

REVIEW OF PYTHON

VIVA QUESTIONS

1. What does IDLE stand for? What is Python IDLE?

IDLE is an acronym of ***Integrated Development Environment*** and is the standard, most popular Python development environment.

To run a program, we basically need an editor to write it, an interpreter/compiler to execute it and a debugger to catch and remove the errors. Python IDLE provides all these tools as a bundle. It lets edit, run, browse and debug Python Programs from a single interface and makes it easy to write programs.

2. What is the difference between Interactive mode and Script mode?

Python IDLE can be used in two modes: Interactive mode and Script mode.

Python shell is an **interactive interpreter**. **Python editor** allows us to work in **script mode** i.e. we can create and edit python source file.

3. What are tokens?

Tokens- Smallest individual unit of a program is called token. Example keywords, identifiers, literals, operators and punctuators.

4. What are Keywords?

They are the words used by Python interpreter to recognize the structure of program. As these words have specific meaning for interpreter, they cannot be used for any other purpose.

['False', 'None', 'True', 'and', 'as', 'assert', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try', 'while', 'with', 'yield']

NOTE: All these keywords are in small alphabets, except for **False, None, True**, which are starting with capital alphabets.

5. What are identifiers and literals?

IDENTIFIERS: These are the names given to identify any memory block, program unit or program objects, function, or module. Examples of identifiers are: num, roll_no, name etc.

LITERALS: A fixed numeric or non-numeric value is called a literal. Examples of literals are: 502, -178.76, “Rajan” etc.

6. What is a variable?

Variables are like containers which are used to store the values for some input, intermediate result of calculations or the final result of a mathematical operation in computer memory.

7. What are the naming conventions of identifiers/variables/literals.

- Variable names are **case sensitive**. For eg. num and NUM are treated as two different variable names.
- **Keywords** or words, which have special meaning, should **not** be used as the variable names.
- Variable names should be **short** and **meaningful**.
- All variable names must begin with a **letter** or an **underscore** (`_`).
- After the first initial letter, variable names may contain **letters** and **digits** (0 to 9) and an **underscore** (`_`), but no spaces or special characters are allowed.

Examples of valid variable names: sum, marks1, first_name, _money

Examples of invalid variables names: marks%, 12GRADE, class, last-name

8. What do you understand by the terms L-value and R-value?

L-value is a value which has an address. Thus, all variables are l-values since variables have addresses. As the name suggests l-value appears on left hand side but it can appear on right hand side of an assignment operator(=). l-value often represents as identifier.

R-value refers to data value that is stored at some address in memory. An **r-value** is a value which is assigned to an l-value. An r-value appears on right but not on left hand side of an assignment operator(=).

9. What is the default separator and terminator in print() function in Python? How can we change it?

By default, print uses a single space as a separator and a `\n` as a terminator (appears at the end of the string).

We can use the parameters **sep** and **end** to change the separator and terminator respectively.

10. Compare and contrast list, tuple and dictionary.

List	Tuple	Dictionary
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A list is an ordered collection of comma-separated values (items) within square brackets.	A tuple is an ordered collection of commas separated values. The comma separated values can be enclosed in parenthesis but parenthesis are not mandatory.	A dictionary is an unordered collection of items where each item is a key: value pair. We can also refer to a dictionary as a mapping between a set of keys/indices and a set of values. The entire dictionary is enclosed in curly braces.
it is mutable	it is immutable.	it is mutable
<code>list2=["Raman", 100, 200, 300, "Ashwin"]</code>	<code>tup1=('Sunday', 'Monday', 10, 20)</code>	<code>dict1={'R':'RAINY' , 'S':'SUMMER', 'W':'WINTER' , 'A':'AUTUMN'}</code>

11. What is the difference between mutable and immutable data types?

Mutable data types	immutable data types
Variables of mutable data types can be changed after creation and assignment of values.	Variables of immutable data types can not be changed or modified once they are created and assigned the value. If an attempt is made to change the value of variable of immutable datatype, the new is stored in some other memory location and the variable starts pointing to that location.
Some of the mutable data types in Python are list and dictionary	some of the immutable data types are int, float, decimal, bool, string and tuple.

12. What are the comments? Declare a single line comment and a multi-line comment.

Comments are the line that compiler ignores to compile or execute. There are two types of comments in Python

- **Single line comment:** This type of comment deactivates only that line where comment is applied. Single line comments are applied with the help of “#”. For e.g.

This program calculates the sum of two numbers

>>>n1=10

>>>N2=20

>>>sum= n1 + N2 # sum of numbers 10 and 20

>>>print (“sum=”, sum)

- **Multi line Comment:** This Type of comment deactivates group of lines when applied. This type of comments is applied with the help of **triple quoted string**.

**""This is a
multiline comment""**

or

**"""This is a
multiline comment"""**

13. What are the different types of errors in a Python program?

SYNTAX ERROR: An error in the syntax of writing code that does not conform to the syntax of the programming language is called a syntax error.

LOGICAL ERROR: It is an error in a program's source code that results in incorrect or unexpected result. It is a type of runtime error that may simply produce the wrong output or may cause a program to crash while running.

RUN TIME ERROR: A runtime error is an error that occurs during execution of the program and causes abnormal termination of program.

14. Write functions for the following:

To convert string to int	int()
To convert string to float	float()
To convert numeric data to string	str()

15. What are operators?

Operators performs some action on data. Various types of operators are:

- **Arithmetic** (+, -, *, /, %)
- **Assignment Operator** (=)

- **Relational/comparison** (<, >, <=, >=, ==, !=)
- **Logical** (AND, OR, NOT)
- **Identity Operators** (is, is not)
- **Membership Operators** (in, not in)

16. What is difference between /, //, %?

/	//	%
Divides two operands and gives quotient	Integer division	Divides two operands and gives remainder
$10/5=2$ $10/3.0 = 3.3$ $10.0/3=3.3$ $10/3=3$	$5//2=2$ $5.0//2=2.0$	$10\%5=0$

17. What is the difference between * and **?

*	**
Multiplies two operands	Exponentiation
$10*5=50$	$2**4=16$

18. What is the difference between = and ==?

=	==
Assigns the value	Checks if the value of left operand is equal to the value of right operand, if yes then condition becomes true.
$x=50$	$15=15$, true $16=15$, false

19. What is the difference between concatenation and repetition?

Concatenation (+)	Repetition (*)
Joins the objects (strings, lists etc.) on either side of the operator	Concatenates multiple copies of the same object (strings, lists etc.) given number of times
<pre>>>> str1="Tech" >>> str2="Era" >>> str1+str2 'TechEra'</pre>	<pre>>>> str1*2 'TechTech'</pre>
<pre>>>> str3=str2+str1</pre>	

>>> print(str3) EraTech	
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20. What is the difference between is and in operators?

is, is not - Identity Operators	in, not in - Membership Operators
Identity operators are used to compare two variables whether they are of same type with the same memory location.	Membership operators are used to validate the membership of a value. It tests for membership in a sequence, such as strings, lists, or tuples.
The is operator evaluates to true if the variables on either side of the operator point to the same memory location and false otherwise. >>> x = 5 >>> type(x) is int True	The in operator is used to check if a value exists in a sequence or not. Evaluates to true if it finds a variable in the specified sequence and false otherwise. >>> x = [1,2,3,4,5] >>> 3 in x True
The is not operator evaluates to true if the variables on either side of the operator point to the different memory location and false otherwise. >>> x = 5 >>> type(x) is not int False	The not in operator evaluates to true if it does not find a variable in the specified sequence and false otherwise. >>> x = [1,2,3,4,5] >>> 7 not in x True

21. What is the use of indentation in Python?

Indentation in Python is used to form block of statements also known as suite. It is required for indicating what block of code, a statement belongs to. Indentation is typically used in flow of control statements (like if, for etc.), function, class etc. Although we can give any number of spaces for indentation but all the statements in a block must have the same indent.

Unnecessary indentation results in syntax error and incorrect indentation results in logical error.

22. What is the difference between indexing and slicing?

Indexing is used to retrieve an element from an ordered data type like string, list, tuple etc. Slicing is used to retrieve a subset of values from an ordered data type. A slice of a list is basically its sub-list.

23. What is the difference among insert, append and extend?

insert()	append()	extend()
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It is used to insert data at the given index position.	It is used to add an element at the end of the list.	is used to add one or more element at the end of the list.
<pre>z1=[121, "RAMESH", 890, 453.90] z1.insert(1, "KIRTI")</pre> OUTPUT <pre>[121, 'KABIR', 'RAMESH', 890, 453.9]</pre>	<pre>list1=[100, 200, 300, 400, 500] list2=["Raman", 100, "Ashwin"] list1.extend(list2) print(list1)</pre> OUTPUT <pre>[100, 200, 300, 400, 500, 'Raman', 100, 'Ashwin']</pre> here LIST2 is added at the end of the list list1.	<pre>z1=[121, "RAMESH", 890, 453.90] z1.insert(1, "KIRTI") z1.append(10) print(z1)</pre> OUTPUT <pre>[121, 'KABIR', 'RAMESH', 890, 453.9, 10]</pre> here LIST2 is added at the end of the list list1.

24. What is the difference among del, remove or pop methods to delete elements from a List?

pop()	del	remove()
It removes the element from the specified index, and also return the element which was removed. The last element is deleted if no index value is provided in pop ().	The del method removes the specified element from the list, but it does not return the deleted value.	The remove method is used when the index value is unknown and the element to be deleted is known.
<pre>>>> list1=[100, 200, 90, 'Raman', 100, 'Ashwin'] >>> list1.pop(2)</pre> OUTPUT <pre>90</pre>	<pre>>>> list1=[100, 200, 'Raman', 100] >>> del list1[2] >>> print(list1)</pre> OUTPUT <pre>[100, 200, 100]</pre>	<pre>>>> list1=[100, 200, 50, 400, 500, 'Raman', 100, 'Ashwin'] >>> list1.remove(400) >>> print(list1)</pre> OUTPUT

		[100, 200, 50, 500, 'Raman', 100, 'Ashwin']
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25. What are the major differences between key and value in a dictionary?

key	value
Keys are unique	Values may not be unique
The keys must be of an immutable data type such as strings, numbers, or tuples.	The values of a dictionary can be of any type

26. Give the difference between upper() and isupper() functions of string.

The upper() function returns the copy of the string with all the letters in uppercase. The isupper() function returns True if the string is in uppercase.

Example

```
>>> print(str3.upper())
ERATECH
```

```
>>> str5='tech era *2018*'
>>> print(str5.isupper())
False
```

27. Compare random(), randint() and randrange().

Function name	Purpose	Example
random()	Generates a random float number between 0.0 to 1.0.	>>> random.random() 0.21787519275240708
randint()	Returns a random integer between the specified integers.	>>> random.randint(1,50) 21 >>> random.randint(1,50) 35
randrange()	Returns a randomly selected element from the range created by the start, stop and step arguments. The value of start is 0	>>> random.randrange(1,20) 1 >>> random.randrange(1,20,5)

	by default. Similarly, the value of step is 1 by default.	16
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28. When is the else clause executed in looping statements?

The **else clause** in looping statements is executed when the loop terminates.

29. Compare break and continue.

BREAK	CONTINUE
Break statement causes the loop to break/ terminate immediately.	Continue statement causes the current iteration of the loop to skip and go to the next iteration.
The loop of which, break statement is a part, stops.	All the statements following the continue statement in the loop will not be executed and loop control goes to the next iteration.
<pre>s=10; for i in range (10, 20, 3): s+=i if(i==16): break print(s); print("end");</pre> OUTPUT: <pre>20 33 end</pre>	<pre>s=10; for i in range (10, 20, 3): s+=i if(i==16): continue print(s); print("end");</pre> OUTPUT: <pre>20 33 68 end</pre>

FUNCTIONS

VIVA QUESTIONS

1. What is a function?

Function is a named group of related programming statements which perform a specific task. Functions are used to break the large code into smaller manageable modules which are easy to manage and debug.

2. Need of functions

Some of the major advantages of using functions in a program are:

- **Modularity:** Functions provide modularity to a program. It is difficult to manage large programs. Thus, a large program is usually broken down into small units called functions. This makes the program easy to understand, more organized and manageable.
- **Code Reusability:** Functions **save space and time**. Sometime a part of the program code needs to be executed repeatedly. If this part of program code is stored in a function than we do not need to write the same code again and again. Instead, function can be called repeatedly. This saves time and space. We can also store the frequently used functions in the form of modules which can easily be imported in other programs when needed.
- **Easy debugging:** It is easy to debug small units of a program than a long program.

3. Types of functions

Basically, we can divide functions into the following three types:

- Built-in Functions
- Python Modules
- User-defined Functions

4. What is the difference between global and local variables?

A variable declared outside the function is known as **global variable**. The global variable can be accessed inside or outside of the function.

A variable declared inside the function is known as **local variable**. The local variable can be accessed only inside the function in which it is declared.

5. How can we access a global variable inside a function if a local variable exists inside the function by the same name?

The keyword `global` may be used to access a global variable inside a function if a local variable exists inside the function by the same name.

6. Consider the following set of statements:

Program 1	Program 2
<pre>x=9 def func():</pre>	<pre>x=9 def func():</pre>

<pre> x=10 print("x=",x) func() print(x) </pre>	<pre> global x x=10 print("x=",x) func() print(x) </pre>
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What will be the output of the above programs and why?

The output will be:

Program 1	Program 2
<pre> x= 10 9 </pre>	<pre> x= 10 10 </pre>

This is because in Python, variables that are only referenced inside a function are implicitly global. If a variable is assigned a value or its value is modified anywhere within the function's body, it's assumed to be a local unless explicitly declared as global.

7. What is the difference between parameters and arguments?

Information can be passed to functions using parameters. They are specified inside the parenthesis after the function name and are separated by a comma. The values provided in the function call are called arguments. Arguments and parameters have one to one correspondence.

8. What is the difference between Positional arguments and Keyword/Named arguments?

When arguments are passed as positional arguments, the order in which the arguments are sent or their position is very important.

- It is mandatory to pass arguments in the same order as the parameters.
- The arguments should have one to one correspondence/mapping with parameters present in the function header.
- The number and type of arguments passed should match the number and type of parameters present in the function header.

When arguments are passed as keyword arguments, the name of the argument is given along with the value. In this case the position of arguments does not matter. They can be written in random order.

9. What is wrong in the following function call?

```
test(a = 1, b = 2, c = 3, 4) #3
```

Positional arguments cannot follow keyword arguments.

10. What is the purpose of a return statement? How can a function return more than one value?

The ***return*** statement is used to return either a single value or multiple values from a function. More than values are returned by a function in the form of a tuple.

PYTHON LIBRARIES

VIVA QUESTIONS

1. Why do we organize our code in the form of functions, modules and libraries?

To easily access it and save ourselves from rewriting the same code again and again. It also makes our code compact and easy to debug.

2. What is a relationship between module, package and library?

Module is a file which contains python functions, global variables etc. It is nothing but .py file which has python executable code / statement.

Package is a collection of modules. Each package in Python is a directory which **MUST** contain a special file called `__init__.py`. This file can be empty, and it indicates that the directory it contains is a Python package, so it can be imported the same way a module can be imported.

Library is a collection of packages. There is no difference between package and python library conceptually. Some examples of library in Python are:
Python standard library containing math module, random module, statistics module etc.

3. How do we create modules in Python?

Modules in Python are simply Python files with a .py extension. The name of the module will be the name of the file. A Python module can have a set of functions, classes or variables defined and implemented.

4. What is the difference between docstrings and comments?

Docstrings are similar to commenting, but they are enhanced, more logical, and useful version of commenting. Docstrings act as documentation for the class, module, and packages.

On the other hand, Comments are mainly used to explain non-obvious portions of the code and can be useful for comments on Fixing bugs and tasks that are needed to be done.

Docstrings are represented with opening and closing quotes while comments start with a # at the beginning.

The comments cannot be accessed with the **help** function while docstring can be accessed with the **help** function.

5. What are different ways of importing modules in Python?

import <module_name> - This import the entire module and all functions inside that module can be used in our program.

import <module_name> as <alias_name> - An alias name can also be given to a module. This alias name is used to invoke the functions stored inside that module.

from <module_name> import <object_name> - This import only the specified functions/objects. No other function/object besides the imported one can be used in the program.

6. What is the importance of `__init__.py` file?

Each package in Python is a directory which MUST contain a special file called `__init__.py`. This file can be empty, and it indicates that the directory it contains is a Python package, so it can be imported the same way a module can be imported.

FILE HANDLING

VIVA QUESTIONS

1. What is the difference between files and variables of other data types (like list, dictionary etc.) in terms of data storage ?

Variables store data in RAM which remains in memory as long as the program is running and gets erased the moment our program gets over. This happens because RAM is volatile in nature.

Files store the data on secondary storage devices like hard disk. The data stored on secondary storage devices is permanent in nature and does not get erased when the program gets over. When input/output operations are performed on files data gets transferred from secondary storage to RAM and vice versa.

2. Compare Text, Binary and CSV files.

Text files	Binary files	CSV files
Text files are sequence of lines, where each line includes a sequence of characters. All lines are terminated by a special character, called the EOL or End of Line character. Text files are stored in human readable form and they can also be created using any text editor.	Binary files deal with non-text files such as images or exe and store data in binary format i.e. in the form of 0's and 1's which is understandable by the machine. So when we open the binary file in our machine, it decodes the data and displays in a human-readable format.	CSV (Comma Separated Values) is a simple file format used to store tabular data. They are a convenient way to export data from spreadsheets and databases as well as import or use it in other programs. These files are saved with the .csv file extension. In general, the separator character is called a delimiter, and other popular delimiters include the tab (\t), colon (:) and semi-colon (;) characters.
Examples of text files are: Web standards: html, XML, CSS, JSON etc. Source code: c, app, js, py, java etc. Documents: txt, tex, RTF etc.	Binary files can range from image files like JPEGs or GIFs, audio files like MP3s or binary document formats like Word or PDF.	

3. What is the difference between a and w modes?

'w'	Open a file for writing. Creates a new file if it does not exist or truncates the file if it exists.
'a'	Open for appending at the end of the file without truncating it. Creates a new file if it does not exist.

4. What is the difference in opening a file using open() function or using with statement?

Using **with** ensures that all the resources allocated to file objects gets deallocated automatically once we stop using the file.

5. What is the need of closing files?

Closing a file frees up the resources that were tied with the file. Before closing a file, any material which is not written in file, is flushed off i.e., written to file. So, it is a good practice to close the file once we have finished using it.

6. What is the difference between the write() and writelines() methods used to write data in a file?

The write() function write a single string at a time and writelines() methods can be used to write a sequence of strings.

7. What is the difference between the read() and readlines() methods used to read data from a file?

The readline() method reads one line(i.e. till newline) at a time from a file and returns that line. It reads the file till newline including the newline character. The file is read sequentially from top i.e. first call to readline() method returns first line, second call returns second line till end of file. The readline() method returns an empty string when the end of file is reached.

The **readlines()method** reads the entire content of the file in one go and returns a **list of lines** of the entire file. This method returns an empty value when an end of file (EOF) is reached.

8. What is the purpose of read(n) method?

This method reads a string of size (here n) from the specified file and returns it. If size parameter is not given or a negative value is specified as size, it reads and returns up to the end of the file. At the end of the file, it returns an empty string.

9. What do you understand by the terms pickling and unpickling?

To store data in binary files, Pickle module is used. Pickle module is used to store any kind of object in file as it allows us to store python objects with their structure. Pickle module supports two major operations: **Pickling** and **Unpickling**.

- Pickling is the process whereby a Python object is converted into a byte stream.

- Unpickling is the process by which a byte stream is converted back into the desired object.

The process of pickling and unpickling a Python data object is known as ***object serialization***.

10. Name the methods which are used to write and read into/form a binary file.

The dump method of pickle module is used to write objects to binary file. The load method of pickle module is used to read the object from the binary file.

11. Name two important functions of CSV module which are used for reading and writing.

The two important functions of CSV module are:

csv.reader()	returns a reader object which iterates over lines of a CSV file
csv.writer()	returns a writer object that converts the user's data into a delimited string. This string can later be used to write into CSV files using the writerow() or the writerows() function.

STACKS

VIVA QUESTIONS

1. What is a stack? Give some real-life examples.

Stack is a data structure that provides temporary storage of data in such a way that the element stored last will be retrieved first. This method is also called **LIFO – Last In First Out**. In real life we can think of stack as a stack of copies, stack of plates, stack of rotis etc.

2. Which function is used to push an element in stack?

The `append()` function.

3. Which function is used to pop an element in stack?

The `pop()` function

4. Which data structure is used to implement stacks in Python?

List

5. Give applications of stack.

The applications of stack are as follows:

- When a program executes, stack is used to store the return address at time of function call. After the execution of the function is over, return address is popped from stack and control is returned back to the calling function.
- Converting an infix expression to postfix operation and to evaluate the postfix expression.
- Reversing an array, converting decimal number into binary number etc.

6. What do you mean by Overflow and Underflow in the context of stacks?

Overflow: trying to insert more data when the size of the stack has reached its maximum limit.

Underflow: trying to delete more data when the stack is empty.

MY SQL

VIVA QUESTIONS

1. What is DDL and DML?

DDL (Data Definition Language): All the commands which are used to create, destroy, or restructure databases and tables come under this category. Examples of DDL commands are - CREATE, DROP, ALTER.

DML (Data Manipulation Language): All the commands which are used to manipulate data within tables come under this category. Examples of DML commands are - INSERT, UPDATE, DELETE.

2. What is RDBMS?

RDBMS: A DBMS used to manage Relational Databases is called an RDBMS (Relational Data Base Management System). Some popular RDBMS software available are: Oracle, MySQL, Sybase, Ingress.

3. What is data inconsistency?

Data inconsistency occurs when same data present in two different tables does not match.

4. What is a relation?

Relation/Table: A table refers to a two-dimensional representation of data arranged in columns (also called fields or attributes) and rows (also called records or tuples).

5. What is cardinality and degree?

Cardinality: Total number of rows in a table is called the cardinality of the table.

Arity/Degree: Total number of columns of a table is called the Degree of the table.

6. What is the difference between primary key, candidate key and alternate key?

Primary Key: The group of one or more columns used to uniquely identify each row of a relation is called its Primary Key.

Candidate Key: A column or a group of columns which can be used as the primary key of a relation is called a candidate key because it is one of the candidates available to be the primary key of the relation.

Alternate Key: A candidate key of a table which is not made its primary key is called its Alternate Key.

7. What is selection and projection?

The SELECTION operation is a horizontal subset of table/relation and is used to choose the tuples(rows) from a relation that satisfies a given condition. It is denoted by the symbol σ (sigma).

The PROJECTION operation is a horizontal subset of table/relation and used to choose the attributes(columns) from a relation that are given in the attribute list. It is denoted by the symbol Π (pi).

8. What are the different types of clauses used in where command?

CLAUSE/KEYWORD	USAGE
DISTINCT	Used to <i>display distinct values (removes duplicate values)</i> from a column of a table.
WHERE	Used to <i>specify the condition</i> based on which rows of a table are displayed.
BETWEEN	Used to define the <i>range of values</i> within which the column values must fall to make a condition true. Range includes both the upper and the lower values.
IN	Used to select values that match any value in a <i>list of specified values</i> .
LIKE	Used for <i>pattern matching</i> of string data using wildcard characters % and _. % (percentage): It is used to represent any sequence of zero or more characters. _ (underscore): It is used to represent a single character.
IS NULL	Used to select rows in which the specified column is NULL (or is NOT NULL).
ORDER BY	Used to display the selected rows in ascending or in descending order of the specified column/expression.
GROUP BY	Group by clause is used when we need <i>to group the data of the table</i> based on certain type.

9. What is a cartesian product?

Cartesian product of two tables is a table obtained by pairing each row of one table with each row of another table. The table obtained has
columns = sum of the columns of both the tables
rows = product of the rows of both the tables
It is represented by the symbol X.

10. What is a UNION?

Union of two tables is a table in which the number of columns is same as the number of columns of the two tables and number of rows is the sum of the number of rows of both the tables.

Union operation can be applied on two tables only if the tables have same number and type of columns.

11. Give a command to insert a new column into a table? Alter table

12. Give a command to delete a column from a table? Alter table

13. Give a command to delete a row from a table? Delete from

14. Give a command to insert a new row into a table? Insert into

15. What is a difference between database and table?

Database is a collection of related tables

Table is a collection of related data in the form of rows and columns

16. What is the difference between update and alter command?

ALTER command is a Data Definition Language Command. UPDATE command is a Data Manipulation Language Command.

ALTER Command add, delete, modify the attributes of the relations (tables) in the database. UPDATE Command modifies one or more records in the relations.

17. What happens when the drop table command is executed?

All the records as well as the entire structure of the table is deleted.

18. In SQL can MAX function be applied to date and char type data?

Yes

19. What are aggregate functions?

Aggregate functions work on multiple rows. There are 5 types of aggregate functions:

Aggregate function	Purpose
MAX()	To find the maximum value under the specified column

MIN()	To find the minimum value under the specified column
AVG()	To find the average of values under the specified column
SUM()	To find the sum of values under the specified column
COUNT()	To count the values under the specified column

20. Difference between count() and count(*)

When the argument is a column name or an expression based on a column, COUNT() returns the number of non-NULL values in that column.

If the argument is a *, then COUNT() counts the total number of rows satisfying the condition, if any, in the table.

21. What is the purpose of group by clause?

Group by clause is used together with the SQL SELECT statement to group the data of the table based on certain type. It arranges identical data into groups. It returns only one single row for every grouped item.

22. What is the difference between where & having?

WHERE is used to put a condition on individual row of a table whereas HAVING is used to put condition on individual group formed by GROUP BY clause in a SELECT statement.

23. What is equi join?

When we extract data from two tables, they must have one column which is present in both the tables. An equi join of two tables is obtained by putting an equality condition on the Cartesian product of two tables.

This equality condition is put on the common column of the tables and is called equi join condition.

24. What is a foreign key?

Foreign key is a column in one table which is the primary key of another table.

For eg. The column Deptno is the primary key of dept table and the foreign key of emp table.

It is important that no entry should be made in the emp table in which deptno does not belong to dept table ie we cannot write deptno in emp table which does not exist in dept table.

MySQL-PYTHON CONNECTIVITY

VIVA QUESTIONS

1. What is MySQL Connector/Python?

MySQL Connector/Python is a standardized database driver provided by MySQL. It is used to access the MySQL database from Python.

2. What are the five major steps for connecting MySQL and Python?

There are five major steps for connecting MySQL and Python.

- Import MySQL connector
- Open a connection to a database
- Create a cursor object
- Execute a query
- Close the connection

3. How do we create a connection object?

Connection object is created with the help of connect() function. The connect() function of mysql.connector package is used to establish a connection to MySQL database. For example:

```
conn1 = mysql.connector.connect(host='localhost', database='test', user='root', password='tiger')
```

Here, mysql.connector.connect is a MySQL-python library function that creates the connection and returns a connection object, conn1. It connects to a specific MySQL database (test in this case) using the given host (localhost in this case), username (root in this case) and password (tiger in this case).

4. How do we create a cursor object?

The connection object returned by the connect() method is used to create a cursor object. You can create a cursor object using the cursor() method of the connection object/class. The cursor object is used to execute statements to perform database operations. For example:

```
cursor1 = conn1.cursor()
```

Here, cursor1 is a cursor object created using connection object conn1 using cursor() method.

5. How do we execute SQL query through Python?

To execute SQL queries through Python, cursor object is used along with execute() method. For example:

```
cursor1.execute("select * from emp;")
```

Here, cursor1 is a cursor object which uses execute method to run the SQL query.

The sql query is given in the form of a string. The output of the SQL query is stored in the cursor object in the form of a result set.

6. What is the difference between fetchall() and fetchnone() methods?

The fetchall() method fetches all rows of a result set and returns a list of tuples.

The fetchnone() method returns a single record as a list/ tuple and None if no more rows are available.

7. What is the purpose of rowcount parameter?

It returns the number of rows affected by the last execute method for the same cur object.