

Chap-8 Introduction to Python Modules

1. What is a module in Python?

- A) A hardware component
- B) A Python file containing reusable code
- C) A type of variable
- D) A type of loop

2. Which statement is used to import a module in Python?

- A) include
- B) using
- C) import
- D) module

3. Which of the following is a built-in Python module?

- A) math
- B) computer
- C) program
- D) code

4. Which statement imports the complete math module?

- A) include math
- B) import math
- C) from math
- D) use math

5. Which statement imports only sqrt from the math module?

- A) import sqrt
- B) from math import sqrt
- C) math import sqrt
- D) include sqrt from math

6. Which function is used to find the square root?

- A) math.square()
- B) math.root()
- C) math.sqrt()
- D) math.sqroot()

7. What is the output of math.factorial(5)?

- A) 25
- B) 100
- C) 120
- D) 125

8. Which function is used to calculate factorial?

- A) math.fact()
- B) math.factorial()
- C) math.factor()
- D) math.product()

9. What does math.ceil(4.2) return?

- A) 4
- B) 4.2
- C) 5
- D) 3

10. Which function is used to find the GCD of two numbers?

- A) math.gcd()
- B) math.greatest()
- C) math.divisor()
- D) math.common()

11. What is the value of math.pow(2, 3)?

- A) 6.0
- B) 8.0
- C) 9.0
- D) 5.0

12. Which function generates a random floating-point number between 0.0 and 1.0?

- A) random.randint()
- B) random.random()
- C) random.randrange()
- D) random.choice()

13. What can random.randint(1, 10) return?

- A) Only 1
- B) Only 10
- C) Any integer from 1 to 10
- D) Only numbers from 1 to 9

14. Which function selects a random item from a sequence?

- A) random.select() **B) random.choice()**
C) random.item() D) random.pick()

15. Which function randomly rearranges the elements of a list?

- A) random.change() B) random.choice()
C) random.shuffle() D) random.reverse()

16. Which function is used to calculate the arithmetic mean?

- A) statistics.average() **B) statistics.mean()**
C) statistics.avg() D) statistics.middle()

17. What is the mean of [10, 20, 30]?

- A) 10 **B) 20**
C) 30 D) 60

Answer: B

18. Which function is used to find the median?

- A) statistics.middle() **B) statistics.median()**
C) statistics.mid() D) statistics.mean()

19. What is the median of [10, 20, 30, 40, 50]?

- A) 20 B) 25
C) 30 D) 40

20. What is the mode of [2, 3, 3, 4, 5]?

- A) 2 **B) 3**
C) 4 D) 5

Short Questions

1. What is a module in Python?

Answer: A module is a Python file containing functions, variables, classes, and statements that can be reused in another Python program.

2. Why are modules used in Python?

Answer: Modules are used to:

- Reuse code
- Organize programs
- Reduce code repetition
- Make programs easier to maintain

3. What is the use of the import statement?

Answer: The import statement is used to make the contents of a module available in a Python program.

Example:

import math

4. How can we import a complete module?

Answer: We use the following syntax:

```
import module_name
```

Example:

```
import math  
print(math.sqrt(25))
```

5. How can we import a specific function from a module?

Answer: We use:

```
from module_name import function_name
```

Example:

```
from math import sqrt  
print(sqrt(25))
```

6. What is the difference between import math and from math import sqrt?

Answer:

- import math imports the complete math module and we use math.sqrt().
- from math import sqrt imports only the sqrt() function and we use sqrt() directly.

7. What is the use of math.sqrt() and math.factorial()?

Answer:

- math.sqrt() returns the square root of a number.
- math.factorial() returns the factorial of a non-negative integer.

Example:

```
math.sqrt(25)    # 5.0  
math.factorial(5) # 120
```

8. What is the difference between math.ceil() and math.floor()?

Answer:

- ceil() returns the smallest integer greater than or equal to the number.
- floor() returns the largest integer less than or equal to the number.

Example:

```
math.ceil(4.2)  # 5  
math.floor(4.8) # 4
```

9. What is the random module?

Answer:

The random module is a built-in Python module used to generate pseudo-random numbers and make random selections.

10. What is the difference between random.randint() and random.randrange()?

Answer:

- randint(a, b) returns a random integer **including both a and b**.
- randrange(a, b) selects a value from the range where the **stop value b is excluded**.

Example:

```
random.randint(1, 10) # 1 to 10
random.randrange(1, 10) # 1 to 9
```

11. What is the use of `random.choice()` and `random.shuffle()`?

Answer:

- `choice()` selects a random item from a sequence.
- `shuffle()` randomly rearranges the elements of a list.

Example:

```
random.choice([10, 20, 30])
random.shuffle([10, 20, 30])
```

12. What is the statistics module?

Answer: The statistics module is a built-in Python module used to perform statistical calculations such as **mean, median and mode**.

13. What are mean, median and mode?

Answer:

- **Mean:** Average of all values.
- **Median:** Middle value after arranging the data.
- **Mode:** Value that occurs most frequently.

Example for [10, 20, 20, 30, 40]:

Mean = 24

Median = 20

Mode = 20

Long Questions

Q1. What is a module? Write any two advantages of using modules.

Answer: A **module** is a Python file containing functions, variables, classes and statements that can be reused in another Python program.

Advantages:

1. It promotes code reusability.
2. It makes programs easier to organize and maintain.

Q2. Explain the two ways of importing a module with examples.

Answer:

1. Importing the complete module:

```
import math
print(math.sqrt(25))
```

2. Importing a specific object:

```
from math import sqrt
print(sqrt(25))
```

Q3. Write any three functions of the math module and state their uses.

Answer:

Function	Use
sqrt()	Finds square root
factorial()	Finds factorial
gcd()	Finds GCD of two numbers

Q4. Explain random.randint(), random.randrange() and random.choice().

Answer:

- randint(a,b) returns a random integer from a to b, including both.
- randrange() returns a random value from a specified range, with the stop value excluded.
- choice() selects a random item from a sequence.

Example:

```
import random
print(random.randint(1, 10))
print(random.randrange(1, 10))
print(random.choice(["A", "B", "C"]))
```

Q5. Explain the math module and write a Python program using five functions of the module.

Answer:

The math module is a built-in Python module that provides mathematical functions and constants.

Five commonly used functions are:

- sqrt() — square root
- pow() — power
- factorial() — factorial
- ceil() — ceiling value
- floor() — floor value

Program:

```
import math
print("Square root =", math.sqrt(25))
print("Power =", math.pow(2, 3))
print("Factorial =", math.factorial(5))
print("Ceiling =", math.ceil(4.3))
print("Floor =", math.floor(4.8))
```

Q6. Explain the random module and write a program demonstrating five functions.

Answer:

The random module is used to generate pseudo-random numbers and make random selections.

Important functions include:

- random()
- randint()
- randrange()
- choice()
- shuffle()

Program:

```
import random
```

```
print("Random number =", random.random())  
print("Random integer =", random.randint(1, 10))  
print("Random range value =", random.randrange(1, 10))
```

```
names = ["Amit", "Riya", "Rahul"]  
print("Selected name =", random.choice(names))
```

```
numbers = [1, 2, 3, 4, 5]  
random.shuffle(numbers)  
print("Shuffled list =", numbers)
```

Q7. Explain the statistics module and write a program to calculate mean, median and mode.

Answer:

The statistics module provides functions for calculating statistical values.

Important functions are:

- mean() — calculates average
- median() — finds the middle value
- mode() — finds the most frequently occurring value

Program:

```
import statistics
```

```
numbers = [10, 20, 20, 30, 40]  
print("Mean =", statistics.mean(numbers))  
print("Median =", statistics.median(numbers))  
print("Mode =", statistics.mode(numbers))
```