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1.PYTHON THEORY

1.) Python is **a powerful, flexible, and easy-to-use language.**

-Features that makes Python widely adopted for diverse applications development.

- Third-Party Modules.
- Easy to learn
- Presence of Libraries
- User-Friendly data structures
- Open Source and free
- Huge-community support

2.) **Count()** is an inbuilt function in Python that returns the count of how many times a given object occurs in a [List](#). The count() function is used to count elements on a list as well as a string.

Example:

```
numbers = [2, 3, 5, 2, 11, 2, 7]
count = numbers.count(2)
print('Count of 2:', count)
```

Output: Count of 2: 3

3.) The ord() function returns the number representing the unicode code of a specified character.

Example:

```
x = ord("A")
print(x)
```

Output: 65

The chr() method converts an integer to its unicode character and returns it.

Example:

```
print(chr(97))
```

Output: a

```
4.)x = "2020-11-10_sales.csv"
print(x[0:16])
```

5.) The important characteristics of Python lists are as follows:

- Lists are ordered.
- Lists can contain any arbitrary objects.
- List elements can be accessed by index.
- Lists can be nested to arbitrary depth.
- Lists are mutable.
- Lists are dynamic.

Tuples are identical to lists in all respects, except for the following properties:

- Tuples are defined by enclosing the elements in parentheses (()) instead of square brackets ([]).
- Tuples are immutable.

6.) In Python, the difference between the **append()** and **extend()** method is that:

- The **append()** method adds a single element to the end of a list.
- The **extend()** method adds multiple items.

Example:

Add a single number to the end of a list of numbers: (append())

```
a = [1, 2, 3]
a.append(4)
print(a)
```

Output: [1, 2, 3, 4]

Or

```
students = ['mary', 'anne', 'teresa', 'joan']
girls_name = input('What is the name of the new girl in the science club? ')
students.append(girls_name)
print(students)
```

Output: ['mary', 'anne', 'teresa', 'joan', 'rita']

Example: extend()

```
a = [1, 2, 3]
a.extend([4, 5])
print(a)
```

Output: [1, 2, 3, 4, 5]

By the way, the **extend()** function argument does not need to be a list.

7.) If you don't handle the condition correctly in a function, it's possible to

create an infinite loop.

For example:

```
i = 0
while i < 10:
    print(i)
```

This print out the numbers 0 to 9, and there is no `i += 1` at the end of the loop body. This means that `i < 10` will always be true and the loop will never end.

In PyCharm, click the Stop button on the toolbar, or press ⌘ F2 for stopping the program/infinite loop.

We need to check the conditionals of the given statement to prevent the infinite loop.

8.). **Parameters** are defined by the names that appear in a function definition, whereas **arguments** are the values actually passed to a function when calling it. Parameters define what types of arguments a function can accept.

9.) Example: We can use `append()`

```
my_dict = {"Name":[],"Address":[],"Age":[]};

my_dict = {"Name":[],"Address":[],"Age":[]};
my_dict["Name"].append("Guru")
my_dict["Address"].append("Mumbai")
my_dict["Age"].append(30)
print(my_dict)
```

Output : {'Name': ['Guru'], 'Address': ['Mumbai'], 'Age': [30]}

10.)

Immutable:

Booleans, Integers, Floats, Strings, and Tuples

Mutable:

List, Set

CODING:

2.

with `open('my_file.txt')` as fh:

```
text = fh.read()
text = text.upper()
```

```
3. a = "Apple"[::-1]
print(a)
```

```
4.
animal_list = ["cat", "horse", "elephant", "dog"]
longest_string = max(animal_list, key=len)
print(longest_string)
```

```
5.
print("Please select operation")
print("1.Add\n")
print("2.Subtract\n")
print("3.Multiply\n")
print("4.Divide\n")
```

```
# input choice
select=int(input("Select operations form 1, 2, 3, 4: "))
```

```
if select==1:
    a=int(input("Enter first number:"))
    b=int(input("Enter second number:"))
    c=a+b
    print("Sum = ",c)
elif select==2:
    a=int(input("Enter first number:"))
    b=int(input("Enter second number:"))
    c=a-b
    print("Difference = ",c)
elif select==3:
    a=int(input("Enter first number:"))
    b=int(input("Enter second number:"))
    c=a*b
    print("Product = ",c)
elif select==4:
    a=int(input("Enter first number:"))
    b=int(input("Enter second number:"))
    c=a/b
    print("Quotient = ",c)
else:
    print("Invalid Option")
```

6.)MySQL Theories

1.)MySQL is an open-source relational database management system. As with other relational databases, MySQL stores data in tables made up of rows and columns.

2.) CHAR which is used to store character string of fixed length specified. If the length of string is less than set or fixed length then it is padded with extra blank spaces so that its length became equal to the set length.

VARCHAR which is used to store character string of variable length but maximum of set length specified. If the length of string is less than set or fixed length then it will store as it is without padded with extra blank spaces.

3.) There are two wildcards often used in conjunction with the LIKE operator:

- The percent sign (%) represents zero, one, or multiple characters
- The underscore sign (_) represents one, single character

4.) The **WHERE** clause is used in the selection of rows according to given conditions whereas the **HAVING** clause is used in column operations and is applied to aggregated rows or groups. Also, we cannot use the HAVING clause **without** SELECT statement whereas the WHERE clause can be used with SELECT, UPDATE, DELETE, etc.

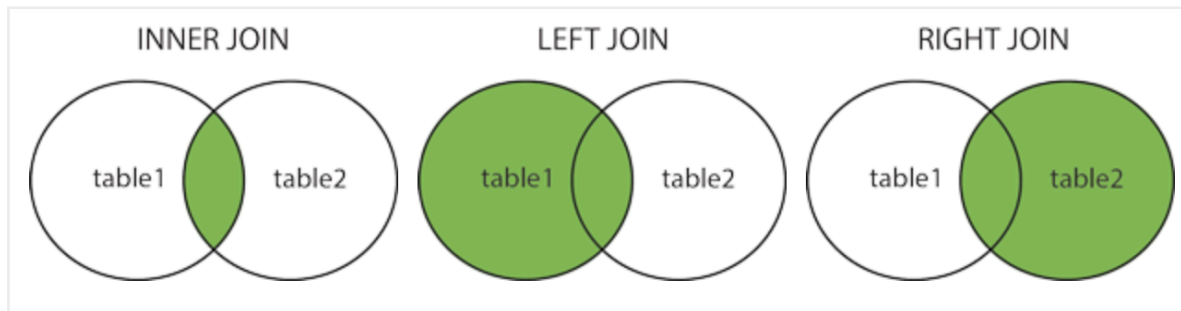
5.) The CHECK constraint is used to limit the value range that can be placed in a column.

Example: The CHECK constraint ensures that the age of a person must be 18, or older:

```
CREATE TABLE Employee (  
    ID int NOT NULL,  
    LastName varchar(255) NOT NULL,  
    FirstName varchar(255),  
    Age int,  
    CHECK (Age>=18)  
);
```

6.) A JOIN clause is used to combine rows from two or more tables, based on a related column between them.

- (INNER) JOIN: Returns records that have matching values in both tables
- LEFT (OUTER) JOIN: Returns all records from the left table, and the matched records from the right table
- RIGHT (OUTER) JOIN: Returns all records from the right table, and the matched records from the left table



7.) COMMIT in SQL is a transaction control language that is used to permanently save the changes done in the transaction in tables/databases.

ROLLBACK in SQL is a transactional control language that is used to undo the transactions that have not been saved in the database. The command is only been used to undo changes since the last COMMIT.

8.) COUNT() is used to count the number of rows for a given condition. COUNT() works on numeric as well as non-numeric values.

SUM() is used to calculate the total sum of all values in the specified numeric column.

Difference is sum() calculates the sum of all values in the set but count() returns the total number of values in the set.

9.) Stored Procedures is a prepared SQL code that you can save, so the code can be reused over and over again.

an SQL query that you write over and over again, save it as a stored procedure, and then just call it to execute it.

10.)

Clustered index is created only when both the following conditions satisfy –

1. The data or file, that you are moving into secondary memory should be in sequential or sorted order.
2. There should be a key value, meaning it can not have repeated values.

Non-clustered index-

The data is stored in one place, and index is stored in another place. Since, the data and non-clustered index is stored separately, then you can have multiple non-clustered index in a table.

In non-clustered index, index contains the pointer to data.

Difference:

Clustered Index:

A table can have only one clustered index.

Non clustered Index:

A table can have multiple non-clustered index.

CODING:

MySQL

```
9.) CREATE TABLE shopping (  
    Number INT,  
    Item VARCHAR(200),  
    Price DECIMAL(10,2)  
);
```

```
10.) CREATE TABLE shopping (  
    Number INT,  
    Item VARCHAR(200),  
    Price DECIMAL(10,2)  
);
```

```
INSERT INTO shopping (Number, Item, Price)  
VALUES ('1', 'Salad', '10.00');
```