1 Init [...]

2 Part 1 - 25 questions

Q1

Which of the following expressions has a different type than the rest?

Options :

```
  I. 6/2
 II. 2.0+5
III. 6%5
 IV. (63/7)//3
```

Solution : III

Q2

Which of the following statements evaluates to False?

Options :

```
  I. bool(-1)
 II. float(2)==2
III. bool("aaaa".replace("a",""))
 IV. bool("False")
```

Solution : III

Q3

In [ ]:

```
st2=string.upper().replace("A","-")
```

executed in 2ms, finished 12:00:53 2020-06-06

If st2==string , which of the following statements about the value of string are true?

A. No non-alphabetical characters

B. Alphabetical characters are in upper case

C. No "-" characters

D. No "A" characters

Options :

I. A,B,D

II. A,C

III. B,D

IV. B,C

Solution : III

Q4

In [ ]:

```
st2=string*3 + "22"
```

executed in 3ms, finished 12:02:36 2020-06-06

Which of the following statements is correct ?

Options :

I. If string does not represent a number, there is an error

II. st2 contains 3 repetitions of string followed by "22".

III. Every digit d in string is replaced by str(float(d)*3+22) in st2

IV. st2 is a list [string, string, string, "22"]

Solution : II

Q5

In [ ]:

```
# MISSING LINE
seq[3]="a"
```

executed in 64ms, finished 11:47:54 2020-06-06

Which of the following substitutions for # MISSING LINE , will not result in any error

A. seq=["1","2"]
B. seq=list("Hello")
C. seq="Hello"
D. seq=(1,2,3,4)

Options :

I. B
II. D
III. B,C
IV. B,C,D

Solution : I

Q6

The statement (a,b) < (c,d) evaluates to True in which of the following cases

A. a < b, c < d
B. a==b, c < d

C. a < b, c > d

D. a > b, c < d

Options :

I. A

II. A,B

III. A,B,C

IV. A,C,D

Solution : III

Q7

How can we append a new element to a tuple object?

Options :

I. .append() method

II. .extend() method

III. .add() method

IV. Not possible

Solution : IV

Q8

In [ ]:

```
def split_line(string):
    parts=string.split()
    lengths=[]
    for p in parts:
        lengths.append(parts)
    return parts,lengths
```

executed in 3ms, finished 12:12:57 2020-06-06

What is the output of type(split_line("Hello what is up")) ?

Options :

I. str
II. tuple
III. list
IV. dict

Solution : II

Q9

In [ ]:

```
mylist=["a","b","c","d"]
print(" ".join(mylist)==" ".join(mylist[:]),end=",")
print(id(mylist)==id(mylist[:]))
```

executed in 3ms, finished 12:14:20 2020-06-06

What is the output of the previous snippet?

Options :

I. True,True
II. True,False
III. False,True
IV. False,False

Solution : II

Q10

Which of the following types are INVALID keys for a dictionary?

A. A boolean value

B. A list

C. A dictionary

D. A tuple

Options :

I. A,B,C,D

II. B,C,D

III. B,D

IV. B,C

Solution : IV

Q11

In which of the following scenarios does set(mylist) result in an error?

A. mylist contains duplicate values

B. mylist contains mixed values

C. mylist contains a list

D. mylist contains a tuple

Options :

I. C

II. D

III. B,C,D

IV. A,B,C,D

Solution : I

Q12

In [ ]:

```
with open("myfile.txt",M1) as fo:
    fo.write("This is the first line\n")

with open("myfile.txt",M2) as fo:
    fo.write("Second line\n")
```

executed in 2ms, finished 00:46:33 2020-06-06

Which of the following statements are correct

A. If myfile.txt does not exist, if M1=="w" then there is no error.

B. If myfile.txt does not exist, if M1=="a" then there is an error.

C. If M2=="w" , the final content of myfile.txt will be exactly one line.

D. If M2=="a" , the final content of myfile.txt will be exactly one line.

Options :

I. A,B,C

II. A,C

III. A,D

IV. B,C

Solution : II

Q13

In [ ]:

```
with open("passage.txt") as fi:
    count=0
    for x in fi:
        count+=1
    print(count)
```

executed in 4ms, finished 12:21:47 2020-06-06

Choose the best answer to describe the output of the previous snippet

Options :

I. The number of characters in the file
II. The number of space separated words in the file
III. The number of lines in the file
IV. The number of bytes in the file

Solution : III

Q14

Consider the following list of dictionaries representing people

```
people=[

    {"name":"Kareena Sharma",
     "email_id":"kreenaS1993@gmail.com"
     "ph-no":"+91-XXXXX-XXXXX"
    },
    ....
    ....
    ]
```

From this we want to create a telephone number directory

```
directory={}
for person in people:
    directory[person["name"]]=person["ph-no"]
```

Which of the following scenarios can cause issues with this code?

A. people with the same phone number
B. people with the same name
C. people without recorded phone numbers

Options :

I. A,B
II. A,C
III. A,B,C

IV. B,C

Solution : IV

Q15

In [ ]:

```
def create_index(mylist):
    positions={}
    for i,num in enumerate(mylist):
        if num not in positions:
            positions[num]=[]
        positions[num].append(i)
    return positions
```

executed in 3ms, finished 12:32:33 2020-06-06

Assume that mylist is always passed as a list of numbers.
Which of the following statements are true?

A. It's possible to reconstruct mylist from create_index(mylist).

B. len(create_index(mylist))==len(mylist) always

C. len(create_index(mylist))<len(mylist) always

D. create_index([]) results in an error.

Options :

I. A

II. A,C

III. C,D

IV. B

Solution : I

Q16

In [ ]:

```
def find_common(list1,list2):
    common=[]
    for value in list1:
        if value in list2:
            common.append(value)
    return common

def find_common_2(list1,list2):
    common=set(list1)&set(list2)
    return list(common)
```

executed in 3ms, finished 12:34:34 2020-06-06

Which of the following statements are true?

A. The result of both functions is always the same

B. The result of both functions is always different

C. len(find_common_1(list1,list2)) >= len(find_common_2(list1,list2)) is always true.

D. len(find_common_1(list1,list2)) < len(find_common_2(list1,list2)) is always true.

Options :

I. A,C

II. B,D

III. B,C

IV. C

Solution : IV

Q17

In [ ]:

```
def number_cases(number):
    if number < 100 :
        print("A")
    elif number > 120:
        print("B")
    else:
        print("C")
```

executed in 3ms, finished 12:37:34 2020-06-06

What can we say about number if "C" is printed?

Options :

I. number lies in [100,120]
II. number is less than 120
III. number is greater than 100
IV. Not possible

Solution : I

Q18

In [ ]:

```
def number_cases(number):
    if number < 100 :
        print("A")
    elif number > 10:
        print("B")
    else:
        print("C")
```

executed in 3ms, finished 12:45:26 2020-06-06

What can we say about number if "C" is printed?

Options :

I. number lies in (10,100)
II. number is less that 10

III. number is greater than 100
IV. Not possible

Solution : IV

Q19

In [ ]:

```
def string_cases(string):
    if string[0].isupper():
        print("A",end="")
    if string[-1].isupper():
        print("B",end="")
    else:
        print("C")
```

executed in 3ms, finished 12:46:03 2020-06-06

Consider only strings made up of alphabetical characters, i.e. a-z and A-Z . A string is uppercase, if all of its characters are in uppercase.

Which of the following statements are correct about this code

A. AB is printed only for uppercase strings.
B. "ABC" is a valid output for this function.
C. Input value of "" will resut in an error.
D. "C" is a valid output for this function.

Options :

I. A,B,C,D
II. A,C
III. C,D
IV. D

Solution : III

Q20

In [ ]:

```
def number_cases(number):
    if number <-5 or number > 22:
        return

    if number %3 ==0:
        return

    if number%5==0:
        print("MAGIC")
```

executed in 4ms, finished 12:46:42 2020-06-06

For how many numbers will this code print "MAGIC"?

Options :

I. 0
II. 4
III. 6
IV. 9

Solution : II

Q21

In [ ]:

```
def sum_my_list(mylist):
    mysum=0
    for el in mylist:
        if el < 0:
            return
        mysum+=el
        if mysum > 50:
            break
    return mysum
```

executed in 4ms, finished 12:50:49 2020-06-06

Which of the following statements are true ?

A. Lists containing negative numbers result in errors.
B. The return value of [22,15,-1,23] is None .
C. The maximum numeric value returned by this function is 50.
D. mylist can also be a set() of numbers.

Options :

I. A,D
II. A,C,D
III. B,C
IV. B,D

Solution : IV

Q22

In [ ]:

```
def process_list(mylist):
    index=0
    already_done=[index]
    while True:
        print(mylist[index])
        new_index=mylist[index]%len(mylist)
        if new_index in already_done:
            break
        index=new_index
        already_done.append(index)
```

executed in 3ms, finished 12:59:09 2020-06-06

Assume that mylist is a list of numbers. Which of the following statements are true?

A. Some values of mylist cause an infinite loop.
B. process_list(mylist) prints at least len(mylist) values.
C. process_list(mylist) prints at most len(mylist) values.
D. Negative numbers in mylist will cause an error

Options :

I. C
II. A,B
III. A,D
IV. C,D

Solution : I

Q23

In [ ]:

```
import random

def sample_random_number(low,high):
    while high-low>1:
        mid=random.randint(low,high)
        print(mid)
        high=mid
```

executed in 3ms, finished 13:04:12 2020-06-06

In [ ]:

```
sample_random_number(1,9)
```

executed in 3ms, finished 13:04:27 2020-06-06

Which of the following are possible outputs of sample_random_number(1,9) ?

A. 1,5,8,7
B. 4,7,9
C. 5,5,3,1
D. 5,3,2,1

Options :

I. C
II. C,D
III. A
IV. A,B

Solution : I

Q24

In [ ]:

```
def factorial(num):
    i=num
    factorial=1
    while i!=0:
        factorial*=i
        i-=1
    return factorial
```

executed in 3ms, finished 13:06:26 2020-06-06

A piece of code is said to terminate, if it finishes execution after some finite amount of time. Which of the following statements are true?

A. If num==0 then the function does not terminate.

B. If type(num)==float then the function does not terminate.

C. The function terminates for positive int values.

D. The function does not terminate for negative int or float values for num .

Options :

I. C

II. C,D

III. A,B,C

IV. B,C,D

Solution : II

Q25

In [ ]:

```
import copy

obj1=copy.copy(my_object)
obj2=copy.deepcopy(my_object)
```

For which values of my_object , will obj1 and obj2 behave differently? Choose the best answer.

A. [1,2,"Hello",True]

B. [[1,2],[3,4,5]]

C. [{"hello":True},3,4,5]

D. set([1,2,3,4])

Options :

I. A,B,C,D

II. A,C

III. B,C

IV. D

Solution : III

3 Part 2 - 1+25 questions

Q0

Please read the following information, before you attempt all the questions related to numpy.

- An array with 2 axes, i.e. whose ndim attribute = 2, will be referred to as a 2D array in the following questions.
- If A is a 2D array, A[i,:] gives us the ith ROW of A.
- If A is a 2D array, A[:,j] gives us the jth ROW of A.

Options :

I. Yes, understood.

Solution : I , no marks

Q1

Which of the following functions CANNOT be used to create a new array

Options :

I. np.array
II. np.zeros
III. np.ones
IV. np.where

Solution : IV

Q2

Given that A is any arbitrary array. Which of the following values is different from the rest?

Options :

I. np.argsort(A).size
II. A.reshape(1,-1).size
III. np.concatenate([A,A]).size
IV. A.T.size

Solution : III

Q3

In [ ]:

```
X=np.zeros((5,5))
X[:,0]=2
Y=np.sum(3/X)
```

executed in 4ms, finished 13:53:49 2020-06-06

What is the value of Y?

Options :

I. 7.5
II. np.inf
III. -np.inf
IV. np.nan

Solution : II

Q4

In [ ]:

```
A = np.random.randint(1,10,(na_1,5,1))
B = np.random.randint(1,10,(1,1,nb_3))
C = np.random.randint(1,10,(6,nc_2,nc_3))

D = A + B + C
```

executed in 3ms, finished 13:27:57 2020-06-06

Which of the following combinations for (na_1,nb_3,nc_2,nc_3) will not throw an error?

A. (1,7,10,3)
B. (6,7,1,7)
C. (1,3,5,3)
D. (6,3,1,1)

Options :

I. A, C, D
II. A, C

III. B, D

IV. B, C, D

Solution : IV

Q5

In [ ]:

```
A=np.random.randint(2,10,(n1,n2,n3,n4))
B= A * A.T
```

executed in 3ms, finished 13:58:22 2020-06-06

Which of the following statements are True about the above statement

A. When the operation is valid, all elements are perfect squares.

B. The operation is always valid if n1,n2,n3,n4 is a palindrome (symmetrical).

C. The operation is always valid if n2=1 and n4=1

D. The operation is always valid if n4=1 and n1=1

Options :

I. A,B,C

II. C,D

III. B,C

IV. B,C,D

Solution : III

Q6

We are given two arrays A, B of shapes (n1,n2) and (n2,n3) respectively.

We want to create an array C of shape (n1,n2,n3) such that,

C[i,j,k]=A[i,j]+B[j,k]

Which of the following operations achieves the required result?

A. np.expand_dims(A,axis=1) + np.expand_dims(B,axis=1)
B. np.expand_dims(A,axis=2) + np.expand_dims(B,axis=0)
C. A.reshape(n1,1,n2) + B.reshape(n3,n2)
D. A.reshape(n1,n2,1) + B

Options :

I. A
II. B
III. A,C
IV. B,D

Solution : IV

Q7

We are given a 3D array of shape (3,3,3) called A. We are also given another 1D array of shape (3,) called B.

Which of the following statements are true?

A. C = A + B then C[i,j,k]==A[i,j,k] + B[i]
B. C = A + B then C[i,j,k]==A[i,j,k] + B[j]
C. C = A + B then C[i,j,k]==A[i,j,k] + B[k]
D. C = A + B.reshape(-1,1) then C[i,j,k]==A[i,j,k] + B[j]

Options :

I. C,D
II. A,D
III. A
IV. D

Solution : I

Q8

In [ ]:

```
A=np.random.randint(1,10,(4,4))
B=A[np.max(A,axis=1)<5]
```

Which of the following best describes B?

Options :

I. The rows of A where the row maximum is less than 5.

II. The columns of A where the column maximum is less than 5

III. All elements of A which are greater than 5

IV. All elements of A which are smaller than the row maximum

Solution : I

Q9

In [ ]:

```
def A_func(num):
    A=np.ones((num,num))
    for i in range(0,num):
        A[i,:]*=i
    for j in range(0,num):
        A[:,j]*=j
    return A

def B_func(num):
    A=np.ones((num,num))
    for i in range(0,num):
        A[i,:]=np.arange(0,num)
    for j in range(0,num):
        A[:,j]*=np.arange(0,num)
    return A
```

executed in 5ms, finished 14:08:57 2020-06-06

Which of the following statements evaluates to True

A. A_func(num) and B_func(num) are always equal.

B. A_func(num) and B_func(num) are only equal along the diagonal.

C. A_func(num) can be written as np.arange(0,num)*np.arange(0,num).reshape(-1,1)

D. B_func(num) can be written as np.arange(0,num)*np.arange(0,num)

Options :

I. A, D

II. A, C

III. B, D

IV. B, C

Solution : II

Q10

A is an arbitrary array. Which of the following values is different from the others?

Options :

I. A.reshape(-1).shape[0]
II. A.shape
III. A.flatten().shape[0]
IV. A.size

Solution : II

Q11

A is an arbitrary 2D array. Which of the following statements are true?

A. np.argsort(A,axis=0)[0,:] tells us the row indices of the minimum of each column.
B. np.argsort(A,axis=0)[0,:] tells us the column indices of the minimum of each row.
C. np.argsort(A,axis=0)[-1,:] tells us the sorted order of the last row.
D. np.argsort(A,axis=0)[:,-1] tells us the sorted order of the last column.

Options :

I. A,D
II. A,C,D
III. B,C,D
IV. B,C

Solution : I

Q12

Suppose A is any 2D array with shape (5,5). Our goal is to rescale each value in a row, such that the sum of each row is 1.

Which of the following statements achieves this goal?

Options :

I. A / np.sum(A,axis=0).reshape(-1,1)
II. A / np.sum(A,axis=1)
III. A / np.sum(A,axis=1).reshape(-1,1)
IV. A / np.sum(A,axis=1).reshape(1,-1)

Solution : III

Q13

In [ ]:

```
A=np.random.randint(1,10,(4,4))
parts=[]
for i in range(0,2):
    for j in range(0,2):
        parts.append(A[2*i:2*(i+1),2*j:2*(j+1)])
C=np.concatenate(parts,axis=0)
```

executed in 5ms, finished 14:54:49 2020-06-06

What is the shape of C?

Options :

I. (8,2)
II. (4,4)
III. (4,2,2)
IV. (2,2)

Solution : I

Q14

You are given an array A whose shape is (5,6,7). Which of the following statements are true,

A. A[:,3:4,2].shape==(5,1)

B. A[:,3:4,2].shape==(5,)

C. A[:,5,:].shape==(5,7)

D. A[:,5,:].shape==(5,1,7)

Options :

I. A,C

II. A,D

III. B,C

IV. B,D

Solution : I

Q15

In [ ]:

```
B=A[np.arange(0,A.shape[0]),np.arange(0,A.shape[0])]
```

executed in 8ms, finished 15:05:03 2020-06-06

A is a 2D array. Which of the following statements are True

A. If A.shape[0]!=A.shape[1], there will be an error.

B. If A.shape[0]==A.shape[1], B contains all the diagonal elements of A.

C. B.shape==(A.shape[0]*A.shape[1],)

D. B.shape==(A.shape[0],)

Options :

I. A,B,D

II. B,C

III. B,D

IV. A

Solution : III

Q16

In [ ]:

```
B=A-np.min(A,axis=0).reshape(1,-1)
```

executed in 3ms, finished 15:06:02 2020-06-06

A is any arbitrary 2D array. Which of the following best describes B with respect to A?

Options :

I. Each element in A has been subtracted by the corresponding row minimum

II. Each element in A has been subtracted by the corresponding column minimum

III. Not applicable, there is a broadcasting error for some shapes of A

IV. Not applicable, there is a reshaping error for some shapes of A.

Solution : II

Q17

In [ ]:

```
A=np.random.randint(1,10,(n1,n2,n3))
B=np.random.randint(1,10,(n3,n4))
C=np.sum(A,axis=0)+np.min(B,axis=1)
```

executed in 4ms, finished 15:09:16 2020-06-06

Which of the following statements is correct?

Options :

I. Broadcasting error for some values of n1,n2,n3,n4
II. C[i,j]==np.sum(A[:,i,j])+np.min(B[j])
III. C[i,j]==np.sum(A[:,i,j])+np.min(B[i])
IV. C[i,j,k]==np.sum(A[i,j,k])+np.min(B[i,j])

Solution : II

Q18

In [ ]:

```
x=np.sum(np.arange(0,5)/np.arange(0,5))
```

executed in 3ms, finished 15:10:14 2020-06-06

What is the value of x?

Options :

I. 55
II. Not applicable, there is an error while calculating X
III. np.nan
IV. np.inf

Solution : III

Q19

In [ ]:

```
X=np.sum(A>np.mean(A,axis=0))
```

executed in 2ms, finished 15:13:40 2020-06-06

A is an arbitrary 2D array. What is the best description for

X?

Options :

I. Not applicable, there is an error while calculating X
II. The sum of elements of A greater than the corresponding column average
III. The number of elements of A greater than the corresponding column average
IV. The sum of elements of A greater than the corresponding row average

Solution : III

Q20

Let A be an arbitrary array. Which of the following values is not equal to the others?

Options :

I. np.argwhere(A!=0).shape[0]
II. np.nonzero(A)[0].shape[0]
III. np.sum(A!=0)
IV. np.where(A>0,1,0)

Solution : IV

Q21

In [ ]:

```
A = np.random.randint(1,10,(4,5))
```

executed in 3ms, finished 15:16:25 2020-06-06

Which of the following values is not equivalent to the others?

Options :

I. A[2][2:5]
II. A[[2],2:]
III. A.T[-3:,2]
IV. A[2,[2,3,4]]

Solution : II

Q22

In [ ]:

```
B=A[np.logical_and(A<5,A>3)]
```

executed in 3ms, finished 15:18:23 2020-06-06

Let A be any arbitrary array Which of the following best describes B?

Options :

I. A boolean array of the same shape as A, s.t. B[...] is True if A[...] is between 3 & 5
II. The number of elements in A which are between 3 and 5
III. The sum of the elements in A which are between 3 and 5
IV. A 1D array with all the elements in A between 3 and 5

Solution : IV

Q23

A is a 2D array. Which of the following statements gives us the rows of A which contain the number 5?

A. A[A==5]
B. A[np.where(A==5)]

C. A[np.sum(A==5,axis=1)>0]

D. A[np.unique(np.argwhere(A==5)[:,0])]

Options :

I. A,B

II. B,C,D

III. C,D

IV. B,D

Solution : III

Q24

In [ ]:

```
C=np.zeros((A.shape[0],B.shape[0]))
for i in range(0,A.shape[0]):
    for j in range(0,B.shape[0]):
        C[i,j]=np.sum(A[i,:]*B[j,:])
```

executed in 4ms, finished 15:28:11 2020-06-06

Assume in the above code, that A and B are 2D arrays such that A.shape[1]==B.shape[1] . Which of the following statements computes the same value as C?

Options :

I. A.reshape(A.shape[0],B.shape[0])*B.reshape(A.shape[0],B.sl

II. np.sum(A.reshape(A.shape[0],1,-1)*B.reshape(1,B.shape[0],·

III. np.sum(A.reshape(A.shape[0],1,-1)*B.reshape(B.shape[0],-1

IV. np.sum(A.reshape(A.shape[0],1,-1)*B.reshape(1,B.shape[0],·

Solution : IV

Q25

In [ ]:

```
alpha=np.random.randint(0,2,(4,4))
beta=np.random.randint(0,4,(4,4))
A=np.random.randint(1,10,(3,7))
```

executed in 4ms, finished 15:30:28 2020-06-06

Which of the following statements are true

A. A[alpha,beta].shape==(4,4,7)

B. A[alpha,:].shape==(4,4,7)

C. A[:,beta].shape==(3,4,4)

D. A[alpha,beta].shape==(4,4)

Options :

I. B,C,D

II. A,C,D

III. B,C

IV. B

Solution : I
