Viva Questions in SACP LAB

1. **What is Python?**
   - Python is a high-level, interpreted programming language known for its readability and simplicity.
2. **What are the key features of Python?**
   - Easy to learn and use
   - Interpreted language
   - Dynamically typed
   - Object-oriented
   - Extensive standard libraries
3. **What is a variable in Python?**
   - A variable is a name that refers to a value stored in memory.
4. **How do you declare a variable in Python?**
   - Simply assign a value to a variable name, e.g., `x = 10`.
5. **What are Python data types?**
   - Common data types include int, float, str, list, tuple, dict, set, bool.
6. **What is a list?**
   - A list is an ordered, mutable collection of elements.
7. **What is a tuple?**
   - A tuple is an ordered, immutable collection of elements.
8. **What is a dictionary?**
   - A dictionary is an unordered collection of key-value pairs.
9. **What are functions in Python?**
   - Functions are blocks of reusable code that perform a specific task.
10. **How do you define a function?**
    - Using the `def` keyword, e.g.,

```
def add(a, b):
    return a + b
```

11. **What is a loop? Name types of loops in Python.**
    - A loop is used to execute a block of code repeatedly.
    - Types: `for` loop and `while` loop.
12. **What is an if statement?**
    - It is used for conditional execution of code.
13. **What is indentation in Python?**
    - Indentation is used to define blocks of code. Python uses indentation instead of braces.
14. **What is a module?**
    - A module is a file containing Python definitions and statements.
15. **How do you import a module?**
    - Using the `import` statement, e.g., `import math`.
16. **What is exception handling?**
    - It is a way to handle errors using `try`, `except` blocks.
17. **What is a class in Python?**
    - A class is a blueprint for creating objects.
18. **What is an object?**
    - An object is an instance of a class.
19. **What is inheritance?**
    - Inheritance allows a class to inherit attributes and methods from another class.

20. **What is the difference between list and tuple?**
    - Lists are mutable; tuples are immutable.
21. **Which language translator is used by python?**
    - Interpreter
22. **What are the built-in types available in python?**
    - Numbers, Strings, Lists, Tuples, Dictionaries
23. **How python interpreter interprets the code?**
    - Python interpreter interprets the code line by line.
24. **Name a few mutable data types of python.**
    - Lists, Sets, and Dictionaries
25. **Name a few immutable data types of python.**
    - Strings, Tuples, Numeric
26. **Name ordered and unordered data type of python.**
    - Ordered – String, List, Tuples
    - Unordred – Set, Dictionaries
27. **What is the significance of a pass statement in python?**
    - pass is no operation python statement. This is used where python requires syntax but logic requires no actions.
28. **What is slicing in python?**
    - Python slicing is a statement of python that extracts a list of elements from the given sequence in the range of start and stop values with step value intervals.
29. **What are comments in python?**
    - Python comments are nonexecutable text written in the python program to give a description for a statement or group of statements.
30. **What do you mean by forward and backward indexing?**
    - Forward indexing refers to automatic indexing applied to the list or tuples or any ordered data type in python. It starts with zero.
    - Backward indexing refers to indexing starting from the end (backward) of list or tuples or any other ordered data type in Python. It starts with -1.
31. **How to print list l in reverse order in a single line statement?**
    - print(l[::-1])
32. **Python string can be converted into integer or float?**
    - If the string contains only numbers it can be converted into an integer or float using int() and float() functions.
33. **What do you mean by typecasting in Python?**
    - Typecasting refers to changing the data type of Python from one to another.
    - It can be done in two ways:
        1. Implicit
        2. Explicit
34. **What is the difference between / and //?**
    - / is used for division, // is used for floor division
    - / returns float as answer whereas // returns integer as answer
    - / gives you the number with decimal places whereas // gives you only integer part
35. **How to check the variables stored in same object in python?**
    - The id() function returns the memory address of python object.
36. **What are the parameters of print() function? Explain.**

- The print function has three parameters:
    1. message – Contains the message to be printed
    2. sep – It is onptional parameter used to print a separator
    3. end – It prints the endline character

37. **What is the significance of 'else' in loops in python?**
    - Else block is written in pyton progrm when loop is not satisfying the condition. It gets executed when the while loop's condition is false where as in for loop it executes when for loop ends normally.
38. **Divya is learning python. She wants to know the version of python using python programming statements. Please help her to accomplish her task.**
    - >>> import sys
    - >>> sys.version
39. **How to remove the last element from a list?**
    - To remove the last element from a list following ways can be used:
        1. l.pop()
        2. del l[-1]
40. **What is the difference between append() and extend() methods?**
    - append() is used to add an element to the list to the last.
    - extend() is used to add multiple elements to the list.
41. **Consider the statement: L = [11,22,33,[45,67]], what will be the output of L[-2+1}?**
    - [45.67]
42. **What is tuple unpacking?**
    - Tuple unpacking refers to extracting tuple values into a separate variable.
43. **What are the two ways to insert an element into dictionary?**
    - Method 1 – Modifying a dictionary with fresh key and value ex. d={1:'A',2:'B'}; d[3]='C'
    - Method 2 – With a function setdefault ex. d={1:'A',2:'B'};d.setdefault(3,'C')
44. **Samira wants to remove an element by value. Suggest her a function name to accomplish her task.**
    - l.remove(value)
45. **How to remove all elements of a list?**
    - There are two ways to remove all elements of list
        1. Using clear – l.clear()
        2. Using del – del l
46. **How del is different from clear?**
    - del removes entire list object where clear() just removes elements and makes list empty
47. **What is a function?**
    - A function is a subprogram and a smaller unit of a python program consists of a set of instructions and returns a value.
48. **Does every python program must return a value?**
    - No, not every python program returns a value.
49. **What are the parts of a function?**
    - A python function has the following parts:
        1. **Function header** – Starts with def keyword followed by function name and parameters

2. **Function body** – Block of statements/instructions that define the action performed by the function, indentation must be followed
3. **Function caller statement** – writing function name including parameter values

50. **What are the needs of function in the python program?**
    - Easy program handling
    - Reduce the size of the program
    - Reduce the repeated statements
    - Ambiguity can be reduced
    - Make program more readable and understandable
51. **How to call your function through python interactive mode?**
    - Save a program if not saved and click on Run > Run Module or press the F5 button from the python script mode
    - Now interactive mode will appear with the message RESTART ……
    - Write a function call statement with function name and list of parameter values in the brackets
    - A function call statement is just like a function name with required parameters
    - Press enter and supply input as per requirements
52. **What are void functions? Explain with example?**
    - The void functions are those functions that do not return any value.
    - Python function which does not contain any return statement and having a bunch of different print statements are called void functions.
    - Python supports a special object “nothing” or None datatype.
53. **Observe the following lines of code and identify function definition or function caller statement:**
    - myfun(“TutorialAICSIP”,2020) – function caller with positional arguments
    - myfun(name=”TutorialAICSIP”,year=2020) – function caller with default arguments
    - def myfun(name, year=2020) – function definition with default argument
    - myfun(name=”TutorialAICSIP”,year) – function caller but reaise an error
54. **What are the physical line and logical line structure in python program?**
    - The physical lines in python programs contain EOL (End Of Line) character at the point of termination of lines
    - The logical lines in python programs contain white spaces or tab or comment at the point of termination of lines
55. **What is indentation? Explain its importance in two lines.**
    - Indentation refers to white spaces added before each line of the code.
    - In python, it detects the block of code.
    - It also makes the program more readable and presentable.
    - It organizes the code of blocks in a good manner.
56. **What is a top-level statement in python?**
    - The python unindented statements in python programs are considered as a top-level-statement.
    - _main_ is also a python top-level statement
57. **What are the comments? Explain the role of comments in the python programs?**

- Comments are non-executable parts of python programs.
- You can write a comment for the description or information related to statements, basic details of programs etc.
- There are two types of comments:
    1. Single-Line: These comments written for explaining single line comments, begins with #
    2. Multi-Line: These comments written for explaining multi-line comments, begins and ends with ”’ triple quotes

58. **Does python program functions contain multiple return statements and return multiple values?**
    - Yes, python program functions can have multiple return statements.
    - To return multiple values you can write values with return keyword separated by comma
59. **What do you mean by fruitful and non-fruitful functions in python?**
    - The functions which return values are called fruitful functions.
    - The function not returning values are called non-fruitful functions.
60. **Which three types of functions supported by python?**
    - Python supports the following three types of functions:
        1. Built-in Functions
        2. Functions defined in modules
        3. User-defined functions
61. **What are parameters and arguments in python programs?**
    - **Parameters** are the values provided at the time of function definition. For Ex. p,r and n.
    - **Arguments** are the values passed while calling a function. For Ex. princ_amt, r, n in main().
62. **Which types of arguments supported by Python?**
    - Python supports three argument types:
        1. **Positional Arguments**: Arguments passed to a function in correct positional order, no. of arguments must match with no. of parameters required.
        2. **Default Arguments: A**ssign default to value to a certain parameter, it is used when the user knows the value of the parameter, default values are specified in the function header. It is optional in the function call statement. If not provided in the function call statement then the default value is considered. **Default arguments must be provided from right to left.**
        3. **Key Word Arguments:** Keyword arguments are the named arguments with assigned values being passed in function call statement, the user can combine any type of argument.
        4. **Variable Length Arguments**: It allows the user to pass as many arguments as required in the program. Variable-length arguments are defined with * symbol.
63. **What are the rules you should follow while combining different types of arguments?**
    - An argument list must contain positional arguments followed by any keyword argument.
    - Keyword arguments should be taken from the required arguments preferably.

- The value of the argument can't be specified more than once.

64. **What do you mean by python variable scope?**
    - The python variable scope refers to the access location of the variable defined in the program.
    - A python program structure has different locations to declare and access the variable.
    - There are two scopes of variables in python:
        1. Local Scope
        2. Global Scope
65. **What is the local and global scope variable?**
    - The variable which is declared inside a function and can be accessible inside a function is known as local variable scope.
    - The variable declared in top-level statements of the python program is called a global variable scope, it is accessible anywhere in the program.
66. **What is the full form of LEGB? Explain in detail.**
    - LEGB stands for Local-Enclosing-Global-Buil-in.
    - Python checks the order of variable in a program by the LEGB rule.
    - First, it checks for the local variable, if the variable not found in local then it looks in enclosing then global then built-in environment.
67. **What are mutable and immutable arguments/parametersin a function call?**
    - Mutable arguments/parameters values changed over the access of value and variable at runtime.
    - Immutable **arguments/parameters** whose values cannot be changed. They allocate new memory whenever the value is changed.
68. **What are modules in python?**
    - A large program is divided into modules.
    - A module is a set of small coding instructions written in a programming language.
    - These modules create a library.
    - A python module is a .py that contains statements, classes, objects, functions, and variables.
    - That allows reusing them anytime by importing the module.
    - The structure of the python module plays an important role in python library functions.
69. **Name few commonly used libraries in python.**
    - Standard library
    - Numpy Library
    - Matplotlib
    - SciPy
70. **What do you mean docstrings in python?**
    - Docstrings is the triple quoted text of the python program.
    - It provides comments related to the authors of the program, details about functions, modules, classes.
    - The docstrings contents written in the module can be accessed through help().
71. **Is there any difference between docstrings and comments?**
    - The docstrings and comments ignored by the python interpreter in execution.

- But the docstring provides the information about modules, functions or classes which can be accessed by help() function.

72. **What is the use of dir() function?**
    - The dir() function is used to display defined symbols in the module.
73. **What are the two ways to import modules?**
    - You can import modules in python using these two ways:
        1. import <modulename>
        2. from <module> import <object>
74. **What is a file?**
    - A file is a stream of bytes stored on secondary storage devices having an extension.
75. **What are the different modes of opening a file?**
    - The different modes of opening a file are as follows:
        1. r,w,a,r+,w+,a+,rb,wb,ab,rb+,wb+,ab+
76. **If no mode is specified in open() function, which mode will be considered?**
    - r
77. **What is the difference between "w" and "a" mode?**
    - "a" mode adds the content to the existing file whereas "w" mode overwrites the contents into the file.
78. **What is the difference between readline() and readlines() function?**
    - readline() function reads the content of the text file and returns the content into the string whereas readlines() function reads the content of the text file and returns the content into the list.
79. **Parth wants to read only n number of characters from a text file. Suggest him a function to accomplish his task.**
    - The read(n) function can be used
80. **Nakshatra wants to count no. of words from the text file. Suggest her code to accomplish a task.**
    - f=open("one.txt")
    - w=f.read().split()
    - c=0
    - for i in w:
        1. c+=1
        2. print(c)
81. **What are the two different types of text files?**
    - Plain text or regular text files
    - Delimited text files or separated text files
82. **What are full forms of: a) csv b) tsv**
    - csv – comma separated values
    - tsv – tab-separated values
83. **Are CSV files and Text Files same?**
    - CSV files and Text Files are same in storage but csv file stores the data separated by a delimiter.
84. **What are the different valid delimiters?**
    - , is default delimiter
    - other delimiters are tab – \t, colon – :, or semi colon – ;
85. **What is pickling?**
    - Pickling refers to the process of converting python object hierarchy into a byte stream to write into a binary file.

86. **What is unpickling?**
    - It is the process of converting the byte stream back into an object hierarchy.
87. **Which module is required to handle binary files?**
    - pickle
88. **Name the functions used to read and write data into binary files.**
    - pickle.dump(list_object, file_handle)
    - pickle.load(file_object)
89. **Which error is reported while reading the** file binary **file?**
    - ran out of input
90. **How to avoid reading file errors in binary file?**
    - By using exception handling with try and except blocks
91. **What is the significance of tell() and seek() functions?**
    - tell() function returns the current file position in a file
    - seek() function change the current file position
92. **What is the default value of offset for seek function?**
    - 0
93. **What is offset in the syntax of seek function?**
    - Offset refers to the number bytes by which the file object is to be moved.
94. **Nimesh is working on a stack. He started deleting elements and removed all the elements from the stack. Name this situation.**
    - Stack underflow
95. **What are the operations can be performed on the stack?**
    - Push
    - Pop
    - Peep or Peek
96. **Which principle is followed by stack?**
    - LIFO (Last in First Out)
97. **Name any three applications of stack.**
    - Call history on mobile
    - Browser history
    - Undo and redo commands
    - CD/DVD tracks
    - Books on the tables
98. **What is an exception in python?**
    - An error or unusual condition that occurs in the program that causes abnormal termination of the program or crash of the python program is called an exception.
99. **What do you mean by debugging?**
    - The process of finding program errors is called debugging.
100. **Tell me the three basic types of errors that occur in Python.**
    - Syntax Errors
    - Logical Errors
    - Run-Time Errors
101. **What is the significance of folloiwng keywords in Python for exception handling?** assert, raise, try, except, finally, else
    - assert – checks for error based on if condition
    - raise – generates and handles built-in exceptions or user defied exceptions

- try – define an exception handler code
- except – defines code to handle a specific exception
- finally – defines code block which always executes
- else – defines code block that runs when no exception occurs in try block

102. **Name a few commonly exceptions occurs in python.**
    - SyntaxError
    - IndexError
    - TypeError
    - NameError
    - KeyError
    - ValueError
    - ZeroDivisioError
103. **Which exception occurs if the specified file does not exists in python?**
    - FileNotFoundError
104. **Differentiate between errors and exceptions?**
    - Error stops the program from completing a specific task whereas an Exception interrupts the normal flow of the program
    - Sometimes errors does not terminate the program but exception always terminates the program
105. **What happens if an exception occurs in a `try` block and there is no matching `except` block?**
    - If an exception occurs in the try block and there is no matching except block, python will terminate the programs and propagate the specific exception