Advanced Programming-Python

Presented by

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Contents of Todays (Day-5 & 6) Discussion

- Statement Vs Expression
- Some popular inbuilt command in python programming
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- Different control statement in python programming
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  - *If elif else* statement
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STATEMENT VS EXPRESSION

- A statement can be thought as an instruction that can be interpreted by the Python interpreter.

Example:

```
>>> message="Hello world"
>>> print 1
        1
>>> x=2
>>>print x
        2
```

- An expression is a combination of variables, operators, values and a reserve keyword.

Example

```
>>> 1+1
2                    # Output
```

SOME POPULAR INBUILT COMMAND IN PYTHON PROGRAMMING

Method	Description
`.lower()`	Convert all upper case letters into lower case.
`.upper()`	Convert all lower case letters into upper case.
`.isalpha()`	Return true if string contain only alphabetical characters.
`.isdigit()`	Return true if string contain only digits characters.
`.isspace()`	Return true if string contain space.
`.find("string")`	Return the first index of search string.
`.replace(" old","new")`	Replace the string with other string.
`.count("character")`	Return the occurrence of particular character in string.
`len("string")`	Return the length of string.

Example

```
>>> s = "Hello Python"              #Defining a string
>>> print s.lower()
hello python                        #Converts the string in lower case
>>> print s.upper()
HELLO PYTHON                        #Converts the string in upper case
>>> print s.find("l")
2                                   #returns the index of first 'l'
>>> print s.replace("l","p")
Heppo Python                        #Replace each "l" to "p"
>>> print s.count("o")
2                                   #count the number of "o"
>>> print len(s)
12                                  #Length of the string


>>> s = "Hello"
>>> print s.isalpha()
True                                #String contains only alphabets
>>> print s.isdigit()
False                               #String doesn't contain digits
```

RANGE() FUNCTION

The range() function is a built-in function in Python that helps us to generate a sequence of numbers.

Example: **range(8)** provides a sequence of numbers 0-7.

```
>>> range(8)
[0, 1, 2, 3, 4, 5, 6, 7]
```

range(3,9) provides a sequence of numbers 3-9.

```
>>> range(3,9)
[3, 4, 5, 6, 7, 8]
```

range(3, 40, 5) provides a sequence of numbers 3-50 at an interval of 5.

```
>>> range(3,40, 5)
[3, 8, 13, 18, 23, 28, 33, 38]
```

RANGE() FUNCTION (CONTD..)

- ***Write a python program to find the prime number for a user provided range.***
- *Write a python program to check the subjects one by one from a list.*
- *Write a python program to find odd number for a user provided range.*
- *Write a python program to find even number for a user provided range*

```
# -*- coding: utf-8 -*-
"""
Created on Sun Feb 19 10:41:41 2023
Finding Prime Numbers from a list

@author: borah
"""

low = int(input("Enter Lower range: "))
up = int(input("Enter upper range: "))
for n in range(low, up+1):
    if n > 1:
        for i in range(2, n):
            if(n % i) == 0:
                break
            else:
                print(n)
                break
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

1. For loop:

- The Python for loop is an iterator-based for loop. It goes through the elements in any ordered sequence list, i.e., string, lists, tuples, dictionary etc.
- In each iteration step, a loop variable is set to a value.

Syntax

```
>>>for x in y :
      Block 1
   else:                    # Optional
      Block 2               # excuted only when the loop exits normally
```

Example

```
>>> subjects = [“Maths”, “English”, “Physics”, “Chemistry”, “Computer”]
>>> for x in subjects:
    print(x)
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

For loop:

- ***Write a python program to find the square of each numbers in a list.***
- *Write a python program to find the summation square of elements in a list. (CW)*

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Sun Feb 19 10:41:41 2023
4  Finding square of each numbers in a list
5
6  @author: borah
7  """
8
9  low = int(input("Enter Lower range: "))
10 up = int(input("Enter upper range: "))
11 for n in range(low, up+1):
12     print(n**2)
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

2. While Statement:

- The while statement is used when you have a piece of code and you want to repeat it 'n' number of times or forever
- With while loop, we have to give a conditional statement that tells the interpreter when the loop will halt.

Syntax

```
>>> while condition :
        block
    else:                    #Optional
        statement
```

Example

Write a while statement that prints integers from zero to 5.

```
>>> count = 0
>>> while count < 6:
      print count
      count += 1

0                                # Output
1
2
3
4
5
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

While Statement

- ***Write a python program using while loop to find the multiplication table of any number.***
- *Write a python program to calculate the sum of numbers until the user enters zero*
- *Write a python program using while loop to check whether a number is Armstrong or not .*

```
# -*- coding: utf-8 -*-
"""
Created on Mon Feb 20 18:08:16 2023

@author: borah
"""

number = int(input ("Multiplication table for: "))
count = 1
print ("The Multiplication Table of: ", number)
while count <= 10:
    number = number * 1
    print (number, 'x', count, '=', number * count)
    count += 1
else:
    print("Multiplication table is printed successfully")
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

Break and Continue statement

- **The break and continue statements are often useful in a while loop as well as in a for loop. The break statement exits from the loop and transfers the execution from the loop to the statement that is immediately following the loop.**

- **The continue statement causes execution to immediately continue at the start of the loop, it skips the execution of the remaining body part of the loop.**

Example

```
# Print first five even numbers.
>>> count = 2
>>> while True:
    print count
    count = count + 2
    if count >= 12:
            break           # breaks the loop

2                           # Output
4
6
8
10
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

Break and Continue statement

```
1  # -*- coding: utf-8 -*-
2  """
3  Created on Mon Feb 20 18:41:50 2023
4
5  @author: borah
6  """
7
8  # Print first four even numbers.
9  for i in range(1,10):
10     if (i % 2) != 0:
11         continue # if condition becomes true, it skips the print part
12     print (i)
13
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

3. If elif else statement:

The if statement is known as the decision-making statement in programming languages. With an if clause, a condition is provided; if the condition is True then the block of statement written in the if clause will be executed, otherwise not.

Syntax

```
>>>if expression :
        statement1
        else :
        statement2
```

Syntax for multiple conditions

Syntax

```
>>>if expression1 :
       statement1
    elif expression2 :
         statement2
    elif expression3 :
         statement3
    else expression4 :
         statement4
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

If elif else statement

- **Write a python program to check whether a person is eligible to vote or not.**
- **Write a python program to assign grades (A, B, C) based on marks obtained by a student.**
  - ***if the percentage is above 90, assign grade A***
  - ***if the percentage is above 75, assign grade B***
  - ***if the percentage is above 50, assign grade C Otherwise FAIL***

```
4
5   @author: borah
6   """
7
8   age = int (input("Enter your age? "))
9   if age>=18:
10      print("You are eligible to vote !!");
11  else:
12      print("Sorry! you have to wait !!");
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

4. Alternative Executions:

The alternative execution provides two possibilities. The condition determines which possibility is executed. If the condition is TRUE, the first block is executed but if condition is FALSE, another block of code is executed.

Syntax:

```
>>>if x % 2 == 0 : print 'x is even'
  else
print 'x is odd'
```

CONTROL STATEMENT IN PYTHON PROGRAMMING

Alternative Executions

- **Write a python program to find the value of P(n,r) for user defined value of n, r**
  - ***If (n-r)! value is negative then display as "Put the correct value of n or r)***
  - ***Otherwise find the value.***

- **Write a python program to find the value of C(n,r) for user defined value of n, r**
  - ***If (n-r)! value is negative then display as "Put the correct value of n or r)***
  - ***Otherwise find the value.***

Thank You