Quiz 1

1 of 9

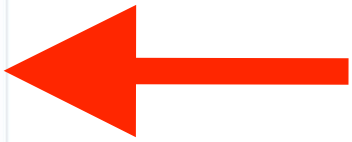
Why is python one of the most popular programming languages among Data Scientists? (1 correct answer)

A. Because is extremely fast and provides a powerful framework.

B. Because of its powerful statistical libraries that are distributed through a peer-reviewed system

C. Because contrary to C++ it is a compiled language

D. Because of its simple syntax that makes its code easy to learn and share, its extensive array of third-party packages and libraries, and its prioritization of outputs rather than development.



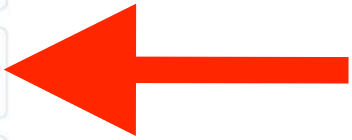
2 of 9

What are the two main types of cells in a Jupyter notebook?

A. Python and JavaScript

B. HTML and CSS

C. Code and Markdown

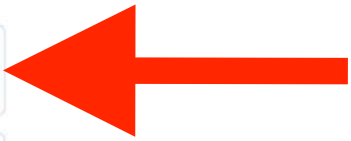


D. Text and Image

Magic commands in Jupyter Notebook are used to enhance the functionality of the notebook environment.

T True

F False



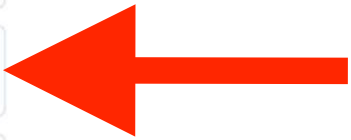
Which magic command is used to measure the execution time of a single statement in Jupyter Notebook?

A %load

B %run

C %timeit

D %store



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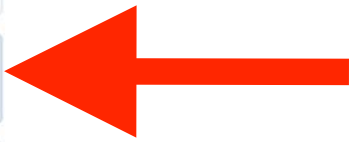
Which magic command is used to execute a Python script from a file in Jupyter Notebook?

A %save

B %run

C %time

D %edit



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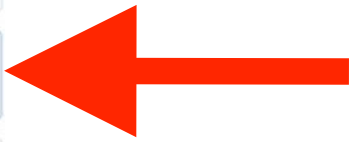
What does a filepath typically include?

A Only the file name

B The file's creation date

C The directory path and file name

D The file size and type



SUBMIT ANSWER

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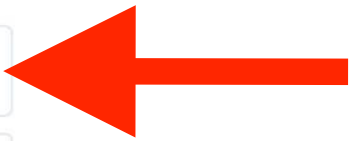
Runtime errors occur when a program, which might be syntactically correct, fails to execute.

- T — True
- F — False



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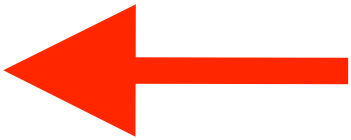
Semantic errors are detected by the Python interpreter during the execution of a program.

- T — True
- F — False



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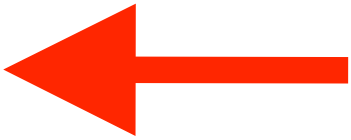
What is the main difference between % and %% magic commands in Jupyter Notebook?

- A — % is for cell magics, %% is for line magics
- B — % is for line magics, %% is for cell magics
- C — Both are for line magics
- D — Both are for cell magics



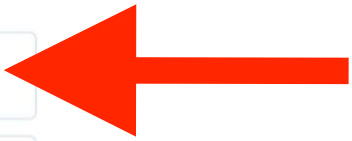
Quiz 2

1 of 10

In Python, indentations are important and are used to defined a blocks of code. For instance, to specify which code is inside a For, While, or If statement.

T True

F False



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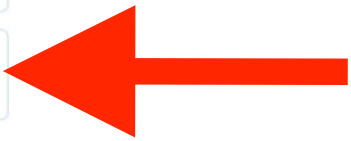
Like in many other programming languages, in Python, we declare the type of a variable at the moment of assignment. Available types include Integer, Float, Double, String, Boolean, and Complex numbers

T True

F False



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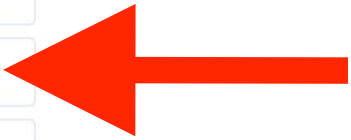
What is the output of
>>> "Foo"*10

A **TypeError**: unsupported operand type(s) for *: 'str' and 'int'

B 'FooFooFooFooFooFooFooFooFooFoo'

C 'Foo10'

D 23493



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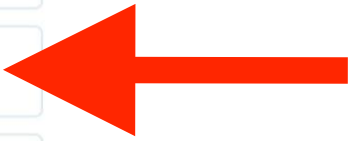
Suppose that we declare the following data structure in Python:
>>> A = {'a':1,'b':2,'c':3,'d':4}
What type would be A? (1 correct answer)

A List

B Tuple

C Dictionary

D Set



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Suppose you have assigned the following data structure to a variable:
>>> a = (2,4,5,6,7,8)
What would be the output of the following code
>>> a[3] = 10
>>> print(a)

A >>> (2,4,5,10,7,8)

B >>> (2,4,10,6,7,8)

C TypeError: 'tuple' object does not support item assignment

D IndexError: tuple index out of range

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Consider the following code snippet:
>>> x = 0
>>> while x <= 5:
>>> ... x += 1
>>> print(x)
What would be the output?
(Note that "..." are used to identify an indentation)

A 4

B 5

C 6

D Infinite Loop

7 of 10

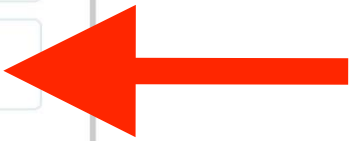
What would be the output of the following program
>>> a = [0,1,2,3,4,5,6,7,8,9,10]
>>> for i in range(len(a)):
>>> ... a[i] = a[i]**2
>>> print(a)

A IndexError: list index out of range

B [0,2,4,6,8,10,12,14,16,18,20]

C [0,1,2,3,4,5,6,7,8,9,10]

D [0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100]



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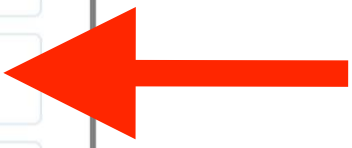
Consider that if X = 5 and Y = 10.
What would be the output of the following statement:
>>> print("G") if X > Y else print ("E") if X == Y else print ("L")

A None

B L



C E

D G

9 of 10

Suppose you write the following
>>> print(range(10))
What is the printed output?

A [1,2,3,4,5,6,7,8,9,10]

B (0,1,2,3,4,5,6,7,8,9)

C range(0,10)

D [0,1,2,3,4,5,6,7,8,9]

10 of 10

Consider the following example:

```
>>> a = [2, 8, 5, 0, 4, 3, 9, 7, 1, 6]
>>> a = a.sort()
>>> print(a)
```

What will be the printed output?

A [0,1,2,3,4,5,6,7,8,9]

B [9,8,7,6,5,4,3,2,1,0]

C **AttributeError**: 'list' object has no attribute 'sort'

D None

Quiz 3

1 of 10

Consider the following comprehension:
>>> {i**3 for i in range(1,10)}
what would be the output?

A {64, 1, 512, 8, 343, 216, 729, 27, 125}

B [1, 8, 27, 64, 125, 216, 343, 512, 729]

C [0, 1, 2, 3, 4, 5, 6, 7, 8]

D [1, 1, 1, 1, 1, 1, 1, 1, 1]

2 of 10

Consider the following list:
>>> a = [0, 1, 1, 2, 3, 5, 8, 13, 21]
what would be the ouput of
>>> print(a[1::2])

A None, this is an invalid slice operation

B [0, 1, 3, 5]

C (1, 2, 5, 13)

D [1, 2, 5, 13]

3 of 10

Consider the following list:
>>> a = [0, 1, 1, 2, 3, 5, 8, 13, 21]
what is the ouput of:
>>> print(a[-3])

A 8

B 5

C 13

D 21

4 of 10

Consider the following example:
>> def add(a, b):
>> ... return a+5, b+5
>> result = add(3, 2)
>> print(result)
What would be the printed output from the above program?

A Syntax Error

B 8

C 15

D (8,7)

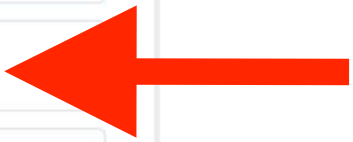
5 of 10

Consider the following example:
>> def displayPerson(*args):
>> ... for i in args:
>> ... ... print(i)
>> displayPerson(name="Emma", age="25")
What would be the printed output from the above program?

A
Emma
25

B
name
age

C
TypeError



D
(name, Emma)
(age, 25)

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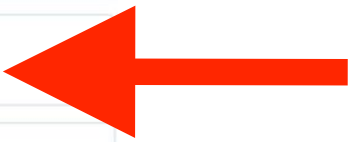
Consider the following example:
>> def nprint(message, n):
>> ... while n > 0:
>> ... ... print(message)
>> ... n-=1
>> nprint('z', 5)
What will be the printed output of the above code?
Consider the following example:
>> def nprint(message, n):
>> ... while n > 0:
>> ... ... print(message)
>> ... ... n-=1
>> nprint('z', 5)
What will be the printed output of the above code?

A 'zzzz'

B Syntax Error

C 'zzzzz'

D Infinite Loop



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Consider the following example:

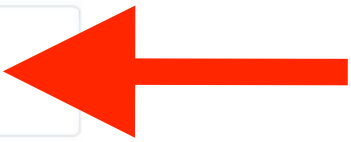
```
>> x = 1
>> def f1():
>> ... y = x + 2
>> ... print(y)
>> f1()
>> print(x)
```

What will be printed by the above program?

A
1
3

B
a Runtime Error because y is not defined

C
3
1



D
a Runtime Error because x is not defined

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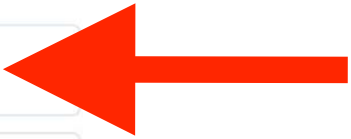
Which of the following is true about lambda functions?

A
They are limited to a single expression



B
They can contain multiple expressions

C
They must have a return statement

D
They can only be used with map and filter

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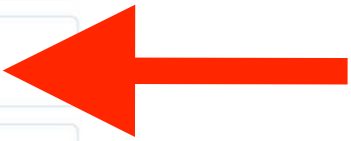
Can lambda functions be assigned to a variable?

A. Yes, but only in Python 2

B. Yes, but only in Python 3

C. Yes, they can be assigned to a variable



D. No, they cannot be assigned to a variable

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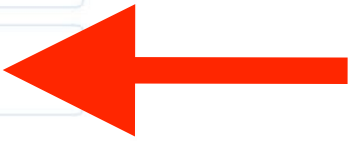
What is the output of the lambda function: (lambda x: x + 2)(3)?

A. 3

B. 4

C. 2

D. 5



Quiz 4

Quizz 4

1 of 9

Pandas is the go-to library for data loading and processing in Python.

T True

F False

2 of 9

Pandas introduces two new data structures to work with, which of the following are the data structures Pandas introduces?

A Series

B Dataframe

C matrices

D spreadsheets

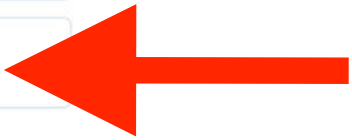
E ndarray

3 of 9

A Series is a multi-dimensional labelled array-like object. It is capable of holding any data type, e.g. integers, floats, strings, Python objects, and so on.

T True

F False



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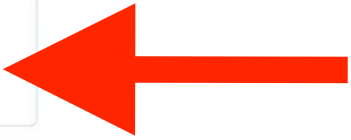
Consider the following code:
>>> days = ["monday", "tuesday", "wednesday", "thursday", "friday"]
>>> classes = [0,0,1,2,3]
>>> s = pd.Series(classes,index=days)
Which of the following statements is correct?

A s is a pandas Series the days as values and no indexes

B s is a pandas Series with the range of integers as an index and the days as values

C s is a pandas Series with the days as an index and the classes as values



D s is a pandas Series with the classes as an index and the days as values

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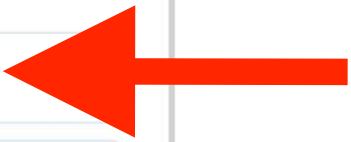
consider the following lines of code:
>>> days = ["monday", "tuesday", "wednesday", "thursday", "friday"]
>>> classes = [0,0,1,2,3]
>>> s1 = pd.Series(classes,index=days)
>>> s2 = pd.Series({'monday':1,'tuesday':2,'thursday':3})
>>> total = s1 + s2
>>> print(total["friday"])

A nan

B ValueError in the assignment of s2

C 6

D 0



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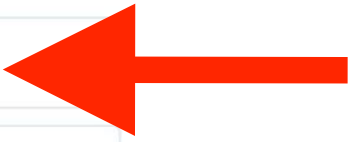
Pandas DataFrames present data in tabular structure akin to a spreadsheet. A DataFrame indexes records both by row and column. When a column of data is extracted from a DataFrame it operates like a Series.

T True

F False



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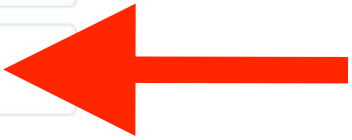
Contrary to Series, DataFrames can only be created by reading data files.

- T: True
- F: False



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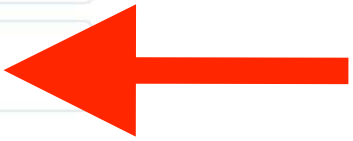
Which of the following is not a correct means/operator to assess elements (rows, columns, or single entries) of a DataFrame?

- A: []
- B: .loc[]
- C: .iloc[]
- D: .pos()



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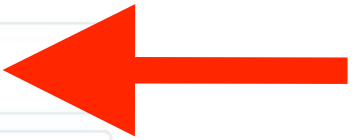
We can use slices to select ranges of values from rows and columns when using the positional operators .loc[], .iloc[], and [].

- T: True
- F: False



Quiz 5

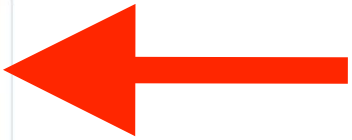
1 of 10

The function .read_csv() allows the user to load a data file into a pandas object, which can be or not assigned to a variable. Which of the following sentences is **incorrect**.

A. The behavior of the function .read_csv() can be adjusted with different arguments in order to read text files with different formats (e.g., .tsv).

B. The object is of the type pandas DataFrame

C. The resulting datatype of each column is always an "object", in order to have different datatypes they need to be specified by the user.



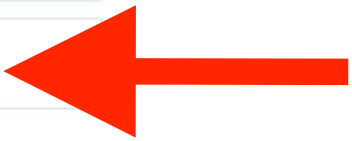
D. By default the first line of the read file will be taken as the header of the DataFrame, as such the column names.

2 of 10

The method .describe() allows the user to obtain information about the columns datatypes and memory size of the DataFrame.

T. True

F. False



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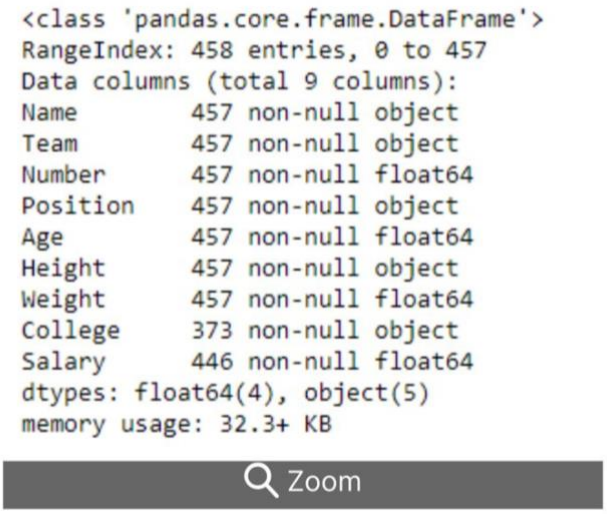


In the attached image we see the output of the method .info() over a dataframe. With verbose argument set to True
Which of the following statements is incorrect.

A The Dataframe contains 5 non-numeric columns

B Three columns have incomplete/missing data

C The DataFrame records are indexed through a sequence of integers between 0 and 457.

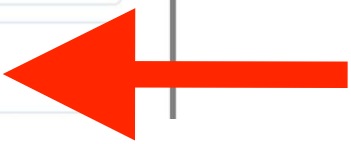
D The column College contains 373 non-null entries

4 of 10

Pandas DataFrames have a static schema, that is, the user cannot create or delete columns.

T True

F False

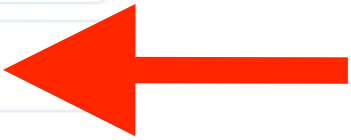


5 of 10

The function pd.value_counts() requires the user to input as an argument a DataFrame and it returns a count of unique values.

T True

F False



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The function .merge() allows to perform the database-style join between tables. It can take a number of optional arguments to adjust, for instance, the type of Join being applied and in which columns to perform the join.

T True

F False

7 of 10

df =

	chave	nome	idade
0	K0	Jai	27
1	K1	Princi	24
2	K2	Gaurav	22
3	K3	Anuj	32

df1 =

	key	Address	Qualification
0	K0	Nagpur	Btech
1	K1	Kanpur	B.A
2	K2	Allahabad	Bcom
3	K3	Kannuaj	B.hons

merged =

	nome	idade	key	Address	Qualification
0	Jai	27	K0	Nagpur	Btech
1	Princi	24	K1	Kanpur	B.A
2	Gaurav	22	K2	Allahabad	Bcom
3	Anuj	32	K3	Kannuaj	B.hons

Zoom

Consider the dataframes df and df1 as shown in the figure attached. And the dataframe merged that results from merging the two. Which of the following would successfully merge both data frames and output the desired output.

A pd.merge(df,df1)

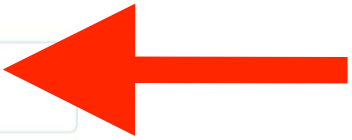
B pd.merge(df,df1,left_on='chave',right_on='key').drop('chave',1)

C pd.merge(df,df1,left_on='key',right_on='chave')

D df1.merge(df,left_on='chave',right_on='key')

8 of 10

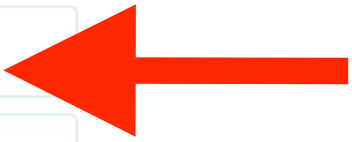
Any groupby operation involves Splitting the initial Object, Applying a function to combine grouped objects. Often, objects are split into sets to which we apply some function to perform aggregations (compute summary statistics), filters (discard data), or transformations (apply some group-specific operations).



- T — True
- F — False

9 of 10

How do you rename columns in a DataFrame?



- A — change_names()
- B — rename()
- C — alter_names()
- D — set_names()

10 of 10

Which method is used to add a new column to a DataFrame?

A df.add_column('new_col', values)

B df['new_col'] = values

C df.insert('new_col', values)

D df.append('new_col', values)

Quiz 6

1 of 11

In Pandas, Series represent a one-dimensional labeled indexed array based in the list data structure.

T True

F False

SUBMIT ANSWER

2 of 11

Numpy introduces a new data structure, what is the name of that structure?

A lists

B ndarray

C vectors

D dataframe

3 of 11

Concerning Numpy, point out the correct statement:

A NumPy main object is the homogeneous multidimensional array

B Numpy array class is called ndarray

C All options are correct

D In Numpy, dimensions are called axes

4 of 11

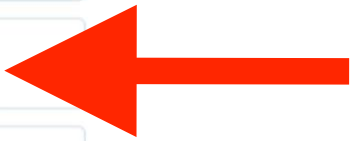
Consider that scores is a 10x10 matrix of the type numpy ndarray. How would you access the data item located in the 6th column of the 3rd row?

A scores[4,1]

B scores[2,5]

C scores(1,4)

D scores[1,4]



5 of 11

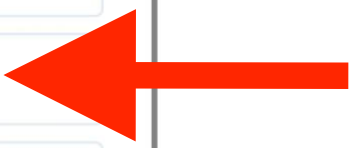
What would be the output of
>>> np.linspace(0,20,3)
?

A array([0, 20, 40, 60])

B array([1, 4, 7, 8, 13, 16, 19])

C array([0, 10, 20])

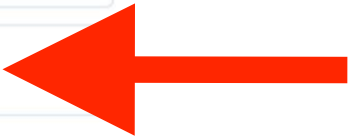
D array([0, 3, 6, 9, 12, 15, 18])



6 of 11

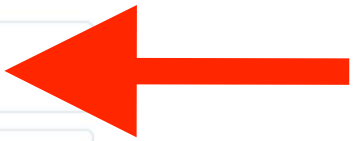
Numpy introduces a rich framework for data analysis and data visualisation. Hence, complementing Pandas utitilies.

T True

F False 

7 of 11

The main addition of Numpy to Python is the ability to perform highly efficient multidimensional arrays operations besides offering a wide range of ready-to-use functionalities that allow us to do vector and matrix operations.

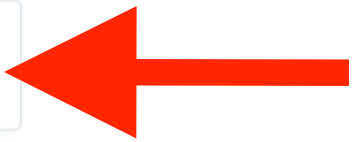
T True 

F False

8 of 11

What is the effect of changes on a shallow copy versus a deep copy?

A. Shallow copy changes reflect in original; deep copy does not.



B. Changes affect both equally.

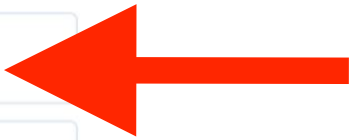
C. Neither affects the original.

D. Deep copy changes the original; shallow does not.

9 of 11

SciPy contains modules for optimization, linear algebra, integration, interpolation, special functions, FFT, signal and image processing, ODE solvers and other tasks common in science and engineering.

T. True



F. False

10 of 11

In Numpy, Universal Functions (UFuncs) is an operation that operates on ndarrays in element-by-element fashion. An example of Universal Functions are, for instance, the multiplication or division between ndarrays.

- T — True
- F — False

11 of 11

What is the primary difference between a NumPy view and a copy?

- A — A view references the same memory as the original (shallow), while a copy allocates new memory (deep).
- B — A view creates a new array with duplicated data, while a copy shares the original data.
- C — A view changes the original data type, while a copy preserves it.
- D — Both create independent arrays without sharing memory.