d) Depends on the operating system
19. What does CSV stand for?
- (a) Cursor Separated Variables (b) Comma Separated Values
(c) Cursor Separated Values (d) Cursor Separated Version
20. Which module is used for working with CSV files in Python?
- (a) `random` (b) `statistics`
(c) `csv` (d) `math`
21. Which of the following modes is used for both writing and reading from a binary file?
- (a) `wb+` (b) `w`
(c) `wb` (d) `w+`
22. Which statement is used to retrieve the current position within the file?
- (a) `fp.seek()` (b) `fp.tell()`
(c) `fp.loc` (d) `fp.pos`
23. What happens if no arguments are passed to the `seek()` method?
- (a) file position is set to the start of file (b) file position is set to the end of file
(c) file position remains unchanged (d) results in an error
24. Which of the following modes will refer to binary data?
- (a) `r` (b) `w`
(c) `+` (d) `b`
25. Every record in a CSV file is stored in reader object in the form of a list using which method?
- (a) `writer()` (b) `append()`
(c) `reader()` (d) `list()`
26. Information stored on a storage device with a specific name is called a ____.
- (a) array (b) dictionary
(c) file (d) tuple

27. Which of the following format of files can be created programmatically through Python to some data?
- (a) Data files (b) Text files
(c) Video files (d) Binary files
28. 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")
29. The separator character of CSV file is called as _____.
- (a) newline character (b) endchar
(c) delimiter (d) none of these
30. The command to read the 15 characters from file object File1 will be
- (a) File1.read() (b) File1.read(15)
(c) File1.readline() (d) File1.readlines()
31. To change the newline character in CSV files, which of the following arguments in the open statement is used?
- (a) newchar (b) newline
(c) nextchar (d) nextlinechar
32. Which function is used to read all the characters?
- (a) read() (b) read characters()
(c) readall() (d) readchar()
33. Which function is used to read single line from file?
- (a) readline() (b) readlines()
(c) readstatement() (d) readfullline()
34. Which function is used to write a list of strings in a file?
- (a) writeline() (b) writelines()
(c) writestatement() (d) writefullline()
35. Which of the following are the modes of both writing and reading in binary format in file?
- (a) wb+ (b) w
(c) wb (d) w+



- | | | |
|-------|-------|----------|
| 1. b | 13. d | 25. c |
| 2. b | 14. c | 26. c |
| 3. a | 15. a | 27. b, d |
| 4. d | 16. b | 28. a, c |
| 5. a | 17. a | 29. c |
| 6. b | 18. b | 30. b |
| 7. a | 19. b | 31. b |
| 8. c | 20. c | 32. a |
| 9. d | 21. a | 33. a |
| 10. d | 22. b | 34. b |
| 11. c | 23. d | 35. a |
| 12. c | 24. d | |



Navodaya Vidyalaya Samiti, Jaipur Region
Term 1 Examination
Computer Science (083)

Time: 1½ Hours

Class: XII

M.M. 35

General Instructions:

- The question paper is divided into 3 Sections - A, B and C.
- Section A, consist of 25 Questions (1-25). Attempt any 20 questions.
- Section B, consist of 24 Questions (26-49). Attempt any 20 questions.
- Section C, consist of 6 case study-based Questions (50-55). Attempt any 5 questions.
- All questions carry equal marks.

Q.N.	Section-A
	This section consists of 25 Questions (1 to 25). Attempt any 20 questions from this section. Choose the best possible option.
1	Find the valid identifier from the following a. True b. lrollno c. while d. false
2	Consider a declaration <code>stu = (2345, 'Abhishek', '94.52')</code> . Which of the following represents the data type of <code>stu</code> ? a. list b. tuple c. dictionary d. string
3	Given a Tuple <code>marks= (60, 65, 70, 75, 80, 65, 78, 89, 92)</code> . What will be the output of <code>print (marks[:7:2])</code> ? a. (60, 65, 70, 75, 80, 65, 78) b. (60, 65, 70, 75, 80, 65, 78,89) c. [60,70,80,78] d. (60,70,80,78)
4	Which of the following options can be used to read the first line of a text file <code>student.txt</code> ? a. <code>fin = open('student.txt'); fin.read()</code> b. <code>fin = open('student.txt','r'); fin.read()</code> c. <code>fin = open('student.txt'); fin.readline()</code> d. <code>fin = open('student.txt'); fin.readlines()</code>

5	<p>Assume that the position of the file pointer is at the beginning of 3rd line in a text file. Which of the following option can be used to read all the remaining lines?</p> <p>a. myfile.read() b. myfile.read(n) c. myfile.readline() d. myfile.readlines()</p>
6	<p>Which of the following option is correct?</p> <p>a. if we try to write in a text file that does not exist, an error occurs. b. if we try to write in a text file that does not exist, the file gets created. c. if we try to write in a text file, it will add the new content with exist one d. None of the above</p>
7	<p>A text file nvs.txt is stored in the storage device. Identify the correct option out of the following options to open the file in write mode.</p> <p>a myfile = open('nvs.txt','wb') b myfile = open('nvs.txt','w') c myfile = open('nvs.txt','r') d myfile = open('nvs.txt')</p>
8	<p>The return type of the input() function in python is</p> <p>a. string type b. integer type c. list type d. tuple type</p>
9	<p>Which of the following operator cannot be used with real (float) data type?</p> <p>a. + b. % c. * d. /</p>
10	<p>Which of the following statement is incorrect in the context of binary files?</p> <p>a. Information is stored in the same format in which the information is held in memory. b. No character translation takes place c. Every line ends with a new line character d. pickle module is used for reading and writing</p>
11	<p>What is the significance of the seek() method?</p> <p>a. seek() method is used for changing the current location of the file handle b. seek () method returns current position of file object. c. tells the end position within the file d. checks the existence of a file at the desired location</p>

12	<p>Consider a tuple <code>country = ('India', 'America', 'Australia', 'South Africa')</code>. Identify the statement that will result in an error.</p> <ol style="list-style-type: none"> <code>print(tup1[2])</code> <code>tup1[2] = 'England'</code> <code>print(min(tup1))</code> <code>print(len(tup1))</code>
13	<p>Which of the following statement is true?</p> <ol style="list-style-type: none"> unpickling creates an object from a sequence of bytes unpickling is the process of retrieving original python objects from the stored string representation unpickling is used for object serialization pickling is used to manage all types of files in Python
14	<p>Syntax of seek function in Python is <code>myfile.seek(offset, reference_point)</code> where <code>myfile</code> is the file object. What is the default value of <code>reference_point</code>?</p> <ol style="list-style-type: none"> 0 1 2 3
15	<p>Which of the following components are part of a function header in Python?</p> <ol style="list-style-type: none"> Function Name Parameter List Return Type Both a and b
16	<p>What is called when a function is defined inside a class?</p> <ol style="list-style-type: none"> class Module Function Method
17	<p>If return statement is not used inside the function, the function will return:</p> <ol style="list-style-type: none"> 0 1 None Null
18	<p>Which of the following character acts as default delimiter in a csv file?</p> <ol style="list-style-type: none"> (colon) : (hyphen) - (comma) , (pipe)

19	<p>Syntax for opening NVS.csv file in write mode is <code>fin = open("NVS.csv","w",newline='')</code>. What is the importance of <code>newline=""</code>?</p> <ol style="list-style-type: none"> A newline gets added to the file Empty string gets appended to the first line. Empty string gets appended to all lines. EOL translation is suppressed
20	<p>What is the correct expansion of CSV files?</p> <ol style="list-style-type: none"> Cpp Separable Values Comma Separated Values Comma Shared Values Comma Separation Values
21	<p>Which of the following is a function / method of csv module in Python?</p> <ol style="list-style-type: none"> <code>read()</code> <code>readline()</code> <code>readlines()</code> <code>writerow()</code>
22	<p>What is the extension name of a Python file?</p> <ol style="list-style-type: none"> <code>.exe</code> <code>.p++</code> <code>.py</code> <code>.p</code>
23	<p>Which of the following symbol is used in Python for multi line comment?</p> <ol style="list-style-type: none"> <code>/</code> <code>/* */</code> <code>'''</code> <code>#</code>
24	<p>Which of the following statement opens a binary file student in write mode and writes data from a list <code>stu = [10,25,34,45]</code> on the binary file?</p> <ol style="list-style-type: none"> with <code>open('record.bin','wb')</code> as <code>fin</code>: <code>pickle.dump(stu,fin)</code> with <code>open('record.bin','wb')</code> as <code>fin</code> <code>pickle.dump(fin,stu)</code> with <code>open('record.bin','wb+')</code> as <code>fin</code> <code>pickle.dump(fin,stu)</code> with <code>open('record.bin','ab')</code> as <code>fin</code> <code>pickle.dump(fin,stu)</code>
25	<p>Which of these about a dictionary is false?</p> <ol style="list-style-type: none"> The values of a dictionary can be accessed using keys The keys of a dictionary can be accessed using values Dictionaries aren't ordered Dictionaries are mutable

SECTION-B

This section consists of 24 Questions (26 to 49). Attempt any 20 questions.

26	<p>What is the output of following code:</p> <pre style="text-align: center;">A=(385) print(type(A))</pre> <p>a. <class 'int'> b. <class 'tuple'> c. <class 'list'> d. 385</p>
27	<p>Suppose content of 'poem.txt' is:</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"><p>Twinkle twinkle little star How I wonder what you are Up above the world so high Like a diamond in the sky</p></div> <pre style="text-align: center;">fout = open("poem.txt") data = myfile.readlines() print(len(data)) fout.close()</pre> <p>output of the above code will be?</p> <p>a. 3 b. 4 c. 5 d. 6</p>
28	<p>Identify the output of the following Python statements.</p> <pre>stu = [[98.0, 'Rahul', 'XII'],[87, 'John', 'XI']] index = stu[0][2] print(index)</pre> <p>a. 98.0 b. XII c. 87 d. XI</p>
29	<p>Identify the output of the following Python statements.</p> <pre>x = 9 while x > 1: print(x, end="") x = x -1</pre> <p>a. 987654321 b. 98765432 c. 9876543210 d. 87654321</p>

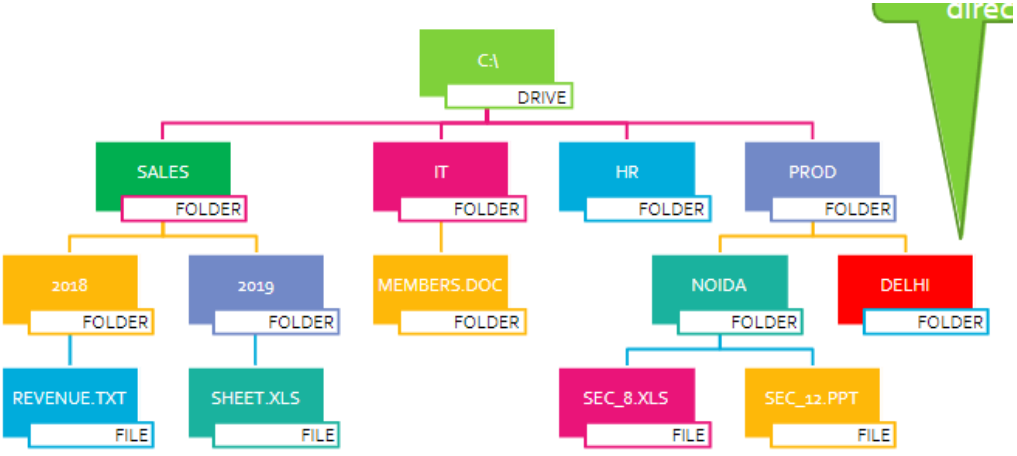
30	<p>Raghav is trying to write a tuple marks = (78,89,75,82,74) on a binary file result.bin. Consider the following code written by him.</p> <pre>import pickle marks = (78,89,75,82,74) fin = open("result.bin", 'wb') pickle._____ #Statement 1 myfile.close()</pre> <p>Identify the missing code in Statement 1.</p> <ol style="list-style-type: none"> dump(fin,marks) dump(marks, fin) write(marks, fin) load(fin,marks)
31	<p>Identify the output of the following Python statements.</p> <pre>b = 1 for a in range(1, 10, 2): b += a + 2 print (b)</pre> <ol style="list-style-type: none"> 25 36 9 11
32	<p>Identify the output of the following Python statements.</p> <pre>student = [10, 15, 20, 25, 30] student.insert(3, 'Sunny') student.insert(2, 3) print (student)</pre> <ol style="list-style-type: none"> [10, 15, 20, 25, 30, 3, Sunny] [10, 15, 20, Sunny, 25, 30, 3] [10, 15, 20, 25, 30,3, 'Sunny'] [10, 15, 3, 20, 'Sunny', 25, 30]
33	<p>What will be the output of the following snippet?</p> <pre>f = None for i in range (5): with open ("jnv.txt", "w") as f: if i > 2: break print (f.closed)</pre> <ol style="list-style-type: none"> True False None Error

34	<p>What will be the output of the following Python code?</p> <pre>def add (x,y): sum = x + y sum = add(200,300) print(sum)</pre> <p>a. 300 b. 0 c. Null d. None</p>
35	<p>Evaluate the following expression and identify the correct answer.</p> $16 - (4 + 2) * 5 + 2 * 3 * 4$ <p>a. 54 b. 46 c. 18 d. 32</p>
36	<p>What will be the output of the following code?</p> <pre>def func (var1=250, var2=350) : var1+=10 var2 = var2 - 80 return var1+var2 print (func (70) , func ())</pre> <p>a. 100 600 b. 350 530 c. 530 350 d. 600 100</p>
37	<p>What will be the output of the following code?</p> <pre>x = 50 def disp (Y) : global x x = 25 if Y%7==0: x = x + Y else: x = x - Y print (x, end="#") disp (20) print (x)</pre> <p>a. 50#50 b. 50#5 c. 50#30 d. 5#50#</p>

38	<p>Which output is not possible after executing the following code?</p> <pre>import random country=["India", "Srilanka", "Australia", "America"] for y in range(4): x = random.randint(1,3) print(country[x],end="#")</pre> <p>a. Srilanka#Srilanka#America#Australia# b. Srilanka#Srilanka#Australia#America# c. Australia#America#Australia#Srilanka# d. India#America#Australia#Srilanka#</p>
39	<p>What is the output of the following code snippet?</p> <pre>def Value(X,Y): for i in range(Y): if X[i]%5 == 0: X[i]//=5 if X[i]%3 == 0: X[i]//=3 list1 = [25,8,75,12] Value(list1,4) for i in list1: print(i,end="#") </pre> <p>a) 5#8#15#4# b) 5#8#5#4# c) 5#8#15#14# d) 5#18#15#4#</p>
40	<p>Suppose content of 'Myfile.txt' is</p> <div style="border: 1px solid black; padding: 5px;"> <p>To provide good quality modern education-including a strong component of culture, inculcation of values, awareness of the environment, adventure activities and physical education- to the talented children predominantly from the rural areas without regard to their family's socio-economic conditions.</p> </div> <p>What will be the output of the following code?</p> <pre>rec = open("jnv.txt") record = rec.read().split() print(len(record)) myfile.close()</pre> <p>a. 37 b. 38 c. 39 d. 40</p>

41	<p>Find the output of the following code snippet</p> <pre> Name="Jawahar@NavoDaya" R="" for x in range(len(Name)): if Name[x].isupper(): R=R+Name[x].lower() elif Name[x].islower(): R=R+Name[x].upper() elif Name[x].isdigit(): R=R+Name[x-1] else: R=R+"#" print(R) </pre> <p>a. Jawahar@Navodaya b. jAWAHAR#nAVOdAYA c. jAWAHAR#navodaya d. jAWAHAR@nAVOdAYA</p>
42	<p>Suppose content of 'editor.txt' is</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">Leveraging tech to drive a better IT experience</div> <p>What will be the output of the following code?</p> <pre> fin = open("editor.txt") x = fin.read() print(len(x)) fin.close() </pre> <p>a. 8 b. 48 c. 47 d. 46</p>
43	<p>Suppose content of 'editor.txt' is</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;">From the cloud to customers, we bring all the answers</div> <p>What will be the output of the following code?</p> <pre> fin = open("editor.txt") x = fin.read() y = x.count('the') print(y) fin.close() </pre> <p>a. 2 b. 3 c. 4 d. 5</p>

44	<p>What will be the output of the following code?</p> <pre> num = 7 def myfunc(): global num num+=2 print(num, end=' ') print(num, end=' ') myfunc() print(num, end=' ') </pre> <p>a. 9 9 9 b. 7 7 7 c. 7 8 9 d. 9 8 7</p>
45	<p>Suppose content of 'editor.txt' is azadi ka amrit mahotsav</p> <p>What will be the output of the following code?</p> <pre> fin = open("editor.txt") vlist = list("aeiouAEIOU") vc=0 x = fin.read() for y in x: if(y in vlist): vc+=1 print(vc) fin.close() </pre> <p>a. 6 b. 7 c. 8 d. 9</p>
46	<p>Suppose content of 'editor.txt' is</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p>Two roads diverged in a yellow wood, And sorry I could not travel both And be one traveler, long I stood And looked down one as far as I could To where it bent in the undergrowth;</p> </div> <p>What will be the output of the following code?</p> <pre> fin = open("editor.txt") line_count = 0 data = fin.readlines() for line in data: if line[0] == 'T': line_count += 1 print(line_count) fin.close() </pre> <p>a. 2 b. 3 c. 4 d. 5</p>

47	<p>Consider the following directory structure.</p>  <p>Suppose root directory (Sales) and present working directory are the same. What will be the absolute path of the file Syllabus.jpg?</p> <ol style="list-style-type: none"> SALES/REVENUE.txt SALES/2018/REVENUE.txt Sales/2018/./revenue.txt Sales/219/revenue.txt
48	<p>Assume the content of text file, 'student.txt' is:</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Ajay Manju Malhotra Kalika Jyoti</p> </div> <p>What will be the data type of data_rec?</p> <pre>fin = open("student.txt") data_rec = fin.readlines() fin.close()</pre> <ol style="list-style-type: none"> string list tuple dictionary
49	<p>What will be the output of the following code?</p> <pre>tup1 = (15,25,[14,15],35) tup1[2][1]=3.14 print(tup1)</pre> <ol style="list-style-type: none"> (15,25,(14,3.14),35) [15,25,(1,3.14),35) (15, 25, [14, 3.14], 35) Error Message

Section-C
Case Study based Questions

This section consists of 6 Questions (50 -55) Attempt any 5 questions.

- 50 Er. Abhinav is a programmer, who has been given a task to write a python code to perform the following binary file operations with the help of two user defined functions/modules:
- NewStud()** to create a binary file called **JNV.DAT** containing student information – roll number, name and marks (out of 100) of each student.
 - DispStud()** to display the name and percentage of those students who have a percentage greater than 75. In case there is no student having percentage ≥ 80 the function displays an appropriate message. The function should also display the average percent.
- But during writing code he missed out certain statements, but he has left certain queries in comment lines. You as an expert of Python have to provide the missing statements and other related queries based on the following code.

```
import pickle
def NewStud():
    _____ #1 statement to open the binary file to write data
    while True:
        Rno = int(input("Enter Roll No of the Student :"))
        Name = input("Enter Name of Student : ")
        Percent = float(input("Enter %age of Marks :"))
        sturec = [Rno, Name, Percent]
        _____ #2 statement to write the list sturec into the file
        Choice = input("Want to Enter more Record (y/n): ")
        if Choice in "nN":
            break
    fin.close()
def DispStud():
    Total=0
    Countrec=0
    Countabove=0
    with open("JNV.DAT","rb") as fin:
        while True:
            try:
                _____ #3 statement to read from the file
                Countrec+=1
                Total+=rec[2]
                if rec[2] >= 80:
                    print(rec[1], " has percent = ",rec[2])
                    Countabove+=1
            except:
                break
        if Countabove==0:
            print("There is no student with % more than 80")
        average=Total/Countrec
        print("Average % of class is = ",average)
        _____ #4 statement
DispStud()
```

50	<p>Which of the following commands is used to open the file “JNV.DAT” or to complete the #1 statement.</p> <p>a. <code>fin= open("JNV.DAT",'wb')</code> b. <code>fin= open("JNV.DAT",'w')</code> c. <code>fin= open("JNV.DAT",'wb+')</code> d. <code>fin= open("JNV.DAT",'w+')</code></p>
51	<p>Which of the following commands is used to write the list sturec into the binary file, JNV.DAT? (#2 Statement)</p> <p>a. <code>pickle.write(sturec,fin)</code> b. <code>pickle.dump(sturec,fin)</code> c. <code>pickle.dump(STUREC,FIN)</code> d. <code>fin=pickle.dump(STUREC)</code></p>
52	<p>Which code can be used to read each record from the binary file JNV.DAT? (#3 statement) in the above program</p> <p>a. <code>rec = pickle.load(fin)</code> b. <code>pickle.read(rec,fin)</code> c. <code>rec= pickle.read(fin)</code> d. <code>pickle.load(rec,fin)</code></p>
53	<p>Complete #4 statement with proper python code?</p> <p>a. <code>fin.close()</code> b. <code>NewStud()</code> c. Both a and B d. None of the above</p>
54	<p>Which of the following statement(s) are correct regarding the file access modes?</p> <p>a) ‘r+’ opens a file for both reading and writing. File object points to its beginning. b) ‘w+’ opens a file for both writing and reading. Adds at the end of the existing file if it exists and creates a new one if it does not exist. c) ‘wb’ opens a file for reading and writing in binary format. Overwrites the file if it exists and creates a new one if it does not exist. d) ‘a’ opens a file for appending. The file pointer is at the start of the file if the file exists.</p>
55	<p>Which of the following statements correctly explain the function of seek() method?</p> <p>a. tells the current position within the file. b. determines if you can move the file position or not. c. indicates that the next read or write occurs from that position in a file. d. moves the current file position to a given specified position</p>

Navodaya Vidyalaya Samiti
(Sample Question Paper)
Computer Science (Code 083)
(Theory: Term-1)
Class: XII

Answer Key

Q.N.	Section-A
1	d. false
2	b. tuple
3	d. (60,70,80,78)
4	c) <code>fin = open('student.txt'); fin.readline()</code>
5	a. <code>myfile.read()</code>
6	b) if we try to write in a text file that does not exist, the file gets created.
7	b) <code>myfile = open('nvs.txt','w')</code>
8	a. string type
9	b) %
10	c) Every line ends with a new line character
11	b. <code>seek ()</code> method returns current position of file object.
12	b) <code>tup1[2] = 'England'</code>
13	d) pickling is used to manage all types of files in Python
14	a) 0
15	d) Both a and b
16	d) Method
17	c) None

18	c) comma
19	a. A newline gets added to the file
20	b. Comma Separated Values
21	d) writerow()
22	c) .py
23	c) ""
24	a) with open('record.bin','wb') as fin: pickle.dump(stu,fin)
25	c) Dictionaries are not ordered
26	a. <class 'int'>
27	b. 4
28	b. XII
29	b. 29
30	b. dump(marks,fin)
31	b. 36
32	d. [10, 15, 3, 20, 'Sunny', 25, 30]
33	a. True
34	d. None
35	c. 18
36	b. 350 530
37	b 50#5
38	d. India#America#Australia#Srilanka#
39	b. 5#8#5#4#
40	c. 39

41	d. jAWAHAR@nAVOdAYA
42	b. 48
43	a. 2
44	a. 9 9 9
45	d. 9
46	a. 2
47	b. SALES/2018/REVENUE.txt
48	b. list
49	c. (15, 25, [14, 3.14], 35)
50	c. fin= open("JNV.DAT",'wb+')
51	b. pickle.dump(sturec,fin)
52	d. pickle.load(rec,fin)
53	b. NewStud()
54	a. 'r+' opens a file for both reading and writing. File object points to its beginning.
55	a. tells the current position within the file.