# Assignment\_1.docx

1. In the below elements which of them are values or an expression? eg:- values can be integer or string and expressions will be mathematical operators.

\*

'hello'

-87.8

-

/

6

2. What is the difference between string and variable?

3. Describe three different data types.

4. What is an expression made up of? What do all expressions do?

5. This assignment statements, like spam = 10. What is the difference between an expression and a statement?

6. After running the following code, what does the variable bacon contain?

bacon = 22

bacon + 1

7. What should the values of the following two terms be?

'spam' + 'spamspam'

'spam' \* 3

8. Why is eggs a valid variable name while 100 is invalid?

9. What three functions can be used to get the integer, floating-point number, or string version of a value?

10. Why does this expression cause an error? How can you fix it?

'I have eaten ' + 99 + ' burritos.'

# Assignment\_10.docx

1. How do you distinguish between shutil.copy() and shutil.copytree()?

2. What function is used to rename files??

3. What is the difference between the delete functions in the send2trash and shutil modules?

4.ZipFile objects have a close() method just like File objects’ close() method. What ZipFile method is equivalent to File objects’ open() method?

5. Create a programme that searches a folder tree for files with a certain file extension (such as .pdf or .jpg). Copy these files from whatever location they are in to a new folder.

# Assignment\_10\_10.docx

Q1. What is the difference between \_\_getattr\_\_ and \_\_getattribute\_\_?

Q2. What is the difference between properties and descriptors?

Q3. What are the key differences in functionality between \_\_getattr\_\_ and \_\_getattribute\_\_, as well as properties and descriptors?

# Assignment\_11.docx

1. Create an assert statement that throws an AssertionError if the variable spam is a negative integer.

2. Write an assert statement that triggers an AssertionError if the variables eggs and bacon contain strings that are the same as each other, even if their cases are different (that is, 'hello' and 'hello' are considered the same, and 'goodbye' and 'GOODbye' are also considered the same).

3. Create an assert statement that throws an AssertionError every time.

4. What are the two lines that must be present in your software in order to call logging.debug()?

5. What are the two lines that your program must have in order to have logging.debug() send a logging message to a file named programLog.txt?

6. What are the five levels of logging?

7. What line of code would you add to your software to disable all logging messages?

8.Why is using logging messages better than using print() to display the same message?

9. What are the differences between the Step Over, Step In, and Step Out buttons in the debugger?

10.After you click Continue, when will the debugger stop ?

11. What is the concept of a breakpoint?

# Assignment\_11\_11.docx

Q1. What is the concept of a metaclass?

Q2. What is the best way to declare a class's metaclass?

Q3. How do class decorators overlap with metaclasses for handling classes?

Q4. How do class decorators overlap with metaclasses for handling instances?

# Assignment\_12.docx

1. In what modes should the PdfFileReader() and PdfFileWriter() File objects will be opened?

2. From a PdfFileReader object, how do you get a Page object for page 5?

3. What PdfFileReader variable stores the number of pages in the PDF document?

4. If a PdfFileReader object’s PDF is encrypted with the password swordfish, what must you do before you can obtain Page objects from it?

5. What methods do you use to rotate a page?

6. What is the difference between a Run object and a Paragraph object?

7. How do you obtain a list of Paragraph objects for a Document object that’s stored in a variable named doc?

8. What type of object has bold, underline, italic, strike, and outline variables?

9. What is the difference between False, True, and None for the bold variable?

10. How do you create a Document object for a new Word document?

11. How do you add a paragraph with the text 'Hello, there!' to a Document object stored in a variable named doc?

12. What integers represent the levels of headings available in Word documents?

# Assignment\_12\_12.docx

Q1. Does assigning a value to a string's indexed character violate Python's string immutability?

Q2. Does using the += operator to concatenate strings violate Python's string immutability? Why or why not?

Q3. In Python, how many different ways are there to index a character?

Q4. What is the relationship between indexing and slicing?

Q5. What is an indexed character's exact data type? What is the data form of a slicing-generated substring?

Q6. What is the relationship between string and character "types" in Python?

Q7. Identify at least two operators and one method that allow you to combine one or more smaller strings to create a larger string.

Q8. What is the benefit of first checking the target string with in or not in before using the index method to find a substring?

Q9. Which operators and built-in string methods produce simple Boolean (true/false) results?

# Assignment\_13.docx

1. What advantages do Excel spreadsheets have over CSV spreadsheets?

2.What do you pass to csv.reader() and csv.writer() to create reader and writer objects?

3. What modes do File objects for reader and writer objects need to be opened in?

4. What method takes a list argument and writes it to a CSV file?

5. What do the keyword arguments delimiter and line terminator do?

6. What function takes a string of JSON data and returns a Python data structure?

7. What function takes a Python data structure and returns a string of JSON data?

# Assignment\_13\_13.docx

Q1. Can you create a programme or function that employs both positive and negative indexing? Is there any repercussion if you do so?

Q2. What is the most effective way of starting with 1,000 elements in a Python list? Assume that all elements should be set to the same value.

Q3. How do you slice a list to get any other part while missing the rest? (For example, suppose you want to make a new list with the elements first, third, fifth, seventh, and so on.)

Q4. Explain the distinctions between indexing and slicing.

Q5. What happens if one of the slicing expression's indexes is out of range?

Q6. If you pass a list to a function, and if you want the function to be able to change the values of the list—so that the list is different after the function returns—what action should you avoid?

Q7. What is the concept of an unbalanced matrix?

Q8. Why is it necessary to use either list comprehension or a loop to create arbitrarily large matrices?

# Assignment\_14.docx

1. What does RGBA stand for?

2. From the Pillow module, how do you get the RGBA value of any images?

3. What is a box tuple, and how does it work?

4. Use your image and load in notebook then, How can you find out the width and height of an Image object?

5. What method would you call to get Image object for a 100×100 image, excluding the lower-left quarter of it?

6. After making changes to an Image object, how could you save it as an image file?

7. What module contains Pillow’s shape-drawing code?

8. Image objects do not have drawing methods. What kind of object does? How do you get this kind of object?

# Assignment\_14\_14.docx

Q1. Is an assignment operator like += only for show? Is it possible that it would lead to faster results at the runtime?

Q2. What is the smallest number of statements you'd have to write in most programming languages to replace the Python expression a, b = a + b, a?

Q3. In Python, what is the most effective way to set a list of 100 integers to 0?

Q4. What is the most effective way to initialise a list of 99 integers that repeats the sequence 1, 2, 3? S If necessary, show step-by-step instructions on how to accomplish this.

Q5. If you're using IDLE to run a Python application, explain how to print a multidimensional list as efficiently?

Q6. Is it possible to use list comprehension with a string? If so, how can you go about doing it?

Q7. From the command line, how do you get support with a user-written Python programme? Is this possible from inside IDLE?

Q8. Functions are said to be “first-class objects” in Python but not in most other languages, such as C++ or Java. What can you do in Python with a function (callable object) that you can't do in C or C++?

Q9. How do you distinguish between a wrapper, a wrapped feature, and a decorator?

Q10. If a function is a generator function, what does it return?

Q11. What is the one improvement that must be made to a function in order for it to become a generator function in the Python language?

Q12. Identify at least one benefit of generators.

# Assignment\_15.docx

1.How many seconds are in an hour? Use the interactive interpreter as a calculator and multiply the number of seconds in a minute (60) by the number of minutes in an hour (also 60).

sol. 60

2. Assign the result from the previous task (seconds in an hour) to a variable called seconds\_per\_hour.

3. How many seconds do you think there are in a day? Make use of the variables seconds per hour and minutes per hour.

4. Calculate seconds per day again, but this time save the result in a variable called seconds\_per\_day

5. Divide seconds\_per\_day by seconds\_per\_hour. Use floating-point (/) division.

6. Divide seconds\_per\_day by seconds\_per\_hour, using integer (//) division. Did this number agree with the floating-point value from the previous question, aside from the final .0?

7. Write a generator, genPrimes, that returns the sequence of prime numbers on successive calls to its next() method: 2, 3, 5, 7, 11, ...

# Assignment\_15\_15.docx

What are the new features added in Python 3.8 version?

What is monkey patching in Python?

What is the difference between a shallow copy and deep copy?

What is the maximum possible length of an identifier?

What is generator comprehension?

# Assignment\_16.docx

1. Create a list called years\_list, starting with the year of your birth, and each year thereafter until the year of your fifth birthday. For example, if you were born in 1980. the list would be years\_list = [1980, 1981, 1982, 1983, 1984, 1985].

2. In which year in years\_list was your third birthday? Remember, you were 0 years of age for your first year.

3.In the years list, which year were you the oldest?

4. Make a list called things with these three strings as elements: "mozzarella", "cinderella", "salmonella".

5. Capitalize the element in things that refers to a person and then print the list. Did it change the element in the list?

6. Make a surprise list with the elements "Groucho," "Chico," and "Harpo."

7. Lowercase the last element of the surprise list, reverse it, and then capitalize it.

8. Make an English-to-French dictionary called e2f and print it. Here are your starter words: dog is chien, cat is chat, and walrus is morse.

9. Write the French word for walrus in your three-word dictionary e2f.

10. Make a French-to-English dictionary called f2e from e2f. Use the items method.

11. Print the English version of the French word chien using f2e.

12. Make and print a set of English words from the keys in e2f.

13. Make a multilevel dictionary called life. Use these strings for the topmost keys: 'animals', 'plants', and 'other'. Make the 'animals' key refer to another dictionary with the keys 'cats', 'octopi', and 'emus'. Make the 'cats' key refer to a list of strings with the values 'Henri', 'Grumpy', and 'Lucy'. Make all the other keys refer to empty dictionaries.

14. Print the top-level keys of life.

15. Print the keys for life['animals'].

16. Print the values for life['animals']['cats']

# Assignment\_16\_16.docx

Q1. What is the benefit of regular expressions?

Q2. Describe the difference between the effects of "(ab)c+" and "a(bc)+." Which of these, if any, is the unqualified pattern "abc+"?

Q3. How much do you need to use the following sentence while using regular expressions?

import re

Q4. Which characters have special significance in square brackets when expressing a range, and under what circumstances?

Q5. How does compiling a regular-expression object benefit you?

Q6. What are some examples of how to use the match object returned by re.match and re.search?

Q7. What is the difference between using a vertical bar (|) as an alteration and using square brackets as a character set?

Q8. In regular-expression search patterns, why is it necessary to use the raw-string indicator (r)? In   replacement strings?

# Assignment\_17.docx

1. Assign the value 7 to the variable guess\_me. Then, write the conditional tests (if, else, and elif) to print the string 'too low' if guess\_me is less than 7, 'too high' if greater than 7, and 'just right' if equal to 7.

2. Assign the value 7 to the variable guess\_me and the value 1 to the variable start. Write a while loop that compares start with guess\_me. Print too low if start is less than guess me. If start equals guess\_me, print 'found it!' and exit the loop. If start is greater than guess\_me, print 'oops' and exit the loop. Increment start at the end of the loop.

3. Print the following values of the list [3, 2, 1, 0] using a for loop.

4. Use a list comprehension to make a list of the even numbers in range(10)

5. Use a dictionary comprehension to create the dictionary squares. Use range(10) to return the keys, and use the square of each key as its value.

6. Construct the set odd from the odd numbers in the range using a set comprehension (10).

7. Use a generator comprehension to return the string 'Got ' and a number for the numbers in range(10). Iterate through this by using a for loop.

8. Define a function called good that returns the list ['Harry', 'Ron', 'Hermione'].

9. Define a generator function called get\_odds that returns the odd numbers from range(10). Use a for loop to find and print the third value returned.

10. Define an exception called OopsException. Raise this exception to see what happens. Then write the code to catch this exception and print 'Caught an oops'.

11. Use zip() to make a dictionary called movies that pairs these lists: titles = ['Creature of Habit', 'Crewel Fate'] and plots = ['A nun turns into a monster', 'A haunted yarn shop'].

# Assignment\_17\_17.docx

Q1. Explain the difference between greedy and non-greedy syntax with visual terms in as few words as possible. What is the bare minimum effort required to transform a greedy pattern into a non-greedy one? What characters or characters can you introduce or change?

Q2. When exactly does greedy versus non-greedy make a difference?  What if you're looking for a non-greedy match but the only one available is greedy?

Q3. In a simple match of a string, which looks only for one match and does not do any replacement, is the use of a nontagged group likely to make any practical difference?

Q4. Describe a scenario in which using a nontagged category would have a significant impact on the program's outcomes.

Q5. Unlike a normal regex pattern, a look-ahead condition does not consume the characters it examines. Describe a situation in which this could make a difference in the results of your programme.

Q6. In standard expressions, what is the difference between positive look-ahead and negative look-ahead?

Q7. What is the benefit of referring to groups by name rather than by number in a standard expression?

Q8. Can you identify repeated items within a target string using named groups, as in "The cow jumped over the moon"?

Q9. When parsing a string, what is at least one thing that the Scanner interface does for you that the re.findall feature does not?

Q10. Does a scanner object have to be named scanner?

# Assignment\_18.docx

1. Create a zoo.py file first. Define the hours() function, which prints the string 'Open 9-5 daily'. Then, use the interactive interpreter to import the zoo module and call its hours() function.

2. In the interactive interpreter, import the zoo module as menagerie and call its hours() function.

3. Using the interpreter, explicitly import and call the hours() function from zoo.

4. Import the hours() function as info and call it.

5. Create a plain dictionary with the key-value pairs 'a': 1, 'b': 2, and 'c': 3, and print it out.

6.Make an OrderedDict called fancy from the same pairs listed in 5 and print it. Did it print in the same order as plain?

7. Make a default dictionary called dict\_of\_lists and pass it the argument list. Make the list dict\_of\_lists['a'] and append the value 'something for a' to it in one assignment. Print dict\_of\_lists['a'].

# Assignment\_18\_18.docx

Q1. Describe the differences between text and binary files in a single paragraph.

Q2. What are some scenarios where using text files will be the better option? When would you like to use binary files instead of text files?

Q3. What are some of the issues with using binary operations to read and write a Python integer directly to disc?

Q4. Describe a benefit of using the with keyword instead of explicitly opening a file.

Q5. Does Python have the trailing newline while reading a line of text? Does Python append a newline when you write a line of text?

Q6. What file operations enable for random-access operation?

Q7. When do you think you'll use the struct package the most?

Q8. When is pickling the best option?

Q9. When will it be best to use the shelve package?

Q10. What is a special restriction when using the shelve package, as opposed to using other data dictionaries?

# Assignment\_19.docx

1. Make a class called Thing with no contents and print it. Then, create an object called example from this class and also print it. Are the printed values the same or different?

2. Create a new class called Thing2 and add the value 'abc' to the letters class attribute. Letters should be printed.

3. Make yet another class called, of course, Thing3. This time, assign the value 'xyz' to an instance (object) attribute called letters. Print letters. Do you need to make an object from the class to do this?

4. Create an Element class with the instance attributes name, symbol, and number. Create a class object with the values 'Hydrogen,' 'H,' and 1.

5. Make a dictionary with these keys and values: 'name': 'Hydrogen', 'symbol': 'H', 'number': 1. Then, create an object called hydrogen from class Element using this dictionary.

6. For the Element class, define a method called dump() that prints the values of the object’s attributes (name, symbol, and number). Create the hydrogen object from this new definition and use dump() to print its attributes.

7. Call print(hydrogen). In the definition of Element, change the name of method dump to \_\_str\_\_, create a new hydrogen object, and call print(hydrogen) again.

8. Modify Element to make the attributes name, symbol, and number private. Define a getter property for each to return its value.

9. Define three classes: Bear, Rabbit, and Octothorpe. For each, define only one method: eats(). This should return 'berries' (Bear), 'clover' (Rabbit), or 'campers' (Octothorpe). Create one object from each and print what it eats.

10. Define these classes: Laser, Claw, and SmartPhone. Each has only one method: does(). This returns 'disintegrate' (Laser), 'crush' (Claw), or 'ring' (SmartPhone). Then, define the class Robot that has one instance (object) of each of these. Define a does() method for the Robot that prints what its component objects do.

# Assignment\_19\_19.docx

Q1. Define the relationship between a class and its instances. Is it a one-to-one or a one-to-many partnership, for example?

Q2. What kind of data is held only in an instance?

Q3. What kind of knowledge is stored in a class?

Q4. What exactly is a method, and how is it different from a regular function?

Q5. Is inheritance supported in Python, and if so, what is the syntax?

Q6. How much encapsulation (making instance or class variables private) does Python support?

Q7. How do you distinguish between a class variable and an instance variable?

Q8. When, if ever, can self be included in a class's method definitions?

Q9. What is the difference between the \_ \_add\_ \_ and the \_ \_radd\_ \_ methods?

Q10. When is it necessary to use a reflection method? When do you not need it, even though you support the operation in question?

Q11. What is the \_ \_iadd\_ \_ method called?

Q12. Is the \_ \_init\_ \_ method inherited by subclasses? What do you do if you need to customize its behavior within a subclass?

# Assignment\_1\_1.docx

Q1. What is the purpose of Python's OOP?

Q2. Where does an inheritance search look for an attribute?

Q3. How do you distinguish between a class object and an instance object?

Q4. What makes the first argument in a class’s method function special?

Q5. What is the purpose of the \_\_init\_\_ method?

Q6. What is the process for creating a class instance?

Q7. What is the process for creating a class?

Q8. How would you define the superclasses of a class?

# Assignment\_2.docx

1.What are the two values of the Boolean data type? How do you write them?

2. What are the three different types of Boolean operators?

3. Make a list of each Boolean operator's truth tables (i.e. every possible combination of Boolean values for the operator and what it evaluate ).

4. What are the values of the following expressions?

(5 > 4) and (3 == 5)

not (5 > 4)

(5 > 4) or (3 == 5)

not ((5 > 4) or (3 == 5))

(True and True) and (True == False)

(not False) or (not True)

5. What are the six comparison operators?

6. How do you tell the difference between the equal to and assignment operators?Describe a condition and when you would use one.

7. Identify the three blocks in this code:

spam = 0

if spam == 10:

print('eggs')

if spam > 5:

print('bacon')

else:

print('ham')

print('spam')

print('spam')

8. Write code that prints Hello if 1 is stored in spam, prints Howdy if 2 is stored in spam, and prints Greetings! if anything else is stored in spam.

9.If your programme is stuck in an endless loop, what keys you’ll press?

10. How can you tell the difference between break and continue?

11. In a for loop, what is the difference between range(10), range(0, 10), and range(0, 10, 1)?

12. Write a short program that prints the numbers 1 to 10 using a for loop. Then write an equivalent program that prints the numbers 1 to 10 using a while loop.

13. If you had a function named bacon() inside a module named spam, how would you call it after importing spam?

# Assignment\_20.docx

1. Set the variable test1 to the string 'This is a test of the emergency text system,' and save test1 to a file named test.txt.

2. Read the contents of the file test.txt into the variable test2. Is there a difference between test 1 and test 2?

3. Create a CSV file called books.csv by using these lines:

title,author,year

The Weirdstone of Brisingamen,Alan Garner,1960

Perdido Street Station,China Miéville,2000

Thud!,Terry Pratchett,2005

The Spellman Files,Lisa Lutz,2007

Small Gods,Terry Pratchett,1992

4. Use the sqlite3 module to create a SQLite database called books.db, and a table called books with these fields: title (text), author (text), and year (integer).

5. Read books.csv and insert its data into the book table.

6. Select and print the title column from the book table in alphabetical order.

7. From the book table, select and print all columns in the order of publication.

8. Use the sqlalchemy module to connect to the sqlite3 database books.db that you just made in exercise 6.

9. Install the Redis server and the Python redis library (pip install redis) on your computer. Create a Redis hash called test with the fields count (1) and name ('Fester Bestertester'). Print all the fields for test.

10. Increment the count field of test and print it.

# Assignment\_20\_20.docx

1. Compare and contrast the float and Decimal classes' benefits and drawbacks.

2. Decimal('1.200') and Decimal('1.2') are two objects to consider. In what sense are these the same object? Are these just two ways of representing the exact same value, or do they correspond to different internal states?

3. What happens if the equality of Decimal('1.200') and Decimal('1.2') is checked?

4. Why is it preferable to start a Decimal object with a string rather than a floating-point value?

5. In an arithmetic phrase, how simple is it to combine Decimal objects with integers?

6. Can Decimal objects and floating-point values be combined easily?

7. Using the Fraction class but not the Decimal class, give an example of a quantity that can be expressed with absolute precision.

8. Describe a quantity that can be accurately expressed by the Decimal or Fraction classes but not by a floating-point value.

Q9.Consider the following two fraction objects: Fraction(1, 2) and Fraction(1, 2). (5, 10). Is the internal state of these two objects the same? Why do you think that is?

Q10. How do the Fraction class and the integer type (int) relate to each other? Containment or inheritance?

# Assignment\_21.docx

1. Add the current date to the text file today.txt as a string.

2. Read the text file today.txt into the string today\_string

3. Parse the date from today\_string.

4. List the files in your current directory

5. Create a list of all of the files in your parent directory (minimum five files should be available).

6. Use multiprocessing to create three separate processes. Make each one wait a random number of seconds between one and five, print the current time, and then exit.

7. Create a date object of your day of birth.

8. What day of the week was your day of birth?

9. When will you be (or when were you) 10,000 days old?

# Assignment\_21\_21.docx

Q1. What is a probability distribution, exactly? If the values are meant to be random, how can you predict them at all?

Q2. Is there a distinction between true random numbers and pseudo-random numbers, if there is one? Why are the latter considered “good enough”?

Q3. What are the two main factors that influence the behaviour of a "normal" probability distribution?

Q4. Provide a real-life example of a normal distribution.

Q5. In the short term, how can you expect a probability distribution to behave? What do you think will happen as the number of trials grows?

Q6. What kind of object can be shuffled by using random.shuffle?

Q7. Describe the math package's general categories of functions.

Q8. What is the relationship between exponentiation and logarithms?

Q9. What are the three logarithmic functions that Python supports?

# Assignment\_22.docx

1. What is the result of the code, and explain?

>>> X = 'iNeuron'

>>> def func():

print(X)

>>> func()

2. What is the result of the code, and explain?

>>> X = 'iNeuron'

>>> def func():

X = 'NI!'

>>> func()

>>> print(X)

3. What does this code print, and why?

>>> X = 'iNeuron'

>>> def func():

X = 'NI'

print(X)

>>> func()

>>> print(X)

4. What output does this code produce? Why?

>>> X = 'iNeuron'

>>> def func():

global X

X = 'NI'

>>> func()

>>> print(X)

5. What about this code—what’s the output, and why?

>>> X = 'iNeuron'

>>> def func():

X = 'NI'

def nested():

print(X)

nested()

>>> func()

>>> X

6. How about this code: what is its output in Python 3, and explain?

>>> def func():

X = 'NI'

def nested():

nonlocal X

X = 'Spam'

nested()

print(X)

>>> func()

# Assignment\_22\_22.docx

Q1. What are the benefits of the built-in array package, if any?

Q2. What are some of the array package's limitations?

Q3. Describe the main differences between the array and numpy packages.

Q4. Explain the distinctions between the empty, ones, and zeros functions.

Q5. In the fromfunction function, which is used to construct new arrays, what is the role of the callable argument?

Q6. What happens when a numpy array is combined with a single-value operand (a scalar, such as an int or a floating-point value) through addition, as in the expression A + n?

Q7. Can array-to-scalar operations use combined operation-assign operators (such as += or \*=)? What is the outcome?

Q8. Does a numpy array contain fixed-length strings? What happens if you allocate a longer string to one of these arrays?

Q9. What happens when you combine two numpy arrays using an operation like addition (+) or multiplication (\*)? What are the conditions for combining two numpy arrays?

Q10. What is the best way to use a Boolean array to mask another array?

Q11. What are three different ways to get the standard deviation of a wide collection of data using both standard Python and its packages? Sort the three of them by how quickly they execute.

12. What is the dimensionality of a Boolean mask-generated array?

# Assignment\_23.docx

1. What is the result of the code, and why?

>>> def func(a, b=6, c=8):

print(a, b, c)

>>> func(1, 2)

2. What is the result of this code, and why?

>>> def func(a, b, c=5):

print(a, b, c)

>>> func(1, c=3, b=2)

3. How about this code: what is its result, and why?

>>> def func(a, \*pargs):

print(a, pargs)

>>> func(1, 2, 3)

4. What does this code print, and why?

>>> def func(a, \*\*kargs):

print(a, kargs)

>>> func(a=1, c=3, b=2)

5. What gets printed by this, and explain?

>>> def func(a, b, c=8, d=5): print(a, b, c, d)

>>> func(1, \*(5, 6))

6. what is the result of this, and explain?

>>> def func(a, b, c): a = 2; b[0] = 'x'; c['a'] = 'y'

>>> l=1; m=[1]; n={'a':0}

>>> func(l, m, n)

>>> l, m, n

# Assignment\_23\_23.docx

Q1. If you have any, what are your choices for increasing the comparison between different figures on the same graph?

Q2. Can you explain the benefit of compound interest over a higher rate of interest that does not compound after reading this chapter?

Q3. What is a histogram, exactly? Name a numpy method for creating such a graph.

Q4. If necessary, how do you change the aspect ratios between the X and Y axes?

Q5. Compare and contrast the three types of array multiplication between two numpy arrays: dot product, outer product, and regular multiplication of two numpy arrays.

Q6. Before you buy a home, which numpy function will you use to measure your monthly mortgage payment?

Q7. Can string data be stored in numpy arrays? If so, list at least one restriction that applies to this data.

# Assignment\_24.docx

1. What is the relationship between def statements and lambda expressions ?

2. What is the benefit of lambda?

3. Compare and contrast map, filter, and reduce.

4. What are function annotations, and how are they used?

5. What are recursive functions, and how are they used?

6. What are some general design guidelines for coding functions?

7. Name three or more ways that functions can communicate results to a caller.

# Assignment\_24\_24.docx

Q1. Is it permissible to use several import statements to import the same module? What would the goal be? Can you think of a situation where it would be beneficial?

Q2. What are some of a module's characteristics? (Name at least one.)

Q3. Circular importing, such as when two modules import each other, can lead to dependencies and bugs that aren't visible. How can you go about creating a program that avoids mutual importing?

Q4. Why is \_ \_all\_ \_ in Python?

Q5. In what situation is it useful to refer to the \_ \_name\_ \_ attribute or the string '\_ \_main\_ \_'?

Q6. What are some of the benefits of attaching a program counter to the RPN interpreter application, which interprets an RPN script line by line?

Q7. What are the minimum expressions or statements (or both) that you'd need to render a basic programming language like RPN primitive but complete— that is, capable of carrying out any computerised task theoretically possible?

# Assignment\_25.docx

1) . What is the difference between enclosing a list comprehension in square brackets and parentheses?

2) What is the relationship between generators and iterators?

3) What are the signs that a function is a generator function?

4) What is the purpose of a yield statement?

5) What is the relationship between map calls and list comprehensions? Make a comparison and contrast between the two.

# Assignment\_25\_25.docx

Q1. What is the distinction between a numpy array and a pandas data frame? Is there a way to convert between the two if there is?

Q2. What can go wrong when an user enters in a stock-ticker symbol, and how do you handle it?

Q3. Identify some of the plotting techniques that are used to produce a stock-market chart.

Q4. Why is it essential to print a legend on a stock market chart?

Q5. What is the best way to limit the length of a pandas data frame to less than a year?

Q6. What is the definition of a 180-day moving average?

Q7. Did the chapter's final example use "indirect" importing? If so, how exactly do you do it?

# Assignment\_2\_2.docx

Q1. What is the relationship between classes and modules?

Q2. How do you make instances and classes?

Q3. Where and how should be class attributes created?

Q4. Where and how are instance attributes created?

Q5. What does the term "self" in a Python class mean?

Q6. How does a Python class handle operator overloading?

Q7. When do you consider allowing operator overloading of your classes?

Q8. What is the most popular form of operator overloading?

Q9. What are the two most important concepts to grasp in order to comprehend Python OOP code?

# Assignment\_3.docx

1. Why are functions advantageous to have in your programs?

2. When does the code in a function run: when it's specified or when it's called?

3. What statement creates a function?

4. What is the difference between a function and a function call?

5. How many global scopes are there in a Python program? How many local scopes?

6. What happens to variables in a local scope when the function call returns?

7. What is the concept of a return value? Is it possible to have a return value in an expression?

8. If a function does not have a return statement, what is the return value of a call to that function?

9. How do you make a function variable refer to the global variable?

10. What is the data type of None?

11. What does the sentence import areallyourpetsnamederic do?

12. If you had a bacon() feature in a spam module, what would you call it after importing spam?

13. What can you do to save a programme from crashing if it encounters an error?

14. What is the purpose of the try clause? What is the purpose of the except clause?

# Assignment\_3\_3.docx

1. What is the concept of an abstract superclass?

2. What happens when a class statement's top level contains a basic assignment statement?

3. Why does a class need to manually call a superclass's \_\_init\_\_ method?

4. How can you augment, instead of completely replacing, an inherited method?

5. How is the local scope of a class different from that of a function?

# Assignment\_4.docx

1. What exactly is []?

2. In a list of values stored in a variable called spam, how would you assign the value 'hello' as the third value? (Assume [2, 4, 6, 8, 10] are in spam.)

Let's pretend the spam includes the list ['a', 'b', 'c', 'd'] for the next three queries.

3. What is the value of spam[int(int('3' \* 2) / 11)]?

4. What is the value of spam[-1]?

5. What is the value of spam[:2]?

Let's pretend bacon has the list [3.14, 'cat,' 11, 'cat,' True] for the next three questions.

6. What is the value of bacon.index('cat')?

7. How does bacon.append(99) change the look of the list value in bacon?

8. How does bacon.remove('cat') change the look of the list in bacon?

9. What are the list concatenation and list replication operators?

10. What is difference between the list methods append() and insert()?

11. What are the two methods for removing items from a list?

12. Describe how list values and string values are identical.

13. What's the difference between tuples and lists?

14. How do you type a tuple value that only contains the integer 42?

15. How do you get a list value's tuple form? How do you get a tuple value's list form?

16. Variables that "contain" list values are not necessarily lists themselves. Instead, what do they contain?

17. How do you distinguish between copy.copy() and copy.deepcopy()?

# Assignment\_4\_4.docx

Q1. Which two operator overloading methods can you use in your classes to support iteration?

Q2. In what contexts do the two operator overloading methods manage printing?

Q3. In a class, how do you intercept slice operations?

Q4. In a class, how do you capture in-place addition?

Q5. When is it appropriate to use operator overloading?

# Assignment\_5.docx

1. What does an empty dictionary's code look like?

2. What is the value of a dictionary value with the key 'foo' and the value 42?

3. What is the most significant distinction between a dictionary and a list?

4. What happens if you try to access spam['foo'] if spam is {'bar': 100}?

5. If a dictionary is stored in spam, what is the difference between the expressions 'cat' in spam and 'cat' in spam.keys()?

6. If a dictionary is stored in spam, what is the difference between the expressions 'cat' in spam and 'cat' in spam.values()?

7. What is a shortcut for the following code?

if 'color' not in spam:

spam['color'] = 'black'

8. How do you "pretty print" dictionary values using which module and function?

# Assignment\_5\_5.docx

Q1. What is the meaning of multiple inheritance?

Q2. What is the concept of delegation?

Q3. What is the concept of composition?

Q4. What are bound methods and how do we use them?

Q5. What is the purpose of pseudoprivate attributes?

# Assignment\_6.docx

1. What are escape characters, and how do you use them?

2. What do the escape characters n and t stand for?

3. What is the way to include backslash characters in a string?

4. The string "Howl's Moving Castle" is a correct value. Why isn't the single quote character in the word Howl's not escaped a problem?

5. How do you write a string of newlines if you don't want to use the n character?

6. What are the values of the given expressions?

'Hello, world!'[1]

'Hello, world!'[0:5]

'Hello, world!'[:5]

'Hello, world!'[3:]

7. What are the values of the following expressions?

'Hello'.upper()

'Hello'.upper().isupper()

'Hello'.upper().lower()

8. What are the values of the following expressions?

'Remember, remember, the fifth of July.'.split()

'-'.join('There can only one.'.split())

9. What are the methods for right-justifying, left-justifying, and centering a string?

10. What is the best way to remove whitespace characters from the start or end?

# Assignment\_6\_6.docx

Q1. Describe three applications for exception processing.

Q2. What happens if you don't do something extra to treat an exception?

Q3. What are your options for recovering from an exception in your script?

Q4. Describe two methods for triggering exceptions in your script.

Q5. Identify two methods for specifying actions to be executed at termination time, regardless of whether or not an exception exists.

# Assignment\_7.docx

1. What is the name of the feature responsible for generating Regex objects?

2. Why do raw strings often appear in Regex objects?

3. What is the return value of the search() method?

4. From a Match item, how do you get the actual strings that match the pattern?

5. In the regex which created from the r'(\d\d\d)-(\d\d\d-\d\d\d\d)', what does group zero cover? Group 2? Group 1?

6. In standard expression syntax, parentheses and intervals have distinct meanings. How can you tell a regex that you want it to fit real parentheses and periods?

7. The findall() method returns a string list or a list of string tuples. What causes it to return one of the two options?

8. In standard expressions, what does the | character mean?

9. In regular expressions, what does the character stand for?

10.In regular expressions, what is the difference between the + and \* characters?

11. What is the difference between {4} and {4,5} in regular expression?

12. What do you mean by the \d, \w, and \s shorthand character classes signify in regular expressions?

13. What do means by \D, \W, and \S shorthand character classes signify in regular expressions?

14. What is the difference between .\*? and .\*?

15. What is the syntax for matching both numbers and lowercase letters with a character class?

16. What is the procedure for making a normal expression in regax case insensitive?

17. What does the . character normally match? What does it match if re.DOTALL is passed as 2nd argument in re.compile()?

18. If numReg = re.compile(r'\d+'), what will numRegex.sub('X', '11 drummers, 10 pipers, five rings, 4 hen') return?

19. What does passing re.VERBOSE as the 2nd argument to re.compile() allow to do?

20. How would you write a regex that match a number with comma for every three digits? It must match the given following:

'42'

'1,234'

'6,368,745'

but not the following:

'12,34,567' (which has only two digits between the commas)

'1234' (which lacks commas)

21. How would you write a regex that matches the full name of someone whose last name is Watanabe? You can assume that the first name that comes before it will always be one word that begins with a capital letter. The regex must match the following:

'Haruto Watanabe'

'Alice Watanabe'

'RoboCop Watanabe'

but not the following:

'haruto Watanabe' (where the first name is not capitalized)

'Mr. Watanabe' (where the preceding word has a nonletter character)

'Watanabe' (which has no first name)

'Haruto watanabe' (where Watanabe is not capitalized)

22. How would you write a regex that matches a sentence where the first word is either Alice, Bob, or Carol; the second word is either eats, pets, or throws; the third word is apples, cats, or baseballs; and the sentence ends with a period? This regex should be case-insensitive. It must match the following:

'Alice eats apples.'

'Bob pets cats.'

'Carol throws baseballs.'

'Alice throws Apples.'

'BOB EATS CATS.'

but not the following:

'RoboCop eats apples.'

'ALICE THROWS FOOTBALLS.'

'Carol eats 7 cats.'

# Assignment\_7\_7.docx

Q1. What is the purpose of the try statement?

Q2. What are the two most popular try statement variations?

Q3. What is the purpose of the raise statement?

Q4. What does the assert statement do, and what other statement is it like?

Q5. What is the purpose of the with/as argument, and what other statement is it like?

# Assignment\_8.docx

1. Is the Python Standard Library included with PyInputPlus?

2. Why is PyInputPlus commonly imported with import pyinputplus as pypi?

3. How do you distinguish between inputInt() and inputFloat()?

4. Using PyInputPlus, how do you ensure that the user enters a whole number between 0 and 99?

5. What is transferred to the keyword arguments allowRegexes and blockRegexes?

6. If a blank input is entered three times, what does inputStr(limit=3) do?

7. If blank input is entered three times, what does inputStr(limit=3, default='hello') do?

# Assignment\_8\_8.docx

Q1. What are the two latest user-defined exception constraints in Python 3.X?

Q2. How are class-based exceptions that have been raised matched to handlers?

Q3. Describe two methods for attaching context information to exception artefacts.

Q4. Describe two methods for specifying the text of an exception object's error message.

Q5. Why do you no longer use string-based exceptions?

# Assignment\_9.docx

1. To what does a relative path refer?

2. What does an absolute path start with your operating system?

3. What do the functions os.getcwd() and os.chdir() do?

4. What are the . and .. folders?

5. In C:\bacon\eggs\spam.txt, which part is the dir name, and which part is the base name?

6. What are the three “mode” arguments that can be passed to the open() function?

7. What happens if an existing file is opened in write mode?

8. How do you tell the difference between read() and readlines()?

9. What data structure does a shelf value resemble?

# Assignment\_9\_9.docx

Q1. In Python 3.X, what are the names and functions of string object types?

Q2. How do the string forms in Python 3.X vary in terms of operations?

Q3. In 3.X, how do you put non-ASCII Unicode characters in a string?

Q4. In Python 3.X, what are the key differences between text-mode and binary-mode files?

Q5. How can you interpret a Unicode text file containing text encoded in a different encoding than your platform's default?

Q6. What is the best way to make a Unicode text file in a particular encoding format?

Q7. What qualifies ASCII text as a form of Unicode text?

Q8. How much of an effect does the change in string types in Python 3.X have on your code?

# Programming\_Assingment1.docx

Write a Python program to print "Hello Python"?

Write a Python program to do arithmetical operations addition and division.?

Write a Python program to find the area of a triangle?

Write a Python program to swap two variables?

Write a Python program to generate a random number?

# Programming\_Assingment10.docx

Write a Python program to find sum of elements in list?

Write a Python program to Multiply all numbers in the list?

Write a Python program to find smallest number in a list?

Write a Python program to find largest number in a list?

Write a Python program to find second largest number in a list?

Write a Python program to find N largest elements from a list?

Write a Python program to print even numbers in a list?

Write a Python program to print odd numbers in a List?

Write a Python program to Remove empty List from List?

Write a Python program to Cloning or Copying a list?

Write a Python program to Count occurrences of an element in a list?

# Programming\_Assingment11.docx

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

Write a Python program for removing i-th character from a string?

Write a Python program to split and join a string?

Write a Python to check if a given string is binary string or not?

Write a Python program to find uncommon words from two Strings?

Write a Python to find all duplicate characters in string?

Write a Python Program to check if a string contains any special character?

# Programming\_Assingment12.docx

Write a Python program to Extract Unique values dictionary values?

Write a Python program to find the sum of all items in a dictionary?

Write a Python program to Merging two Dictionaries?

Write a Python program to convert key-values list to flat dictionary?

Write a Python program to insertion at the beginning in OrderedDict?

Write a Python program to check order of character in string using OrderedDict()?

Write a Python program to sort Python Dictionaries by Key or Value?

# Programming\_Assingment13.docx

18,22,24

Question 3:

bag,hello,without,world

Question 4:

again and hello makes perfect practice world

Question 5:

DIGITS 3

Question 6:

ABd1234@1

# Programming\_Assingment14.docx

Define a class with a generator which can iterate the numbers, which are divisible by 7, between a given range 0 and n.

Question 2:

to:1

Define a class Person and its two child classes: Male and Female. All classes have a method "getGender" which can print "Male" for Male class and "Female" for Female class.

Question 4:

Please write a program to generate all sentences where subject is in ["I", "You"] and verb is in ["Play", "Love"] and the object is in ["Hockey","Football"].

Question 5:

Please write a program to compress and decompress the string "hello world!hello world!hello world!hello world!".

Question 6:

Please write a binary search function which searches an item in a sorted list. The function should return the index of element to be searched in the list.

# Programming\_Assingment15.docx

Question 1:

Please write a program using generator to print the numbers which can be divisible by 5 and 7 between 0 and n in comma separated form while n is input by console.

Example:  
If the following n is given as input to the program:

100

Then, the output of the program should be:

0,35,70

Question 2:

Please write a program using generator to print the even numbers between 0 and n in comma separated form while n is input by console.

Example:  
If the following n is given as input to the program:

10

Then, the output of the program should be:

0,2,4,6,8,10

Question 3:

The Fibonacci Sequence is computed based on the following formula:

f(n)=0 if n=0  
f(n)=1 if n=1  
f(n)=f(n-1)+f(n-2) if n>1

Please write a program using list comprehension to print the Fibonacci Sequence in comma separated form with a given n input by console.

Example:  
If the following n is given as input to the program:

7

Then, the output of the program should be:

0,1,1,2,3,5,8,13

Question 4:

Assuming that we have some email addresses in the "" format, please write program to print the user name of a given email address. Both user names and company names are composed of letters only.

Example:  
If the following email address is given as input to the program:

Then, the output of the program should be:

john

Question 5:

Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as argument. Both classes have a area function which can print the area of the shape where Shape's area is 0 by default.

# Programming\_Assingment16.docx

Question1. Write a function that stutters a word as if someone is struggling to read it. The first two letters are repeated twice with an ellipsis ... and space after each, and then the word is pronounced with a question mark ?.

Examples

stutter("incredible") ➞ "in... in... incredible?"

stutter("enthusiastic") ➞ "en... en... enthusiastic?"

stutter("outstanding") ➞ "ou... ou... outstanding?"

Hint :- Assume all input is in lower case and at least two characters long.

Question 2.Create a function that takes an angle in radians and returns the corresponding angle in degrees rounded to one decimal place.

Examples

radians\_to\_degrees(1) ➞ 57.3

radians\_to\_degrees(20) ➞ 1145.9

radians\_to\_degrees(50) ➞ 2864.8

Question 3. In this challenge, establish if a given integer num is a Curzon number. If 1 plus 2 elevated to num is exactly divisible by 1 plus 2 multiplied by num, then num is a Curzon number.

Given a non-negative integer num, implement a function that returns True if num is a Curzon number, or False otherwise.

Examples

is\_curzon(5) ➞ True

# 2 \*\* 5 + 1 = 33

# 2 \* 5 + 1 = 11

# 33 is a multiple of 11

is\_curzon(10) ➞ False

# 2 \*\* 10 + 1 = 1025

# 2 \* 10 + 1 = 21

# 1025 is not a multiple of 21

is\_curzon(14) ➞ True

# 2 \*\* 14 + 1 = 16385

# 2 \* 14 + 1 = 29

# 16385 is a multiple of 29

Question 4.Given the side length x find the area of a hexagon.

Examples

area\_of\_hexagon(1) ➞ 2.6

area\_of\_hexagon(2) ➞ 10.4

area\_of\_hexagon(3) ➞ 23.4

Question 5. Create a function that returns a base-2 (binary) representation of a base-10 (decimal) string number. To convert is simple: ((2) means base-2 and (10) means base-10) 010101001(2) = 1 + 8 + 32 + 128.

Going from right to left, the value of the most right bit is 1, now from that every bit to the left will be x2 the value, value of an 8 bit binary numbers are (256, 128, 64, 32, 16, 8, 4, 2, 1).

Examples

binary(1) ➞ "1"

# 1\*1 = 1

binary(5) ➞ "101"

# 1\*1 + 1\*4 = 5

binary(10) ➞ "1010"

# 1\*2 + 1\*8 = 10

# Programming\_Assingment17.docx

Question1. Create a function that takes three arguments a, b, c and returns the sum of the numbers that are evenly divided by c from the range a, b inclusive.

Examples

evenly\_divisible(1, 10, 20) ➞ 0

# No number between 1 and 10 can be evenly divided by 20.

evenly\_divisible(1, 10, 2) ➞ 30

# 2 + 4 + 6 + 8 + 10 = 30

evenly\_divisible(1, 10, 3) ➞ 18

# 3 + 6 + 9 = 18

Question2. Create a function that returns True if a given inequality expression is correct and False otherwise.

Examples

correct\_signs("3 < 7 < 11") ➞ True

correct\_signs("13 > 44 > 33 > 1") ➞ False

correct\_signs("1 < 2 < 6 < 9 > 3") ➞ True

Question3. Create a function that replaces all the vowels in a string with a specified character.

Examples

replace\_vowels("the aardvark", "#") ➞ "th# ##rdv#rk"

replace\_vowels("minnie mouse", "?") ➞ "m?nn?? m??s?"

replace\_vowels("shakespeare", "\*") ➞ "sh\*k\*sp\*\*r\*"

Question4. Write a function that calculates the factorial of a number recursively.

Examples

factorial(5) ➞ 120

factorial(3) ➞ 6

factorial(1) ➞ 1

factorial(0) ➞ 1

Question 5

Hamming distance is the number of characters that differ between two strings.

To illustrate:

String1: "abcbba"

String2: "abcbda"

Hamming Distance: 1 - "b" vs. "d" is the only difference.

Create a function that computes the hamming distance between two strings.

Examples

hamming\_distance("abcde", "bcdef") ➞ 5

hamming\_distance("abcde", "abcde") ➞ 0

hamming\_distance("strong", "strung") ➞ 1

# Programming\_Assingment18.docx

Question 1

Create a function that takes a list of non-negative integers and strings and return a new list without the strings.

Examples

filter\_list([1, 2, "a", "b"]) ➞ [1, 2]

filter\_list([1, "a", "b", 0, 15]) ➞ [1, 0, 15]

filter\_list([1, 2, "aasf", "1", "123", 123]) ➞ [1, 2, 123]

Question 2

The "Reverser" takes a string as input and returns that string in reverse order, with the opposite case.

Examples

reverse("Hello World") ➞ "DLROw OLLEh"

reverse("ReVeRsE") ➞ "eSrEvEr"

reverse("Radar") ➞ "RADAr"

Question 3

You can assign variables from lists like this:

lst = [1, 2, 3, 4, 5, 6]

first = lst[0]

middle = lst[1:-1]

last = lst[-1]

print(first) ➞ outputs 1

print(middle) ➞ outputs [2, 3, 4, 5]

print(last) ➞ outputs 6

With Python 3, you can assign variables from lists in a much more succinct way. Create variables first, middle and last from the given list using destructuring assignment (check the Resources tab for some examples), where:

first ➞ 1

middle ➞ [2, 3, 4, 5]

last ➞ 6

Your task is to unpack the list writeyourcodehere into three variables, being first, middle, and last, with middle being everything in between the first and last element. Then print all three variables.

Question 4

Write a function that calculates the factorial of a number recursively.

Examples

factorial(5) ➞ 120

factorial(3) ➞ 6

factorial(1) ➞ 1

factorial(0) ➞ 1

Question 5

Write a function that moves all elements of one type to the end of the list.

Examples

move\_to\_end([1, 3, 2, 4, 4, 1], 1) ➞ [3, 2, 4, 4, 1, 1]

# Move all the 1s to the end of the array.

move\_to\_end([7, 8, 9, 1, 2, 3, 4], 9) ➞ [7, 8, 1, 2, 3, 4, 9]

move\_to\_end(["a", "a", "a", "b"], "a") ➞ ["b", "a", "a", "a"]

# Programming\_Assingment19.docx

Question1

Create a function that takes a string and returns a string in which each character is repeated once.

Examples

double\_char("String") ➞ "SSttrriinngg"

double\_char("Hello World!") ➞ "HHeelllloo WWoorrlldd!!"

double\_char("1234!\_ ") ➞ "11223344!!\_\_ "

Question2

Create a function that reverses a boolean value and returns the string "boolean expected" if another variable type is given.

Examples

reverse(True) ➞ False

reverse(False) ➞ True

reverse(0) ➞ "boolean expected"

reverse(None) ➞ "boolean expected"

Question3

Create a function that returns the thickness (in meters) of a piece of paper after folding it n number of times. The paper starts off with a thickness of 0.5mm.

Examples

num\_layers(1) ➞ "0.001m"

# Paper folded once is 1mm (equal to 0.001m)

num\_layers(4) ➞ "0.008m"

# Paper folded 4 times is 8mm (equal to 0.008m)

num\_layers(21) ➞ "1048.576m"

# Paper folded 21 times is 1048576mm (equal to 1048.576m)

Question4

Create a function that takes a single string as argument and returns an ordered list containing the indices of all capital letters in the string.

Examples

index\_of\_caps("eDaBiT") ➞ [1, 3, 5]

index\_of\_caps("eQuINoX") ➞ [1, 3, 4, 6]

index\_of\_caps("determine") ➞ []

index\_of\_caps("STRIKE") ➞ [0, 1, 2, 3, 4, 5]

index\_of\_caps("sUn") ➞ [1]

Question5

Using list comprehensions, create a function that finds all even numbers from 1 to the given number.

Examples

find\_even\_nums(8) ➞ [2, 4, 6, 8]

find\_even\_nums(4) ➞ [2, 4]

find\_even\_nums(2) ➞ [2]

# Programming\_Assingment2.docx

Write a Python program to convert kilometers to miles?

Write a Python program to convert Celsius to Fahrenheit?

Write a Python program to display calendar?

Write a Python program to solve quadratic equation?

Write a Python program to swap two variables without temp variable?

# Programming\_Assingment20.docx

Question1

Create a function that takes a list of strings and integers, and filters out the list so that it returns a list of integers only.

Examples

filter\_list([1, 2, 3, "a", "b", 4]) ➞ [1, 2, 3, 4]

filter\_list(["A", 0, "Edabit", 1729, "Python", "1729"]) ➞ [0, 1729]

filter\_list(["Nothing", "here"]) ➞ []

Question2

Given a list of numbers, create a function which returns the list but with each element's index in the list added to itself. This means you add 0 to the number at index 0, add 1 to the number at index 1, etc...

Examples

add\_indexes([0, 0, 0, 0, 0]) ➞ [0, 1, 2, 3, 4]

add\_indexes([1, 2, 3, 4, 5]) ➞ [1, 3, 5, 7, 9]

add\_indexes([5, 4, 3, 2, 1]) ➞ [5, 5, 5, 5, 5]

Question3

Create a function that takes the height and radius of a cone as arguments and returns the volume of the cone rounded to the nearest hundredth. See the resources tab for the formula.

Examples

cone\_volume(3, 2) ➞ 12.57

cone\_volume(15, 6) ➞ 565.49

cone\_volume(18, 0) ➞ 0

Question4

This Triangular Number Sequence is generated from a pattern of dots that form a triangle. The first 5 numbers of the sequence, or dots, are:

1, 3, 6, 10, 15

This means that the first triangle has just one dot, the second one has three dots, the third one has 6 dots and so on.

Write a function that gives the number of dots with its corresponding triangle number of the sequence.

Examples

triangle(1) ➞ 1

triangle(6) ➞ 21

triangle(215) ➞ 23220

Question5

Create a function that takes a list of numbers between 1 and 10 (excluding one number) and returns the missing number.

Examples

missing\_num([1, 2, 3, 4, 6, 7, 8, 9, 10]) ➞ 5

missing\_num([7, 2, 3, 6, 5, 9, 1, 4, 8]) ➞ 10

missing\_num([10, 5, 1, 2, 4, 6, 8, 3, 9]) ➞ 7

# Programming\_Assingment21.docx

Question1

Write a function that takes a list and a number as arguments. Add the number to the end of the list, then remove the first element of the list. The function should then return the updated list.

Examples

next\_in\_line([5, 6, 7, 8, 9], 1) ➞ [6, 7, 8, 9, 1]

next\_in\_line([7, 6, 3, 23, 17], 10) ➞ [6, 3, 23, 17, 10]

next\_in\_line([1, 10, 20, 42 ], 6) ➞ [10, 20, 42, 6]

next\_in\_line([], 6) ➞ "No list has been selected"

Question2

Create the function that takes a list of dictionaries and returns the sum of people's budgets.

Examples

get\_budgets([

{ "name": "John", "age": 21, "budget": 23000 },

{ "name": "Steve", "age": 32, "budget": 40000 },

{ "name": "Martin", "age": 16, "budget": 2700 }

]) ➞ 65700

get\_budgets([

{ "name": "John", "age": 21, "budget": 29000 },

{ "name": "Steve", "age": 32, "budget": 32000 },

{ "name": "Martin", "age": 16, "budget": 1600 }

]) ➞ 62600

Question3

Create a function that takes a string and returns a string with its letters in alphabetical order.

Examples

alphabet\_soup("hello") ➞ "ehllo"

alphabet\_soup("edabit") ➞ "abdeit"

alphabet\_soup("hacker") ➞ "acehkr"

alphabet\_soup("geek") ➞ "eegk"

alphabet\_soup("javascript") ➞ "aacijprstv"

Question4

Suppose that you invest $10,000 for 10 years at an interest rate of 6% compounded monthly. What will be the value of your investment at the end of the 10 year period?

Create a function that accepts the principal p, the term in years t, the interest rate r, and the number of compounding periods per year n. The function returns the value at the end of term rounded to the nearest cent.

For the example above:

compound\_interest(10000, 10, 0.06, 12) ➞ 18193.97

Note that the interest rate is given as a decimal and n=12 because with monthly compounding there are 12 periods per year. Compounding can also be done annually, quarterly, weekly, or daily.

Examples

compound\_interest(100, 1, 0.05, 1) ➞ 105.0

compound\_interest(3500, 15, 0.1, 4) ➞ 15399.26

compound\_interest(100000, 20, 0.15, 365) ➞ 2007316.26

Question5

Write a function that takes a list of elements and returns only the integers.

Examples

return\_only\_integer([9, 2, "space", "car", "lion", 16]) ➞ [9, 2, 16]

return\_only\_integer(["hello", 81, "basketball", 123, "fox"]) ➞ [81, 123]

return\_only\_integer([10, "121", 56, 20, "car", 3, "lion"]) ➞ [10, 56, 20, 3]

return\_only\_integer(["String", True, 3.3, 1]) ➞ [1]

# Programming\_Assingment22.docx

Question1

Create a function that takes three parameters where:

x is the start of the range (inclusive).

y is the end of the range (inclusive).

n is the divisor to be checked against.

Return an ordered list with numbers in the range that are divisible by the third parameter n. Return an empty list if there are no numbers that are divisible by n.

Examples

list\_operation(1, 10, 3) ➞ [3, 6, 9]

list\_operation(7, 9, 2) ➞ [8]

list\_operation(15, 20, 7) ➞ []

Question2

Create a function that takes in two lists and returns True if the second list follows the first list by one element, and False otherwise. In other words, determine if the second list is the first list shifted to the right by 1.

Examples

simon\_says([1, 2], [5, 1]) ➞ True

simon\_says([1, 2], [5, 5]) ➞ False

simon\_says([1, 2, 3, 4, 5], [0, 1, 2, 3, 4]) ➞ True

simon\_says([1, 2, 3, 4, 5], [5, 5, 1, 2, 3]) ➞ False

Notes

Both input lists will be of the same length, and will have a minimum length of 2.

The values of the 0-indexed element in the second list and the n-1th indexed element in the first list do not matter.

Question3

A group of friends have decided to start a secret society. The name will be the first letter of each of their names, sorted in alphabetical order.

Create a function that takes in a list of names and returns the name of the secret society.

Examples

society\_name(["Adam", "Sarah", "Malcolm"]) ➞ "AMS"

society\_name(["Harry", "Newt", "Luna", "Cho"]) ➞ "CHLN"

society\_name(["Phoebe", "Chandler", "Rachel", "Ross", "Monica", "Joey"])

Question4

An isogram is a word that has no duplicate letters. Create a function that takes a string and returns either True or False depending on whether or not it's an "isogram".

Examples

is\_isogram("Algorism") ➞ True

is\_isogram("PasSword") ➞ False

# Not case sensitive.

is\_isogram("Consecutive") ➞ False

Notes

Ignore letter case (should not be case sensitive).

All test cases contain valid one word strings.

Question5

Create a function that takes a string and returns True or False, depending on whether the characters are in order or not.

Examples

is\_in\_order("abc") ➞ True

is\_in\_order("edabit") ➞ False

is\_in\_order("123") ➞ True

is\_in\_order("xyzz") ➞ True

Notes

You don't have to handle empty strings.

# Programming\_Assingment23.docx

Question 1

Create a function that takes a number as an argument and returns True or False depending on whether the number is symmetrical or not. A number is symmetrical when it is the same as its reverse.

Examples

is\_symmetrical(7227) ➞ True

is\_symmetrical(12567) ➞ False

is\_symmetrical(44444444) ➞ True

is\_symmetrical(9939) ➞ False

is\_symmetrical(1112111) ➞ True

Question 2

Given a string of numbers separated by a comma and space, return the product of the numbers.

Examples

multiply\_nums("2, 3") ➞ 6

multiply\_nums("1, 2, 3, 4") ➞ 24

multiply\_nums("54, 75, 453, 0") ➞ 0

multiply\_nums("10, -2") ➞ -20

Question 3

Create a function that squares every digit of a number.

Examples

square\_digits(9119) ➞ 811181

square\_digits(2483) ➞ 416649

square\_digits(3212) ➞ 9414

Notes

The function receives an integer and must return an integer.

Question 4

Create a function that sorts a list and removes all duplicate items from it.

Examples

setify([1, 3, 3, 5, 5]) ➞ [1, 3, 5]

setify([4, 4, 4, 4]) ➞ [4]

setify([5, 7, 8, 9, 10, 15]) ➞ [5, 7, 8, 9, 10, 15]

setify([3, 3, 3, 2, 1]) ➞ [1, 2, 3]

Question 5

Create a function that returns the mean of all digits.

Examples

mean(42) ➞ 3

mean(12345) ➞ 3

mean(666) ➞ 6

Notes

The mean of all digits is the sum of digits / how many digits there are (e.g. mean of digits in 512 is (5+1+2)/3(number of digits) = 8/3=2).

The mean will always be an integer.

# Programming\_Assingment24.docx

Question1

Create a function that takes an integer and returns a list from 1 to the given number, where:

If the number can be divided evenly by 4, amplify it by 10 (i.e. return 10 times the number).

If the number cannot be divided evenly by 4, simply return the number.

Examples

amplify(4) ➞ [1, 2, 3, 40]

amplify(3) ➞ [1, 2, 3]

amplify(25) ➞ [1, 2, 3, 40, 5, 6, 7, 80, 9, 10, 11, 120, 13, 14, 15, 160, 17, 18, 19, 200, 21, 22, 23, 240, 25]

Notes

The given integer will always be equal to or greater than 1.

Include the number (see example above).

To perform this problem with its intended purpose, try doing it with list comprehensions. If that's too difficult, just solve the challenge any way you can.

Question2

Create a function that takes a list of numbers and return the number that's unique.

Examples

unique([3, 3, 3, 7, 3, 3]) ➞ 7

unique([0, 0, 0.77, 0, 0]) ➞ 0.77

unique([0, 1, 1, 1, 1, 1, 1, 1]) ➞ 0

Notes

Test cases will always have exactly one unique number while all others are the same.

Question3

Your task is to create a Circle constructor that creates a circle with a radius provided by an argument. The circles constructed must have two getters getArea() (PIr^2) and getPerimeter() (2PI\*r) which give both respective areas and perimeter (circumference).

For help with this class, I have provided you with a Rectangle constructor which you can use as a base example.

Examples

circy = Circle(11)

circy.getArea()

# Should return 380.132711084365

circy = Circle(4.44)

circy.getPerimeter()

# Should return 27.897342763877365

Notes

Round results up to the nearest integer.

Question4

Create a function that takes a list of strings and return a list, sorted from shortest to longest.

Examples

sort\_by\_length(["Google", "Apple", "Microsoft"])

➞ ["Apple", "Google", "Microsoft"]

sort\_by\_length(["Leonardo", "Michelangelo", "Raphael", "Donatello"])

➞ ["Raphael", "Leonardo", "Donatello", "Michelangelo"]

sort\_by\_length(["Turing", "Einstein", "Jung"])

➞ ["Jung", "Turing", "Einstein"]

Notes

All test cases contain lists with strings of different lengths, so you won't have to deal with multiple strings of the same length.

Question5

Create a function that validates whether three given integers form a Pythagorean triplet. The sum of the squares of the two smallest integers must equal the square of the largest number to be validated.

Examples

is\_triplet(3, 4, 5) ➞ True

# 3² + 4² = 25

# 5² = 25

is\_triplet(13, 5, 12) ➞ True

# 5² + 12² = 169

# 13² = 169

is\_triplet(1, 2, 3) ➞ False

# 1² + 2² = 5

# 3² = 9

Notes

Numbers may not be given in a sorted order.

# Programming\_Assingment25.docx

Question1

Create a function that takes three integer arguments (a, b, c) and returns the amount of integers which are of equal value.

Examples

equal(3, 4, 3) ➞ 2

equal(1, 1, 1) ➞ 3

equal(3, 4, 1) ➞ 0

Notes

Your function must return 0, 2 or 3.

Question2

Write a function that converts a dictionary into a list of keys-values tuples.

Examples

dict\_to\_list({

"D": 1,

"B": 2,

"C": 3

}) ➞ [("B", 2), ("C", 3), ("D", 1)]

dict\_to\_list({

"likes": 2,

"dislikes": 3,

"followers": 10

}) ➞ [("dislikes", 3), ("followers", 10), ("likes", 2)]

Notes

Return the elements in the list in alphabetical order.

Question3

Write a function that creates a dictionary with each (key, value) pair being the (lower case, upper case) versions of a letter, respectively.

Examples

mapping(["p", "s"]) ➞ { "p": "P", "s": "S" }

mapping(["a", "b", "c"]) ➞ { "a": "A", "b": "B", "c": "C" }

mapping(["a", "v", "y", "z"]) ➞ { "a": "A", "v": "V", "y": "Y", "z": "Z" }

Notes

All of the letters in the input list will always be lowercase.

Question4

Write a function, that replaces all vowels in a string with a specified vowel.

Examples

vow\_replace("apples and bananas", "u") ➞ "upplus und bununus"

vow\_replace("cheese casserole", "o") ➞ "chooso cossorolo"

vow\_replace("stuffed jalapeno poppers", "e") ➞ "steffed jelepene peppers"

Notes

All words will be lowercase. Y is not considered a vowel.

Question5

Create a function that takes a string as input and capitalizes a letter if its ASCII code is even and returns its lower case version if its ASCII code is odd.

Examples

ascii\_capitalize("to be or not to be!") ➞ "To Be oR NoT To Be!"

ascii\_capitalize("THE LITTLE MERMAID") ➞ "THe LiTTLe meRmaiD"

ascii\_capitalize("Oh what a beautiful morning.") ➞ "oH wHaT a BeauTiFuL moRNiNg."

# Programming\_Assingment3.docx

Write a Python Program to Check if a Number is Positive, Negative or Zero?

Write a Python Program to Check if a Number is Odd or Even?

Write a Python Program to Check Leap Year?

Write a Python Program to Check Prime Number?

Write a Python Program to Print all Prime Numbers in an Interval of 1-10000?

# Programming\_Assingment4.docx

Write a Python Program to Find the Factorial of a Number?

Write a Python Program to Display the multiplication Table?

Write a Python Program to Print the Fibonacci sequence?

Write a Python Program to Check Armstrong Number?

Write a Python Program to Find Armstrong Number in an Interval?

Write a Python Program to Find the Sum of Natural Numbers?

# Programming\_Assingment5.docx

Write a Python Program to Find LCM?

Write a Python Program to Find HCF?

Write a Python Program to Convert Decimal to Binary, Octal and Hexadecimal?

Write a Python Program To Find ASCII value of a character?

Write a Python Program to Make a Simple Calculator with 4 basic mathematical operations?

# Programming\_Assingment6.docx

Write a Python Program to Display Fibonacci Sequence Using Recursion?

Write a Python Program to Find Factorial of Number Using Recursion?

Write a Python Program to calculate your Body Mass Index?

Write a Python Program to calculate the natural logarithm of any number?

Write a Python Program for cube sum of first n natural numbers?

# Programming\_Assingment7.docx

Write a Python Program to find sum of array?

Write a Python Program to find largest element in an array?

Write a Python Program for array rotation?

Write a Python Program to Split the array and add the first part to the end?

Write a Python Program to check if given array is Monotonic?

# Programming\_Assingment8.docx

Write a Python Program to Add Two Matrices?

Write a Python Program to Multiply Two Matrices?

Write a Python Program to Transpose a Matrix?

Write a Python Program to Sort Words in Alphabetic Order?

Write a Python Program to Remove Punctuation From a String?

# Programming\_Assingment9.docx

Write a Python program to check if the given number is a Disarium Number?

Write a Python program to print all disarium numbers between 1 to 100?

Write a Python program to check if the given number is Happy Number?

Write a Python program to print all happy numbers between 1 and 100?

Write a Python program to determine whether the given number is a Harshad Number?

Write a Python program to print all pronic numbers between 1 and 100?