

15 November
Tuesday

Chapter Python Modules

1) Some types of modules: There are many modules in python, some are,

- a. math module
- b. json module
- c. random module
- d. statistic module

2) random module: Some functions of random module are listed below.

a. random(): It returns a random floating point number n in the range. For example, its range is (0.0 to 1.0)

```
import random  
print(random.random())  
op  $\rightarrow$  0.787145
```

b. randint(a, b): Returns a random integer in the range of a and b .
For example, `print(random.randint(10, 72))`

```
import random  
print(random.randint(1,5))
```

op $\rightarrow$ 3

c. randrange(start(opt), stop, step(or)):

no definition

For example, `randrange(4)` $\Rightarrow$ numbers from 0-3

`randrange(2,7)` $\Rightarrow$ 2, 3, 4, 5, 6

`randrange(1,8,3)` $\Rightarrow$ 1, 4, 7

7. Statistic module: It calculates the arithmetic mean of the numbers in the list.

For example, `import statistics`
`print(statistics.mean([1,2,3]))`

op $\rightarrow$ 2

ii. median(): Returns the middle value of numeric data in a list.

If a data set has even number of values, it averages the two middle terms.
For example, `print(statistics.median([1,5,7,11,18]))`
`print(statistics.median([1,2,3,4]))`

output $\rightarrow 7$
3.5

iii) `mode()`: It returns the most repeated value of a list or sequence passed.

For example,

```
print(statistics.mode([1,2,1,2,1,1,3,4]))
```

op $\rightarrow 1$

8) What could be the minimum possible and maximum number by the following code.

```
import random  
print(random.randint
```

Ans) Minimum possible number = 0
Max possible number = 7

because `randint(3,10)` would generate a random integer number in the range (3,10). Subtracting 3 from it would change the range to 0 to 7.

Given the following .py code which is repeated four times, what could be the possible four outcomes out of different 4 sets (dddd represents any combination of digits).

options

- i) 17.dddd 19.dddd 20.dddd 15.dddd
- ii) 15.dddd 17.dddd 19.dddd 18.dddd
- iii) 14.dddd 16.dddd 18.dddd 20.dddd
- iv) 15.dddd 15.dddd 15.dddd 15.dddd

Ans) ii and iv is answer because

a) random() generates any number between $0.0 \leq N < 1.0$

b) random() * 5 generates the range 0.0 to less than 5.

c) When 15 is added to it, the range becomes 15.0 to <20.

10) Find the output.

```
import random
print(int(20 + random.random() * 5), end=' ')
print(int(20 + random.random() * 5), end=' ')
print(int(20 + random.random() * 5), end=' ')
print(int(20 + random.random() * 5))
```

Write the least and highest value that can be generated.

Find the suggested output from (i) to (iv).

(i) 20 22 24 25

(ii) 22 23 24 25

(iii) 23 24 23 24

(iv) 21 21 21 21

Ans) option iii and iv

least possible value will be 20 and highest 24.

11) Find the suggested output options in (i) to (iv), also write the least and highest value.

```
import random
```

```
print(100 + random.randint(5, 10), end='')
```

```
print(100 + random.randint(5, 10), end='')
```

```
print(100 + random.randint(5, 10), end='')
```

```
print(100 + random.randint(5, 10))
```

options

(i) 102 105 104 105

(ii) 110 103 104 105

(iii) 105 107 105 110

(iv) 110 105 105 110

Ans) Least value = 105

Most value = 110

option (iii) and (iv)

2) Find the output and check the correct options.

```
import math
```

```
import random
```

```
print(str(int(math.pow(random.randint(2, 4), 2))), end='')
```

ctrl+v

ctrl+v

options

(i) 2 3 4 (ii) 9 4 4 (iii) 16 16 16
(iv) 2 4 9 (v) 4 9 4 (vi) 4 4 4

Ans) options are (ii) (iii) (v) (vi)
least value - 4
Most value - 16

13) Choose correct possible answers(s).

```
import random
```

```
a = random.randint(1, 5)
```

```
b = random.randint(1, 3)
```

```
c = random.randint(2, 6)
```

```
print(a, b, c)
```

options → (i) 2 1 3 (ii) 4 4 4
(iii) 3 2 1 (iv) 5 3 5

Ans) Answers is (i) and (iv)

14) Choose the correct answer in the following questions.

(i) import random

```

x = [100, 75, 10, 125]
Go = random.randint(0, 3)
for i in range(Go):
    print(x[i], '$$')

```

options

- (i) 100\$\$ 75\$\$ 10\$\$
- (ii) 75\$\$ 10\$\$ 125\$\$ 125\$\$
- (iii) 75\$\$ 10\$\$
- (iv) 10\$\$ 125\$\$ 100\$\$

Ans) Option (i) is correct.

Go	i	print
0	-	
1	0	x[0] => 100\$\$
2	0, 1	x[0] => 100\$\$ x[1] => 75\$\$
3	0, 1, 2	100\$\$ 75\$\$ 10\$\$

```

ii) import random
sides = ["East", "West", "North", "South"]
n = random.randint(1, 3)
out = ''
for i in range(n, 1, -1):

```

```
out = out + sides[i]
print(out)
```

options

- i) South North
- ii) South
- iii) South North West
- iv) East West North

Sol. option (i) is correct

n = 1, 2, 3			
n	range(n, 1, -1)	i	out
1	(1, 1, -1)	-	-
2	(2, 1, -1)	2	North
3	(3, 1, -1)	3 2	South North

iii) import random
x=3

n = random.randint(1, x)

for i in range(n):
 print(i, "#", i+1)

a) min and max times the loop will execute?

Ans) min = 1, max = 3

b) Which isn't expected?

0#1

1#2

2#3

3#4

Sol. option 3#4

15) Import Selected Function

Using examples:-

import math: If you

want to import selected functions from any module, you can mention it by 'from' statement. For example,

from math import sqrt
from math import pi, pow

n	i	i#i+1
1	0	0#1
2	0,1	0#1 1#2
3	0,1,2	0#1 1#2 2#3