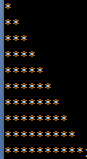
**Python Various exercises**

1. Explain break, continue and pass statement with suitable example of each.
2. Differentiate between List, Tuple & Set with suitable examples of each.
3. . Explain any three collection data types of Python with suitable examples of each.
4. Explain count() and index() methods of list with suitable examples of each.
5. Explain insert() and remove() methods of list with suitable examples of each.
6. Explain reverse() and remove() methods of list with suitable examples of each.
7. a) Develop a program to find the largest among three numbers.
8. b) Write a python program to find the given year is leap or not
9. Write a python program to print factorial of a given number
10. What is module?
11. How to create a module? Explain with example
12. a Describe the any one regular expression
13. Explain package installation via pip
14. What is import statement in modules?
15. Explain about reading and writing files in python
16. Create Python codes to read a file
17. What is the difference between global and local scope?
18. What is the \_\_init\_\_() function in Python?
19. What is the difference between lists, tuples and sets?
20. Which collection does not allow duplicate members?
21. What is the output of the following code?

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#### How can you create and use a Module in Python?, Write sample codes of python module

1. What is pandas in python
2. How do you create a DataFrame from a dictionary?
3. How do you select a single column from a DataFrame?
4. How do you filter rows based on a condition?
5. How do you add a new column to a DataFrame?
6. How do you apply a function to a DataFrame column?
7. How do you group data by a column and calculate the mean?
8. Write Pythin code to print the below stars

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22) Differentiate what is class, what is Inheritance and what is polymorphism in python . Give on create one example for each

22) **After studying python module and Pandas do the below question(Mandatory for everyone and to be presented on Saturday )**

The X shop in Kigali city has compiled a record of customer transactions and requires a Python program for data mining. As a Python programmer, you are provided with a dataset of customer transactions stored in the below CSV file named transactions.csv. The file includes the following columns: CustomerID, TransactionDate, Amount, and Category

|  |  |  |  |
| --- | --- | --- | --- |
| **CustomerID** | TransactionDate | Amount | Category |
| 1001 | 2023-01-15 | 50.00 | Electronics |
| 1002 | 2023-03-22 | 200.00 | Clothing |
| 1001 | 2023-04-10 | 100.00 | Electronics |
| 1003 | 2022-12-05 | 50.00 | Books |
| 1002 | 2023-05-18 | 120.00 | Clothing |

1. Write python function to load the dataset into a pandas DataFrame.
2. Write code to calculate the total transaction amount for each customer.
3. Develop code to find the average transaction amount for each category.
4. Write code to filter the DataFrame to include only transactions that occurred in the year 2023.Create a new column called TransactionMonth that extracts the month from the TransactionDate.