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Q1. Why do we call Python as a general purpose and high-level programming language?

Python is a general-purpose language, it can be used to create a variety of different programs and can be used for any specific problems.

Python is a high-level programming language, it's easy for humans to understand.

Q2. Why is Python called a dynamically typed language?

In python it is not necessary to declare the type of the variable. It declares the type of the variable during the runtime of the program.

Python also takes care of memory management. So, Python is a dynamically typed language.

Q3. List some pros and cons of Python programming language?

Python is easy to learn and read.

Python improves the productivity.

Python has a large collection of libraries.

Python is open-source and has large community.

Q4. In what all domains can we use Python?

Python is used in various domains like Machine Learning, Web Development, Artificial Intelligence, Gaming, Data science, Scientific Programming etc.,.

Q5. What are variable and how can we declare them?

A variable is a name given to an object or function or class in python. To define a variable, we must follow the below properties.

1. A variable name must start with a letter or the underscore character.
2. A variable name cannot start with a number.
3. A variable name can only contain alpha-numeric characters and underscores (A-z, 0-9, and _).
4. Variable names are case-sensitive (name, Name and NAME are three different variables).
5. The reserved words(keywords) cannot be used naming the variable.

Q6. How can we take an input from the user in Python?

To take an input from the user we have to declare as `int(input("Enter data."))`.

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Q7. What is the default datatype of the value that has been taken as an input using input() function?

string is the default datatype that will be taken as input by using the input() function.

Q8. What is type casting?

converting the type of data by using type casting.

There are two types Implicit (conversion of data types is done automatically by Python) and Explicit type casting (conversion of data types is done by the user).

Q9. Can we take more than one input from the user using single input() function? If yes, how? If no, why?

Yes, it is possible to take more than one input using python.

eg: `x = list(map(int, input("Enter multiple values: ").split()))`

Q10. What are keywords?

Python keyword is specially reserved words with specific meanings and purposes.

They are different from built-in functions and types. Keywords are the building blocks of any python program.

Q11. Can we use keywords as a variable? Support your answer with reason.

Keywords are used to define the syntax of the coding. The keyword cannot be used as an identifier, function, and variable name.

Q12. What is indentation? What's the use of indentation in Python?

Indentation refers to the spaces at the beginning of a code line. Where in other programming languages the indentation in code is for readability only,

the indentation in Python is very important. Python uses indentation to indicate a block of code.

Q13. How can we throw some output in Python?

By using the print() function we can get the output in python

Q14. What are operators in Python?

An Operator is used to perform operations. There are different types of operators,

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Arithmetic, Assignment, Bitwise, logical, binary, unary, comparison, Identity, Membership operators.

Q15. What is difference between / and // operators?

/ is regular division(returns float) and // is floor division(returns int).

Floor division was introduced in python 3.

eg:

```
x = 5/2 #2.5
```

```
y = 5//2 #2
```

Q16. Write a code that gives following as an output.

```
```iNeuroniNeuroniNeuroniNeuron```  
x = "iNeuroniNeuroniNeuroniNeuron"
print(x)
```

Q17. Write a code to take a number as an input from the user and check if the number is odd or even.

```
x = int(input("Enter the value:"))
if x%2==0:
 print("Even Number.")
else:
 print("Odd Number.")
```

Q18. What are boolean operator?

Boolean operators are used to perform boolean operations.

Boolean or logical operators are AND, OR, and NOT.

The keywords and, or and not are the Python operators for these operations.

Q19. What will the output of the following?

```
```  
1 or 0
```

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0 and 0

True and False and True

1 or 0 or 0

'''

1 or 0 output: 1

0 and 0 output: 0

True and False and True output: False

1 or 0 or 0 output: 1

Q20. What are conditional statements in Python?

The if, elif and else statements are conditional statements in python, that is used to determine whether a block of code will be executed or not.

Q21. What is use of 'if', 'elif' and 'else' keywords?

If-elif-else statement is used in Python for decision-making i.e the program will evaluate test expression and

will execute the remaining statements only if the given test expression turns out to be true.

This allows validation for multiple expressions.

Q22. Write a code to take the age of person as an input and if age \geq 18 display "I can vote". If age is $<$ 18 display "I can't vote".

```
age = int(input("Enter age:"))
```

```
if age<=18:
```

```
    print("I can vote")
```

```
else:
```

```
    print("I can't vote")
```

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Q23. Write a code that displays the sum of all the even numbers from the given list.

```
``numbers = [12, 75, 150, 180, 145, 525, 50]``  
  
for number in numbers:  
    even_sum = 0  
    if number%2==0:  
        even_sum = even_sum+number  
  
print("The sum of all even numbers is:", even_sum)
```

Q24. Write a code to take 3 numbers as an input from the user and display the greatest no as output.

```
x = int(input("How many values do you want to print?"))  
  
y = []  
  
for i in range(1,x+1):  
    y.append(int(input("Enter the value")))  
  
max_ele = y[0]  
  
for i in y:  
    if i>=max_ele:  
        max_ele = i  
  
print(max_ele)
```

Q25. Write a program to display only those numbers from a list that satisfy the following conditions

- The number must be divisible by five
- If the number is greater than 150, then skip it and move to the next number

- If the number is greater than 500, then stop the loop

``

```
numbers = [12, 75, 150, 180, 145, 525, 50]
```

``

```
for number in numbers:
```

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```
if number > 500:
    break
elif number > 150:
    continue
elif number % 5 == 0:
    print(number)
```

Q26. What is a string? How can we declare string in Python?

String is a collection of alphabets, words or other characters. It is one of the primitive data structures and are the building blocks for data manipulation.

Python has a built-in string class named str . Python strings are "immutable" which means they cannot be changed after they are created.

Eg:

```
x = "Python Program"
print(type(x))
print(x)
```

Q27. How can we access the string using its index?

```
x = "Python Program"
print(x[0])
print(x[9])
```

Q28. Write a code to get the desired output of the following

```
string = "Big Data iNeuron"
desired_output = "iNeuron"
```

```
string[9::]
```

O/P: 'iNeuron'

Q29. Write a code to get the desired output of the following

```
string = "Big Data iNeuron"
desired_output = "norueNi"
```

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```
string[16:8:-1]
```

O/P: 'norueNi'

Q30. Reverse the string given in the above question.

```
string[::-1]
```

'norueNi ataD giB'

Q31. How can you delete entire string at once?

```
x = "Python"
```

```
del x
```

Q32. What is escape sequence?

The sequence of character which has indirect meaning when it placed within double quotes.

It will optimize some the repetitive tasks while programming.

Q33. How can you print the below string?

```
'iNeuron's Big Data Course'
```

```
print('iNeuron's Big Data Course')
```

Q34. What is a list in Python?

A list is a sequence datatype in python. A list is mutable i.e, we can modify the elements of the list.

Each element or value that is inside of a list is called an item. Just as strings are defined as characters between quotes,

lists are defined by having values between square brackets [].

Q35. How can you create a list in Python?

A list can be defined by using the square brackets [].

Eg: x = []

```
print(type(x))
```

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Q36. How can we access the elements in a list?

We can access the elements of the list by using print, indexing method and slicing method.

Eg: x = [5,4,8,7,9,2,5]

```
print(x[5])
```

```
print(x[0:5])
```

```
print(x)
```

Q37. Write a code to access the word "iNeuron" from the given list.

```
lst = [1,2,3,"Hi",[45,54, "iNeuron"], "Big Data"]
```

ANS: lst[4][2]

O/P: 'iNeuron'

Q38. Take a list as an input from the user and find the length of the list.

```
x = input("Enter a string:")
```

Enter a string:Python Programming

O/P: 'Python Programming'

Q39. Add the word "Big" in the 3rd index of the given list.

```
lst = ["Welcome", "to", "Data", "course"]
```

ANS: lst.insert(2, "Big")

```
print(lst)
```

O/P: ['Welcome', 'to', 'Big', 'Data', 'course']

Q40. What is a tuple? How is it different from list?

Tuple is a sequence data type in python. Tuple is immutable, whereas list is mutable.

The length of the list can be extended but tuple is fixed in length.

Q41. How can you create a tuple in Python?

A tuple can be created by using the paranthesis ().

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Q42. Create a tuple and try to add your name in the tuple. Are you able to do it? Support your answer with reason.

```
x = ('a',1.5,52)
```

```
x.append('Python')
```

```
AttributeError: 'tuple' object has no attribute 'append'
```

Due to immutable property of tuple, we can't add the elements into tuple.

Q43. Can two tuple be appended. If yes, write a code for it. If not, why?

yes, it is possible to append two tuples.

```
lst.append([('ball',15.6,78),('python',48.5,45)])
```

```
print(lst)
```

```
O/P: ['Welcome', 'to', 'Big', 'Data', 'course', [('ball', 15.6, 78), ('python', 48.5, 45)]]
```

Q44. Take a tuple as an input and print the count of elements in it.

```
x = input("Enter a string")
```

```
Enter a string('python', 48.5, 45)
```

```
print(x)
```

```
O/P: "('python', 48.5, 45)"
```

```
# converting the string into tuple.
```

```
x = tuple(x)
```

```
print(x)
```

```
O/P: ((' ', '"', 'p', 'y', 't', 'h', 'o', 'n', '"', ' ', ' ', ' ', '4', '8', '.', '5', ' ', ' ', ' ', '4', '5', ' '))
```

```
# counting the elements of the tuple
```

```
print(len(x))
```

```
O/P: 20
```

Q45. What are sets in Python?

A set is a unordered collection of elements. Sets restricts duplicate values.

Q46. How can you create a set?

```
x = set({})
```

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```
print(x)
```

```
O/P: set()
```

```
print(type(x))
```

```
O/P: <class 'set'>
```

Q47. Create a set and add "iNeuron" in your set.

```
x = set({})
```

```
x.add('iNeuron')
```

```
print(x)
```

```
O/P: {'iNeuron'}
```

Q48. Try to add multiple values using add() function.

```
x = set()
```

```
x.add(10)
```

```
x.add(15)
```

```
x.add(20)
```

```
print(x)
```

```
O/P: {10, 20, 15}
```

Q49. How is update() different from add()?

we can add single element at a time in to set. we can't add multiple elements into set by using add().

To add multiple elements into set, we have to use update() function.

Q50. What is clear() in sets?

```
x = set()
```

```
x.update({'a', 'b', 10, 15 })
```

```
x.clear()
```

```
print(x)
```

```
O/P: set()
```

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Q51. What is frozen set?

frozen set is immutable. we can't able to change the elements in frozen set.

Q52. How is frozen set different from set?

Frozen set is just an immutable version of a Python set object. While elements of a set can be modified at any time,

elements of the frozen set remain the same after creation.

Q53. What is union() in sets? Explain via code.

It displays the common elements from the both set objects.

```
x = {"apple", "banana", "cherry"}
```

```
y = {"google", "microsoft", "apple"}
```

```
z = x.union(y)
```

```
print(z)
```

O/P: {'microsoft', 'apple', 'google', 'banana', 'cherry'}

Q54. What is intersection() in sets? Explain via code.

intersection in set eliminates the common elements and displays the unique elements from the both sets.

```
x = {"apple", "banana", "cherry"}
```

```
y = {"google", "microsoft", "apple"}
```

```
z = x.intersection(y)
```

```
print(z)
```

O/P: {'apple'}

Q55. What is dictionary in Python?

A dictionary is a combination of key, value pairs also called as 'Mapping'. A dictionary is mutable.

Q56. How is dictionary different from all other data structures.

The dictionary Data Structure in Python is an unordered collection of items.

While other Data Structures use only one value as the element, the dictionary is a slightly more compound data structure.

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It makes use of two elements i.e. a pair of elements, namely, a key and a value.

Q57. How can we declare a dictionary in Python?

We can declare a dictionary by using the curly braces { }.

Q58. What will the output of the following?

```
var = {}  
print(type(var))  
O/P: <class 'dict'>
```

Q59. How can we add an element in a dictionary?

```
d = {}  
d['name'] = 'Arun'  
d['age'] = 25  
d['city'] = 'Hyderabad'  
print(d)  
O/P: {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}
```

Q60. Create a dictionary and access all the values in that dictionary.

```
d = {}  
d['name'] = 'Arun'  
d['age'] = 25  
d['city'] = 'Hyderabad'  
print(d.items())  
O/P: dict_items([('name', 'arun'), ('age', 25), ('city', 'Hyderabad')])
```

Q61. Create a nested dictionary and access all the element in the inner dictionary.

```
D = {'emp1': {'name': 'Bob', 'job': {'name': 'Kim', 'job': 'Dev'}}, 'emp3': {'name': 'Sam', 'job': 'Dev'}}  
print(D['emp1']['job'])  
O/P: {'name': 'Kim', 'job': 'Dev'}
```

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Q62. What is the use of get() function?

The get() method returns the value of the item with the specified key.

Q63. What is the use of items() function?

It returns the key, value pairs of the dictionary.

Q64. What is the use of pop() function?

The pop() method removes the specified item from the dictionary.

The value of the removed item is the return value of the pop()

```
d = {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}
```

```
d.pop()
```

```
print(d.pop('city'))
```

O/P: 'Hyderabad'

```
print(d)
```

O/P: {'name': 'arun', 'age': 25}

Q65. What is the use of popitem() function?

The popitem() method removes the item that was last inserted into the dictionary.

```
d = {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}
```

```
print(d)
```

```
x = d.popitem()
```

```
print(x)
```

```
print(d)
```

O/P: {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}

('city', 'Hyderabad')

{'name': 'arun', 'age': 25}

Q66. What is the use of keys() function?

keys() function returns the key values from the dictionary items.

```
d = {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}
```

```
print(d.keys())
```

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O/P: dict_keys(['name', 'age', 'city'])

Q67. What is the use of values() function?

values() function returns values from the dictionary items.

```
d = {'name': 'arun', 'age': 25, 'city': 'Hyderabad'}
```

```
print(d.values())
```

O/P: dict_values(['arun', 25, 'Hyderabad'])

Q68. What are loops in Python?

loops are used to iterate the values of the sequence datatype based on the given condition. when the condition satisfies it comes out of the loop.

Q69. How many type of loop are there in Python?

There are 3 types of loops in python.

1. for loop
2. while loop
3. infinity loop

Q70. What is the difference between for and while loops?

The for and while loops are both conditional statements. A for loop is a single-line command that will be executed repeatedly.

While loops can be single-lined or contain multiple commands for a single condition.

Q71. What is the use of continue statement?

The continue statement will skip the current value based on the given condition.

Q72. What is the use of break statement?

break statement executes when the condition meets, it terminates the loop and comes out.

Q73. What is the use of pass statement?

When the pass statement is executed, nothing happens, but you avoid getting an error when empty code is not allowed.

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Q74. What is the use of range() function?

The range() is an in-built function in Python.

It returns a sequence of numbers starting from zero and increment by 1 by default and stops before the given number.

it consists starting point, ending point and step size.

Q75. How can you loop over a dictionary?

if we want to iterate over both keys and values at a time, we can call items().

The method will return a tuple containing the key value pairs in the form (key, value).

Q76. Write a Python program to find the factorial of a given number.

```
num = int(input("Enter the factorial value: "))
```

```
factorial = 1
```

```
if num < 0:
```

```
    print("please enter positive values")
```

```
elif num == 0:
```

```
    print("The factorial of 0 is 1")
```

```
else:
```

```
    for i in range(1,num + 1):
```

```
        factorial = factorial*i
```

```
print("The factorial of",num,"is",factorial)
```

Q77. Write a Python program to calculate the simple interest. Formula to calculate simple interest is $SI = (PRT)/100$

```
P = int(input("Enter the principle value: "))
```

```
R = int(input("Enter the interest rate: "))
```

```
T = int(input("Enter the time period: "))
```

```
print('The principal is', p)
```

```
print('The rate of interest is',R)
```

```
print('The time period is', T)
```

```
SI = (P * R * T)/100
```

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```
print('The Simple Interest is', SI)
```

Q78. Write a Python program to calculate the compound interest. Formula of compound interest is $A = P(1 + R/100)^t$.

```
P= int(input("Enter the principle value: "))
t= int(input("Enter the time period: "))
R= int(input("Enter the interest rate: "))
A=P*(1+(R/100))**t
print(A)
```

Q79. Write a Python program to check if a number is prime or not.

```
num = int(input("Enter a value to check prime or not!!!))
if num > 1:
    for i in range(2,num):
        if (num % i) == 0:
            print(num,"is not a prime number")
            break
    else:
        print(num,"is a prime number")
else:
    print(num,"is not a prime number")
```

Q80. Write a Python program to check Armstrong Number.

```
num = int(input("Enter a number to check Armstrong or Not"))
num_str = len(str(num))
amstr_num = 0
for i in str(num):
    amstr_num = amstr_num+int(i)**num_str
if num == amstr_num:
    print("Armstrong Number")
else:
```


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```
print("Not an Armstrong Number")
```

Q81. Write a Python program to find the n-th Fibonacci Number.

```
num = int(input("Enter a number:"))  
fib = [0,1]  
for i in range(num+1):  
    fib.append(fib[-1]+fib[-2])  
print("The n-th fibonacci number is: ",fib[num])
```

Q82. Write a Python program to interchange the first and last element in a list.

```
lst = [2,3,5,8,13,21,34,55,89]  
lst[0],lst[-1] = lst[-1],lst[0]  
print(lst)  
O/P: [89,3,5,8,13,21,34,55,2]
```

Q83. Write a Python program to swap two elements in a list.

```
lst = [2,3,5,8,13,21,34,55,89]  
lst[1],lst[2] = lst[2],lst[1]  
print(lst)  
O/P: [2,5,3,8,13,21,34,55,89]
```

Q84. Write a Python program to find N largest element from a list.

```
lst = [2,3,5,89,13,21,314,55,8]  
print("The length of the list is: ",len(lst))  
x = int(input("Which largest value do you want to print from the list?"))  
for i in range(len(lst)):  
    for j in range(i,len(lst)):  
        if lst[i]>lst[j]:  
            lst[i],lst[j] = lst[j],lst[i]  
print("The ",x,"th largest value from the given list is: ",lst[x]-1)
```

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Q85. Write a Python program to find cumulative sum of a list.

```
lst = [10, 15, 20, 25, 30]

cum_sum_lst = []

cum_sum = 0

for i in lst:

    cum_sum = cum_sum+i

    cum_sum_lst.append(cum_sum)

print(cum_sum_lst)
```

Q86. Write a Python program to check if a string is palindrome or not.

```
x = input("Enter a string to check palindrome or not: ")

if x[::-1] == x:

    print("Palindrome.")

else:

    print("not a palindrome.")
```

Q87. Write a Python program to remove i'th element from a string.

```
x = input("Enter a string: ")

print("The length of the string is: ",len(x))

y = int(input("which element do you want to remove from the string?"))

z = x.replace(x[y-1],"")

print("The string after removing the",y,"th element is: ", z)
```

Q88. Write a Python program to check if a substring is present in a given string.

```
string = "iNeuron Data Engineering Program"

substring = input("Enter the substring to check: ").lower()

str_lst = string.lower().split()

if substring in str_lst:

    print("Yes, Substring is present.")

else:

    print("No, Substring is not present.")
```

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Q89. Write a Python program to find words which are greater than given length k.

```
string = "iNeuron Python Data Engineering Program By Shashank"
k = int(input("How many letter words do you want to get? "))
str_lst = string.split()
k_letters = []
[k_letters.append(i) for i in str_lst if len(i)>k ]
print(', '.join(k_letters))
```

Q90. Write a Python program to extract unquie dictionary values.

```
d = {'A' : [1, 3, 5, 4], 'B' : [4, 6, 8, 10], 'C' : [6, 12, 4 ,8], 'D' : [5, 7, 2]}
s = set()
for i in d.values():
    s.update(i)
print(list(s))
```

Q91. Write a Python program to merge two dictionary.

```
dict_1 = {'Arun': 15, 'Rohit': 10, 'Mishra' : 12 }
dict_2 = {'Baskar': 18, 'Ravi': 20, 'Surya' : 16 }
dict_1.update(dict_2)
print('Updated dictionary:')
print(dict_1)
```

Q92. Write a Python program to convert a list of tuples into dictionary.

```
Input : [('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]
Output : {'Sachin': 10, 'MSD': 7, 'Kohli': 18, 'Rohit': 45}
```

```
lst = [('Sachin', 10), ('MSD', 7), ('Kohli', 18), ('Rohit', 45)]
d = {}
for i in lst:
    d[i[0]] = i[1]
```

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```
print(d)
```

Q93. Write a Python program to create a list of tuples from given list having number and its cube in each tuple.

Input: list = [9, 5, 6]

Output: [(9, 729), (5, 125), (6, 216)]

```
lst = [9, 5, 6]
```

```
z = [(i,i**3) for i in lst]
```

```
print(z)
```

Q94. Write a Python program to get all combinations of 2 tuples.

Input : test_tuple1 = (7, 2), test_tuple2 = (7, 8)

Output : [(7, 7), (7, 8), (2, 7), (2, 8), (7, 7), (7, 2), (8, 7), (8, 2)]

```
test_tuple_1 = input("Enter the tuple 1 values: ")
```

```
test_tuple_2 = input("Enter the tuple 2 values: ")
```

```
test_tuple_1 = tuple(test_tuple_1)
```

```
test_tuple_2 = tuple(test_tuple_2)
```

```
output = []
```

```
for j in range(len(test_tuple_1)):
```

```
    for k in range(len(test_tuple_2)):
```

```
        output.append((test_tuple_1[int(j)],test_tuple_2[int(k)]))
```

```
    for l in range(len(test_tuple_1)):
```

```
        for m in range(len(test_tuple_2)):
```

```
            output.append((test_tuple_2[int(l)],test_tuple_1[int(m)]))
```

```
print(output)
```

Q95. Write a Python program to sort a list of tuples by second item.

Name :- Manthan Joshi

Input : [('for', 24), ('Geeks', 8), ('Geeks', 30)]

Output : [('Geeks', 8), ('for', 24), ('Geeks', 30)]

```
x = [('for', 24), ('Geeks', 8), ('Geeks', 30)]
```

```
d = {}
```

```
for i in range(len(x)):
```

```
    d[x[i][1]] = x[i][0]
```

```
s = sorted(d.items())
```

```
print([(s[i][1],s[i][0]) for i in range(len(s))])
```

Q96. Write a python program to print below pattern.

```
*
* *
* * *
* * * *
* * * * *
```

```
x = int(input("Enter a value: "))
```

```
for i in range(x):
```

```
    print("* "*i)
```

Q97. Write a python program to print below pattern.

```
*
**
***
****
*****
```

```
height = 5
```

Name :- Manthan Joshi

```
for row in range(1, height+ 1):  
    print(" " * (height - row) + "*" * row)
```

Q98. Write a python program to print below pattern.

```
*  
* *  
* * *  
* * * *  
* * * * *
```

```
def triangle(n):  
    k = n - 1  
    for i in range(0, n):  
        for j in range(0, k):  
            print(end=" ")  
        k = k - 1  
        for j in range(0, i+1):  
            print("* ", end="")  
        print("\r")  
  
n = 5  
triangle(n)
```

Q99. Write a python program to print below pattern.

```
1  
1 2  
1 2 3  
1 2 3 4  
1 2 3 4 5
```

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```
def pattern(n):  
    num = 1  
    for i in range(0, n):  
        num = 1  
        for j in range(0, i+1):  
            print(num, end=" ")  
            num = num + 1  
        print("\r")  
  
n = 5  
pattern(n)
```

Q100. Write a python program to print below pattern.

```
A  
B B  
C C C  
D D D D  
E E E E E
```

```
def alphabet(n):  
    num = 65  
    for i in range(0, n):  
        for j in range(0, i+1):  
            ch = chr(num)  
            print(ch, end=" ")  
        num = num + 1  
        print("\r")  
  
n = 5  
alphabet(n)
```

Name :- Manthan Joshi