IQRA NATIONAL UNIVERSITY

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Subject: Data Sciences

DEP: BS (CS,SE)

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Q1. a. Why Functions are used discuss in detail?

ANSWER:

Functions in Python You use functions in programming to bundle a set of instructions that you want to use repeatedly or that, because of their complexity, are better self-contained in a sub-program and called when needed. That means that a function is a piece of code written to carry out a specified task. A function is a set of statements that take inputs, do some specific computation and produces output. Python provides built-in functions like print(), etc. but we can also create your own functions. These functions are called user-defined functions.

b. How arguments are used in function , write a simple program in Python?

ANSWER

Python functions arguments are used to block being with the keyword def followed by the function name and parentheses (( )). Any input parameters or arguments should be placed within these parentheses. .A return statement with no arguments is the same as return None, parameters and arguments are used for the same thing , that information that are passed into a function. From a function's perspective: A parameter is the variable listed inside the parentheses in the function definition. An argument is the value , are sent to the function when it is called.

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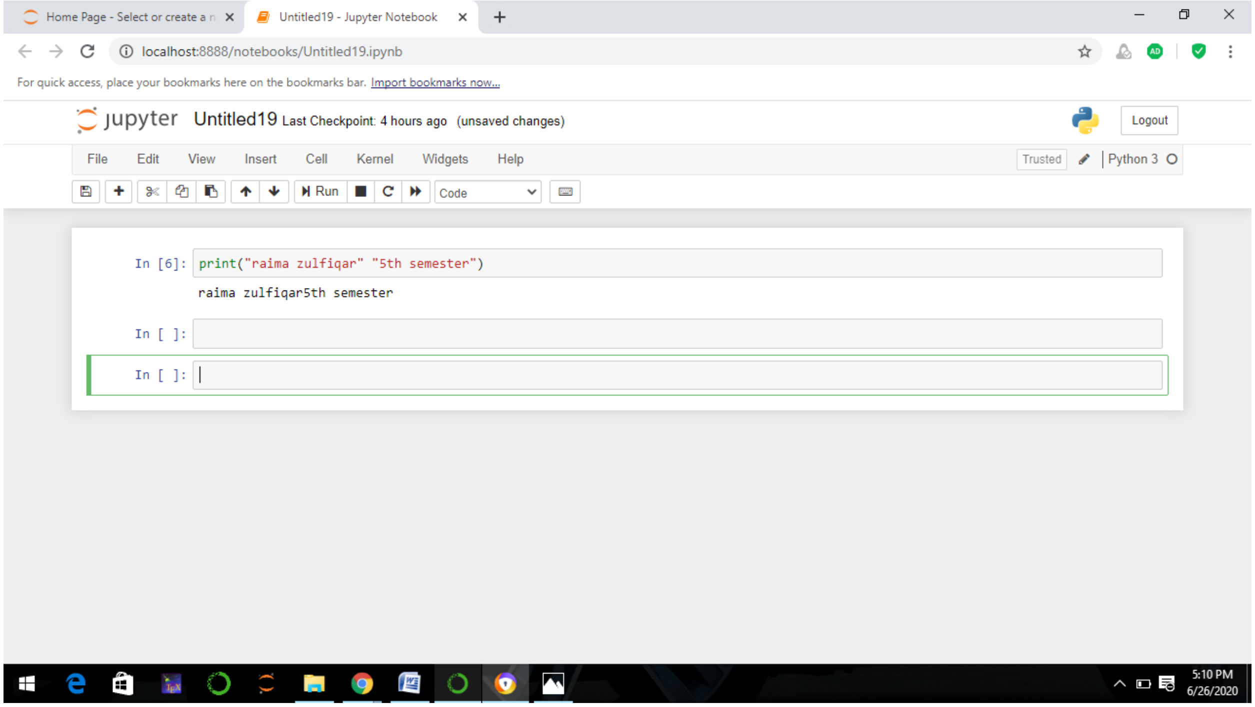
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```
In [6]: print("raima zulfiqar" "5th semester")
        raima zulfiqar5th semester

In [ ]:

In [ ]:
```

EXPLANATION:

- A simple line of code with a function ,we use variable as a name ,integers and strings and (print)them .

Q2. a. Why .upper(),.lower(),capitalize() and .swapcase() function are used ?

b. Write a program in which the discussed functions are used.

Note : Q2 part a functions.

ANSWER:

.upper() : This method is use to convert all the characters of the string into uppercase.

SYNTAX:

String.upper()

.lower() :- This method is used to convert all the characters of the string into lowercase.

SYNTAX:-

String.lower()

.Swapcase() :- This method is used to convert all lowercase characters into uppercase and vice versa.

SYNTAX:

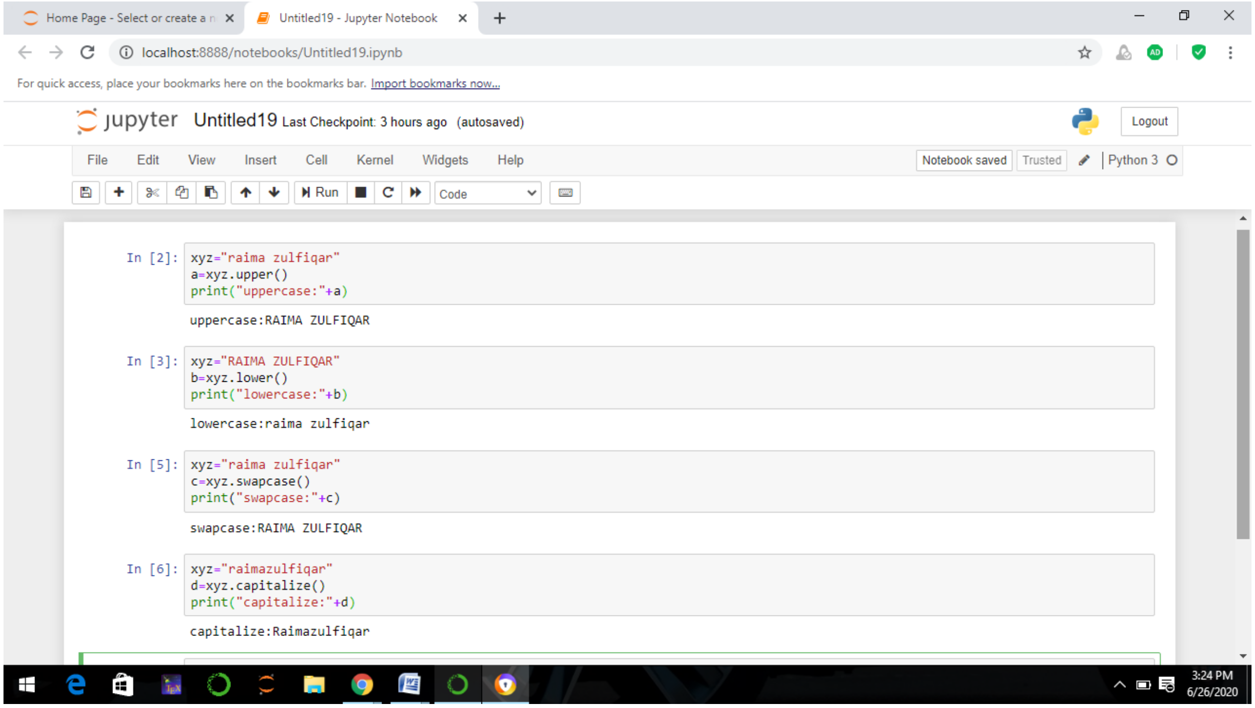
String.swapcase()

.capitalize():-In Python, the capitalize() method converts the first character of a string to capital (uppercase) letter. If the string has its first character as capital, then it returns the original string.

SYNTAX:

String.capitalize()

PROGRAM:



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```
In [2]: xyz="raima zulfiqar"
        a=xyz.upper()
        print("uppercase:"+a)

        uppercase:RAIMA ZULFIQAR

In [3]: xyz="RAIMA ZULFIQAR"
        b=xyz.lower()
        print("lowercase:"+b)

        lowercase:raima zulfiqar

In [5]: xyz="raima zulfiqar"
        c=xyz.swapcase()
        print("swapcase:"+c)

        swapcase:RAIMA ZULFIQAR

In [6]: xyz="raimazulfiqar"
        d=xyz.capitalize()
        print("capitalize:"+d)

        capitalize:Raimazulfiqar
```

EXPLANATION:

- I write my name in small letter and when I use uppercase (.upper()) my name converted into capital letter.
- I write my name into capital letter and when I apply lowercase function(.lower()) my name converted into small letters.
- And when I write my name in small letters and I apply swapcase function(.swapcase()) the small letters converted into capital and the capital converted into small ,so my name converted into capital letters.
- And in the last a apply capitalizecase ,where in coding I write my name in small letters so when I apply capitalizecase(.capitalize()) my name first alphabets change from small letters to capital letters.

Q3. a. What are the rules for defining the function?

ANSWER:

1. Function blocks begin with the keyword def followed by the function name and parentheses (( )).

2. Any input parameters or arguments should be placed within these parentheses. You can also define parameters inside these parentheses.

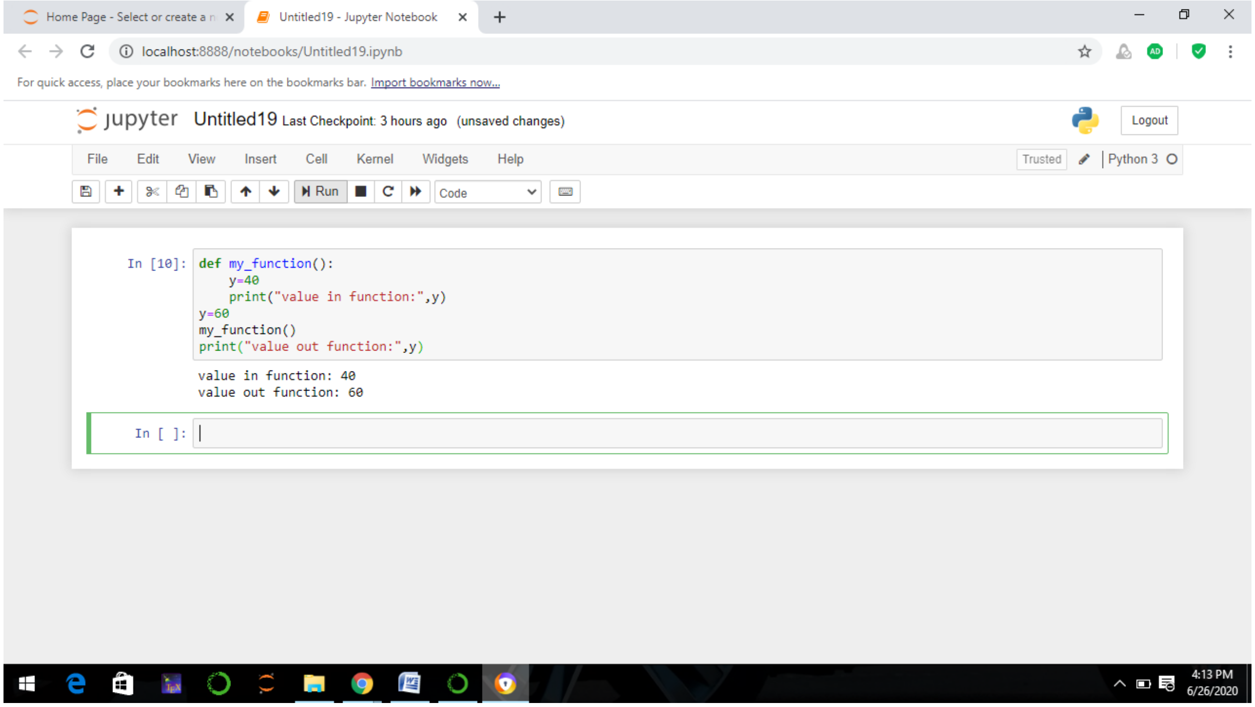
3. The first statement of a function can be an optional statement - the documentation string of the function or docstring.

4. The code block within every function starts with a colon (:) and is indented.

5. The statement return [expression] exits a function, optionally passing back an expression to the caller. A return statement with no arguments is the same as return None.

b. Write a suitable program of our defined function in Python?

PROGRAM: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```
In [10]: def my_function():
             y=40
             print("value in function:",y)
         y=60
         my_function()
         print("value out function:",y)

         value in function: 40
         value out function: 60

In [ ]:
```

EXPLANATION:

In this coding we are defining a function ,so I write the function (def my_function()) .given a variable with a value and we print that variable into a function (y) ,again given variable with different value and print that value out of function with same variable.

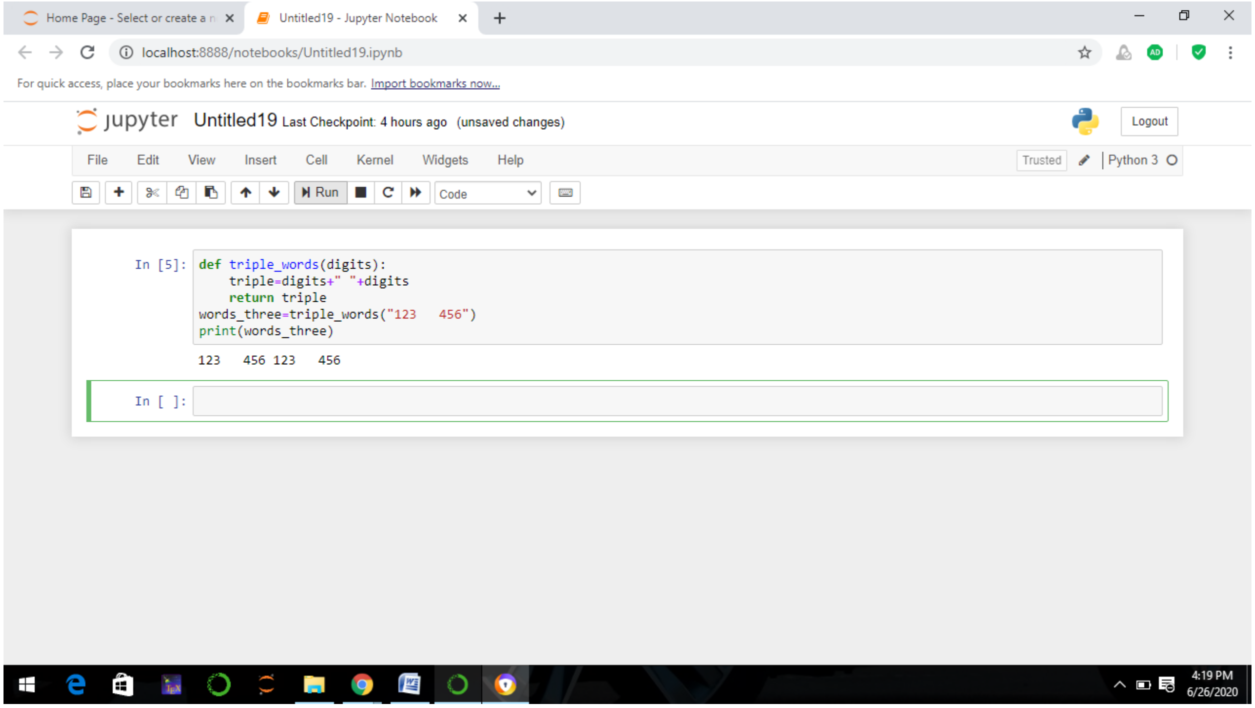
Q4. a. What are the rules for defining the function and Parameter passing to the function?

ANSWER:

1. Parameters should be written in the brackets () of the function.
2. This a,b,c in the brackets are:
3. Passing the parameters the parameters to the function should be separated by the comma like def add (a,b,c):
4. Arguments are passed by value.
5. T hat is, when a function is called, the parameter receives a copy of the argument's value, not its address.
6. This rule applies to all scalar values, structures, and unions passed as arguments.
7. Modifying a parameter does not modify the corresponding argument passed by the function call.

Q4b:

PROGRAM: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```
In [5]: def triple_words(digits):
            triple=digits+" "+digits
            return triple
        words_three=triple_words("123   456")
        print(words_three)

        123   456 123   456

In [ ]:
```

EXPLAINATION:

1. In the first code of line we define a function.
2. In the second code of line we use notation of concatenate "+", in the above code of line we concatenate and joint two strings amoung themselves and to make them or represent as a single sentence.

Q5. a. What are return values to a Function discuss in detail?

ANSWER:

A return statement is used to end the execution of the function call and "returns" the result (value of the expression following the return keyword) to the caller. The statements after the return statements are not executed. If the return statement is without any expression, then the special value None is returned. A return statement ends the execution of the function call and "returns" the result, i.e the value of the expression following the return keyword, to the caller.

b. Write a suitable program of a Function with returning value?

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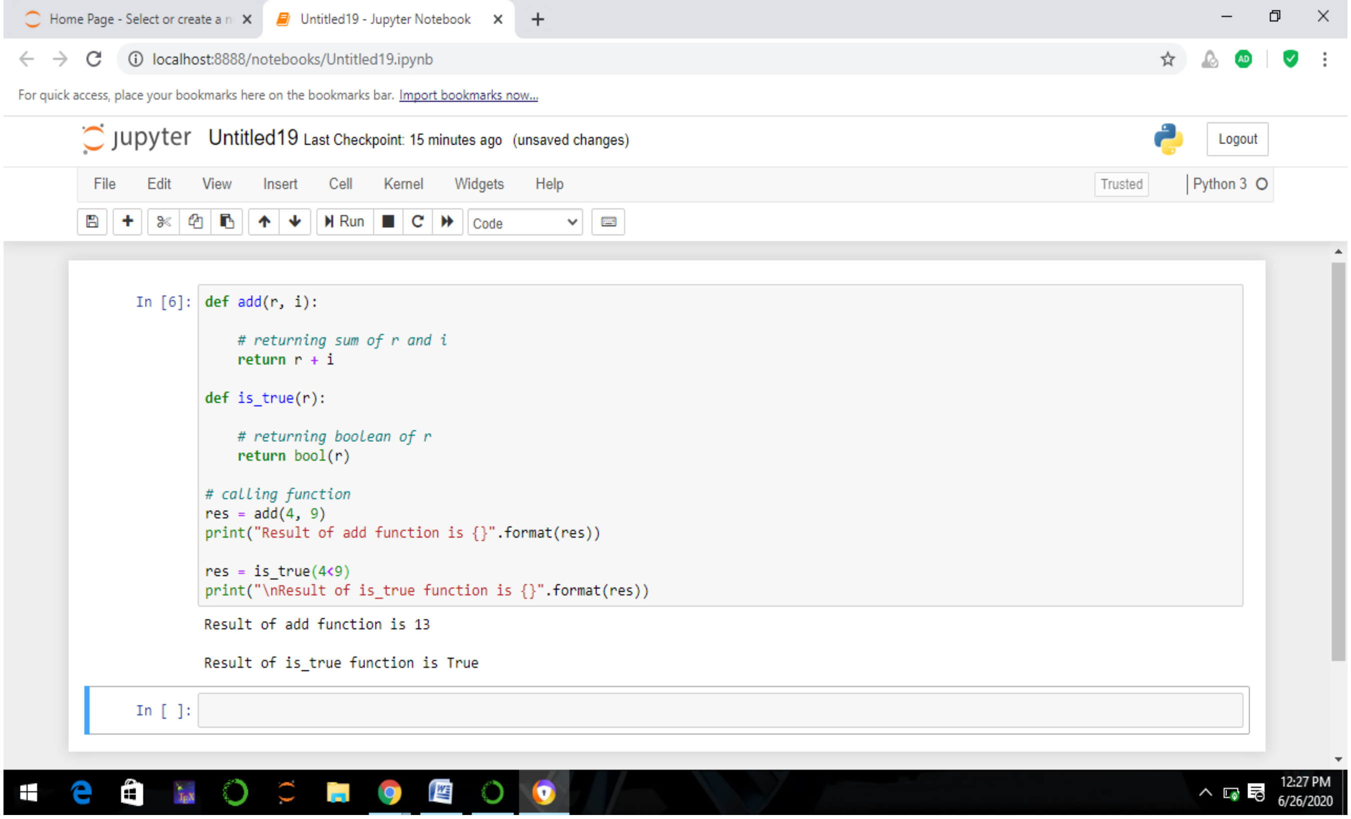
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In [6]:
```
def add(r, i):

    # returning sum of r and i
    return r + i

def is_true(r):

    # returning boolean of r
    return bool(r)

# calling function
res = add(4, 9)
print("Result of add function is {}".format(res))

res = is_true(4<9)
print("\nResult of is_true function is {}".format(res))
```

```
Result of add function is 13

Result of is_true function is True
```

In [ ]:

EXPLANIATION:

- In this coding we are returning a function ,in first code of line (def add(r,i)) we are returning sum of r and I (return r+i).
- In the second code of line (def is_true(r)) we are returning a boolean of r (return bool(r)).
- In the third code of line we are calling a function , and printing a result.