**Assignament**

**1.What is devops ?**

**Ans.** Devops is a process of delivering the product or project by ensuring automation in place by ensuring the quality with continuous monitoring and continuous testing

**2.Why devops?**

**ans.** DevOps is a way of working that brings **developers** (Dev) and **operations** (Ops) teams together to deliver software faster, more efficiently, and with fewer errors. It focuses on **collaboration, automation, and continuous improvement**.

What devops solves is developers write the code and operations team deploy and maintain it .this separates communication,delays, and errors.devops bridges the gap

* Faster delivery of updates and new features
* Easier to respond to changes of the customers needs
* Improved reliability and fewer bugs

**3.What is need of devOps?**

Ans:- devops is needed because it

* To speed up software delivery
* To reduce errors
* Makes system more adoptable for changes
* Improves team work and customers satisfaction

**4.What are the devOps tools?**

Ans:-

1. For planning/coding:- git,jira
2. For building the code:-maven,gradle,apache ant
3. For testing:- selenium testing with python
4. For integration:- Jenkins(ci/cd)
5. For deployment:- dockers,kubernates
6. For operations :- ansible (managing tools)
7. Monitoring:- teraform

**5.Difference b/w break continue and pass ?**

**1.break:-**

Functionality is used to terminate the loop (completely exit the loop)

When you want to stop the loop execution immediately based on a condition

Example:-

for i in range(5):

if i == 3:

break # Exits the loop when i is 3

print(i)

**2.countinue:-**It is used to **skip the current iteration** of the loop and move to the next iteration.

When you want to skip some specific conditions but keep the loop running.

Example:-

for i in range(5):

if i == 3:

continue # Skips printing when i is 3

print(i)

**3.pass:-**It is a **placeholder** that does nothing. It is used when a statement is syntactically required but no action is needed.

When you're writing code that you want to implement later or to avoid errors for an empty block of code.

Example:-

for i in range(5):

if i == 3:

pass # Does nothing

print(i)

**6.d/w remove , delete, pop and write an example program in python to demonstrate 3 of them.?**

Ans:-

|  |  |  |
| --- | --- | --- |
| Method | Usecase | Effect |
| remove() | Removes the first occurrence of specified value from list | Only removes the value,doesn’t requires an index |
| del | Deletes items in a specific index or the entire object | Can delete a list element by index,a slice,or entire list |
| Pop() | Removes and return in an items at specified index(default:last). | Requires an index(optional)if no index is provided ,it removes the last element |

# Initializing a list

my\_list = [10, 20, 30, 40, 50, 60]

# Using remove() - Removes a specific value

my\_list.remove(30) # Removes the first occurrence of 30

print("After remove(30):", my\_list)

# Using del - Deletes an item by index

del my\_list[2] # Deletes the element at index 2

print("After del my\_list[2]:", my\_list)

# Using pop() - Removes and returns an element

removed\_item = my\_list.pop(1) # Removes and returns the element at index 1

print("After pop(1):", my\_list)

print("Popped item:", removed\_item)

Output:-

After remove(30): [10, 20, 40, 50, 60]

After del my\_list[2]: [10, 20, 50, 60]

After pop(1): [10, 50, 60]

Popped item: 20

remove( ) : you must specify the value u want to remove; it raises an error if the value is not found

del:(delete):deletes by index or slices,it can be delete the entire list if used without an index

Pop( ): returns the removed element useful when you need to use the removed value later

**7.D/w append and extend..?**

Ans:-

append ( ) adds a single element to the end of the list.

The entire element is added as one item,it it is list or another iterate

Extend( ) adds multiple elements from iterables

Ex:-another list,tuple,string)to the end of the list

The elements are iterate and not as a single element added as individual element

Example:-

Using append( ):-

list1 = [1, 2, 3]

list1.append([4, 5]) # Appending a list as a single element

print("Using append:", list1)

Output:-Using append: [1, 2, 3, [4, 5]]

The list 4,5 added as a single item at the end of the list1

using extend( ):-

list2 = [1, 2, 3]

list2.extend([4, 5]) # Extending the list with elements from another list

print("Using extend:", list2)

Using extend: [1, 2, 3, 4, 5]

The elements 4 and 5 added from second list added individually to list 2

Key diffrence:-

* Append adds a single element
* Any data type
* Only increases by 1
* Extend adds multiple elements from iterable
* Only iterate one example list,tuple,string---etc
* Increases by number of elements added

**8.Write a python program to print the element in the array with negative elements (ex : print the element which is present in -2 positions) ..?**

my\_list =[10,30,50,70,20,15]  
  
negetive\_index\_element = my\_list[-2]  
  
print("element at -2 postion is:",negetive\_index\_element)

Output:-element at -2 postion is: 20

1. **Explain about lambda function?**

Ans:- in python lambda function is small anonymous function that is defined using lambda.unlike regular functions used the key word “def”, lambda functions are single expression functions it means the code consists of single line only.

Example:-

add = lambda x, y: x + y

print(add(5, 3)) # Output: 8

**10.What is cloud ..? explain top 10 cloud providers ..?**

Ans:-in simple terms cloud refers to cloud computing ,which is delivery of computing services such as storage server databases networking software

And more over the cloud instead of host(amazon web services),Microsoft azure or google cloud.

The top 10 cloud providers are:-

1. amazon web services (aws):- aws has market share of 31%
2. Microsoft azure :- holds 24% of market share
3. Google cloud platform(gcp):- it holds 11.5% of market share
4. Alibaba cloud:- alibaba having 4% market share
5. Ibm cloud:-accounts 2.5% market share
6. Oracle cloud:- holds 3% of market share
7. Tencent cloud:-holds 2%
8. OVHcloud:-less then 1%
9. Digital ocean:-less then 1%
10. Lincode(akamai):- less then 1%

**11.what is cloud computing and explain types ..?**

Ans :-cloud computing is like study of cloud servers

1. Public cloud
2. Private cloud
3. Hybrid cloud

Public cloud:- Cloud services are delivered over the internet and shared across multiple organizations. Resources are owned and operated by third-party cloud providers.

Examples:- aws,google cloud,microsoft azure

Private cloud:- private cloud means it is only for particular organization.it can be hosted in particular premises only but infrastructure dedicated to single organization.

Example:- vmware,openstack

Hybrid cloud:-

Hybrid cloud means combines 2 organizations or combines private and public cloud.

The data can be shared within the 2 companies only.

**12. what are the different levels of cloud storage's ..?**

Ans:-

* cloud storage level include object,file,block and cold storage.
* Each level caters to specific use cases such as performance,scalability or cost efficiency

**Object storage:-** the purpose of object storage is to storing unstructured data like images videos and backups.

**File storage:-** the purpose of file storage is managing and sharing the files across multiple devices and users.in file storage the structure will be like files and directories

**Block storage:-** this is a high performance storage for databases and virtual machines

Data is stored in fixed-sized blocks and accessed quickly.

**Cold storage:-**archiving and storing infrequently accessed data.it is low cost but slower access times.

**13. explain the architecture of service model with real time examples?**

Ans:- cloud computing is categorized into four primary service models

They are :-

1. **infrastruture as a service (iaas):-**

* provides virtualized computing resources like servers,storage and networking
* Users manage the os,applications , and data,while the provider handles hardware and virtualization

Realtime examples :-

A company uses aws to host e commerce website scaling server resources based on traffic and demand

Google cloud a start up uses to host virtual machines for app testing

1. **platform as a service (paas)**

* Provide a platform for developers to build deploy and manage applications
* Te provide manages infrastrutre ,os,middelware,leaving the user to focus on development

Example:-heroku: developers use heroku to deploy and scale a web application without worrying about server configuration

Google app engine:- a company can creates a scalable mobile app backend using google app engine

1. **software as a services (saas)**

* delivers software applications over the internet
* Users access the software through a web browser while the provider manages everything including infrastructure and data

Example:-

Google work space: a company uses google docs and gmail for collaboration

Salesforce: a business manages its customer relationships through salesfoce CRM

**4.Function as a Service (Faas)** is a cloud computing service model that allows users to execute small, modular pieces of code (functions) in response to specific events, without worrying about the underlying infrastructure.

**14.explain deployment model?**

Ans:- the complete server moved from local to global is called deployment

### ****1. Public Cloud****

* Services are hosted by a third-party provider and shared among multiple organizations or individuals.
* **Examples**: AWS, Microsoft Azure, Google Cloud.

### ****2. Private Cloud****

* Cloud infrastructure is dedicated to a single organization and is either hosted on-premises or by a third-party provider.
* **Examples**: VMware Private Cloud, OpenStack.

### ****3. Hybrid Cloud****

* A mix of private and public clouds, allowing data and applications to be shared between them.
* **Examples**: AWS Outposts, Microsoft Azure Stack..

### ****4. Community Cloud****

* Shared infrastructure among multiple organizations with common interests, such as healthcare or education.
* **Examples**: CERN OpenStack for research collaborations.

**15.mention few differences b/w AWS , MICROSOFT AZURE , AND GCP?**

Ans:-

**amazon web services:-**

* Aws is a top provider of the cloud it aquires globally 31% share
* Aws offered compute,storage,databases,ai,etc---
* Available in 26 geographical regions
* It is an elastic compute code
* It has simple storage service(s3)
* The strength of aws is high scalability,large ecosystem and flexible pricing
* Aws popular for e-commers platforms,startup,enterprise-level applications

**Microsoft azure:-**

* Microsoft azure is a second largest cloud provider with 24% of market share
* It is similar to aws with strong enterprise focus (windows server,active directory)
* Azure available for 60+ regions
* Azure virtual mechines
* azure is a blob storage
* Strong integration with microsoft tools,hybrid cloud solutions
* Windows based work loads , hybrid and enterprise solutions

**Google cloud platform(gcp):-**

* gcp is the third highest cloud producer with 11.5% of market share
* gcp is strong in data analytics ,mechine learning,and open source tools
* Available in 34 regions
* Google compute engine (GCE)storage
* google cloud storage
* Leader in AI,mechine learning and data analytics
* Big data analysis,AL/ML applications ,server less computing

1. **Write a python program to print your name , designation, technology 100 times ?**

name = "jeevan nagendra"  
designation = "trainee"  
technology = "devops"  
  
for i in range(100):  
 print(name,designation,technology)

**17. d/w agile and waterfall models..?**

Ans:-

**Water fall model:-**this is a old traditional model that we have to develop first and test after the development and we have to give to the client

**Agile model:-**The **Agile Model** is a **software development approach** that emphasizes flexibility, collaboration, and continuous improvement. It focuses on delivering small, functional parts of the software (called increments) in **short cycles** called **sprints**, rather than delivering the entire project at the end.

In agile model requirements will be taken in between the development phase where in water fall model not accepting any changes or requirements in middle of the project

Agile model is low investment where in water fall model high investment

Waterfall model preferably for small projects

Time to deliver project is less in agile model compared to waterfall model

**18.explain about arithmetic an relational operators with example..**

Ans:

**Operators:-**

**Types of operators:-**

**1.** Arithmetic Operators:- Perform mathematical operations.

EXAMPLES:-

**`+`, `-`, `\*`, `/`, `//`, `%`, `\*\*`.**

a=10

b=20

Print(a+b):- 30 #

Print(a-b):- 10 #

Print(a\*b):- 200#

Print(a/b):-0.5 #

Print (a\*\*b) :- print a to the power of b

1. Comparison operators :-compare values and return a boolean

**-`<`,`>`,`<=`,`>=`,`==`,`!=`**

EXAMPLES:- a=10 b=12

print a>b :- false

Print a<b:- true

Print a<=b=true

Print a>=b=true

Print a==b= false

a=[1,2]

b=a

Print (a is b) # true

**19.compares b/w set, list, tuple and dictionary ?**

Ans:-

Set:-

* set is a unorderd collection of unique element “{}”
* Set id mutable
* Set will not allow duplicates
* Uses loops no indexing

List:-

* List is an ordered and mutable collection of elements “[ ]”
* List is mutable
* List will allow duplicates
* List will access through indexing and slicing

Tuple:-

* Tuple is ordered and immutable collection of elements “( ) ”
* Tuple is immutable
* Tuple will allow duplicates
* Tuple will access through indexing and slicing

Dictionary:-

* Dictionary is an unordered collection of key values
* Dictionary is mutable
* Keys will not allowed any changes but values changes will be allowed
* Dictionary is unordered
* Dictionary will be access via keys

Example:-

{'key1': 'value1', 'key2': 'value2'}

**20.Explain the phases involved in software development life cycle..?**

Ans:-The Software Development Life Cycle (SDLC) outlines the process for designing, developing, and maintaining software. It ensures systematic and efficient software delivery.

1. **Planning phase:-** to define the project scope,objectives and feasibility
2. **Requirement analysis:-** to gather detailed requirements from stakeholders
3. **Design:-** create architectural and detail designs for the software
4. **Implementation:-** convert the design into functional software
5. **Testing:-** to ensure the software is defect free and meets requirements
6. **Deployment:-** release the software to the production environment
7. **Maintenance :-** Ensure the software remains functional and up-to-date.

**21.what is database ..? what is dbms and explain types of dbms ..?**

Ans:-A **database** is an organized collection of data that can be easily accessed, managed, and updated. It allows users to store and retrieve data efficiently.

A **DBMS** is software that helps users interact with a database. It allows users to store, retrieve, update, and manage data securely and efficiently.

* **Examples**: MySQL, Oracle, MongoDB, PostgreSQL.

**Hierarchical DBM**S:-Organizes data in a tree-like structure, with parent-child relationships.

**Network DBMS:-**Represents data as a graph, allowing multiple parent-child relationships

#### ****Relational DBMS (RDBMS):-****Organizes data into tables (rows and columns) with predefined relationships

**Object-Oriented DBMS (OODBMS)**:-Stores data in objects, similar to object-oriented programming.

**NoSQL DBMS:-** Designed to handle unstructured and semi-structured data.

1. **what are ddl and dml commands mention example of each one ..?**

In SQL, commands are categorized into different types based on their functionality. **DDL** and **DML** are two primary categories.

**DDL COMMANDS:-** DDL commands are used to define, create, and manage database objects like tables, schema , and indexes. These commands directly affect the database structure.

Create:-create a new database object

Alter:-modifies an existing database object

Drop:-delete an object from database

Truncate:-remove all the rows from a table

**DML COOMANDS:-**DML commands are used to manipulate data stored in database tables. These commands only affect the data within the table, not the structure.

Insert :- add new data to table

Update:-modifies existing data in a table

Delete:-removes data from the table

Select:-retrieves the data from the table

**23. what are clauses and explain with example..?**

Clauses in SQL are the building blocks of SQL statements that define the purpose and scope of a query. Clauses modify or provide additional functionality to SQL commands such as SELECT, INSERT, UPDATE, and DELETE

**KEY CLAUSES :-**

1. **SELECT CLAUSE:-**Used to retrieve specific columns or all columns from a table.

Example;- SELECT Name, Age FROM Students;

1. **WHERE Clause:-** Filters records based on a specified condition

Example:-SELECT \* FROM Students WHERE Age > 18;

1. **GROUP BY Clause**:-Groups rows that have the same values in specified columns, often used with aggregate functions.

Example:-

SELECT Department, COUNT(\*) AS StudentCount

FROM Students

GROUP BY Department;

1. **HAVING Clause**:-Filters groups of data created by the GROUP BY clause.

Example:-

SELECT Department, COUNT(\*) AS StudentCount

FROM Students

GROUP BY Department

HAVING COUNT(\*) > 10;

1. **ORDER BY Clause**:-Sorts the result set in ascending (ASC) or descending (DESC) order.

Example:-

SELECT \* FROM Students ORDER BY Age DESC;

1. **LIMIT Clause**:-Limits the number of rows returned by a query.

Example:-SELECT \* FROM Students LIMIT 5;

#### ****JOIN Clause:-****Combines rows from two or more tables based on a related column.

Example:-

SELECT Students.Name, Departments.DepartmentName

FROM Students

INNER JOIN Departments

ON Students.DepartmentID = Departments.ID;

1. **DISTINCT Clause:**-Removes duplicate rows from the result set.

Example:-SELECT DISTINCT Department FROM Students;

**24. explain the concept of joins with examples..?**

Ans:-in SQL, **joins** are used to combine rows from two or more tables based on a related column between them. They help retrieve data that is spread across multiple tables.

1. INNER JOIN:-Returns rows that have matching values in both tables

SELECT

s.student\_name,

c.course\_name

FROM

students s

JOIN

enrollments e

ON

s.students\_id = e.students\_id

JOIN

courses c

ON

e.course\_id = c.course\_id;

1. LEFT JOIN (or LEFT OUTER JOIN):-Returns all rows from the left table and matching rows from the right table. If no match is found, NULL is returned for right table columns.

SELECT

u.user\_name,

COUNT(o.order\_id) AS total\_orders

FROM

users u

LEFT JOIN

orders o

ON

u.user\_id = o.user\_id

GROUP BY

u.user\_id, u.user\_name;

1. RIGHT JOIN (or RIGHT OUTER JOIN):-Returns all rows from the right table and matching rows from the left table. If no match is found, NULL is returned for left table columns.

SELECT

u.user\_name,

COUNT(o.order\_id) AS total\_orders

FROM

users u

RIGHT JOIN

orders o

ON

u.user\_id = o.user\_id

GROUP BY

u.user\_id, u.user\_name;

1. FULL JOIN (or FULL OUTER JOIN):-Returns rows when there is a match in either table. Non-matching rows will have NULL in columns from the table that lacks a match.

SELECT Students.Name, Departments.DepartmentName

FROM Students

FULL JOIN Departments

ON Students.DepartmentID = Departments.DepartmentID;

1. CROSS JOIN:-returns the Cartesian product of both tables (every row from the first table is combined with every row from the second table).

SELECT Students.Name, Courses.CourseName

FROM Students

CROSS JOIN Courses;

1. self join:-A table is joined with itself. Useful for hierarchical or relational comparisons within the same table.

SELECT E1.EmployeeName AS Employee, E2.EmployeeName AS Manager

FROM Employees E1

LEFT JOIN Employees E2

ON E1.ManagerID = E2.EmployeeID;

1. **create a trigger and explain..?**

A **trigger** is a special type of stored procedure in a database that is automatically executed (or "triggered") in response to certain events on a particular table or view. These events include **INSERT**, **UPDATE**, or **DELETE** operations.

CREATE TRIGGER salary\_verification

BEFORE INSERT ON emp\_salary

FOR EACH ROW

BEGIN

IF NEW.emp\_salary < 3000 THEN

SET NEW.emp\_salary = 2500;

END IF;

END $$

DELIMITER ;