Masterclass in Python - Exercise Set 1

Predict the Output
Python Programming Exercises

Instructions:

- For each question, carefully read the Python code
- Predict what will be displayed when the program runs
- Write your answer in the space provided
- Consider operator precedence, data types, and control flow
- If there are multiple lines of output, write each on a separate line
- For programs with input(), assume the input values are provided as mentioned

Easy Level Questions (1-10)

These questions test basic understanding of print(), variables, and simple operations.

Question 1:

```
print("Welcome to Python")
print("Let's start coding!")
```

Your Answer:

Question 2:

```
x = 10
y = 5
print(x + y)
print(x - y)
```

Your Answer:

Question 3:

```
name = "Bob"
city = "Mumbai"
print("Hello", name)
print("You live in", city)
```

Your Answer:

Question 4:

```
a = 8
b = 3
print(a * b)
print(a / b)
```

Your Answer:

Question 5:

```
marks = 95
if marks > 90:
    print("Excellent performance!")
```

Your Answer:

Question 6:

```
age = 16
if age >= 18:
    print("You can vote")
else:
    print("You cannot vote yet")
```

Your Answer:

Question 7:

```
p = 12
q = 12
print(p == q)
print(p > q)
```

Your Answer:

Question 8:

```
number = 20
print(number // 6)
print(number % 6)
```

Your Answer:

Question 9:

```
score = 45
if score >= 40:
    print("You passed the exam")
```

Your Answer:

Question 10:

```
first = "Good"
second = "Morning"
print(first + " " + second + "!")
```

Your Answer:

Medium Level Questions (11-20)

These questions involve multiple concepts and require careful analysis of operator precedence and control flow.

Question 11:

```
base = 4
exponent = 3
print(base ** exponent)
print(base % exponent)
```

Your Answer:

Question 12:

```
temperature = 35
if temperature > 30:
    print("It's hot outside")
else:
    print("Pleasant weather")
print("Check complete")
```

Your Answer:

Question 13:

```
x = 6
y = 4
z = x + y * 3
print(z)
print(x < y or y < 10)
```

Your Answer:

Question 14:

```
percentage = 67
if percentage >= 90:
    print("A+ Grade")
elif percentage >= 80:
    print("A Grade")
elif percentage >= 70:
    print("B Grade")
elif percentage >= 60:
    print("C Grade")
else:
    print("Need to improve")
```

Your Answer:

Question 15:

```
m = 15
n = 8
result = m > n and n > 5
print(result)
print(not result)
```

Your Answer:

Question 16:

```
num1 = 25
num2 = 30
if num1 > 20 and num2 > 20:
    product = num1 * num2
    print("Product is:", product)
```

Your Answer:

Question 17:

```
value = ""
if value:
    print("Non-empty")
else:
    print("Empty")
print(value == "")
```

Your Answer:

Question 18:

```
a = 9
b = 6
c = 3
result = a - b * c + 2
print(result)
print(result < a)
```

Your Answer:

Question 19:

```
speed = 65
limit = 60
if speed > limit:
    fine = (speed - limit) * 10
    print("Speeding fine: Rs.", fine)
else:
    print("Within speed limit")
```

Your Answer:

Question 20:

```
x = 4
y = 9
z = x * 3 - y // 2
print(z)
if z > 5:
    print("Greater than 5")
    z = z + 3
    print("Updated value:", z)
```

Your Answer:

Hard Level Questions (21-30)

These questions test complex logic, edge cases, and advanced understanding of Python concepts.

Question 21:

```
side1 = 5
side2 = 7
side3 = 10
if side1 + side2 > side3 and side1 + side3 > side2 and side2 + side3
> side1:
    perimeter = side1 + side2 + side3
    print("Valid triangle with perimeter:", perimeter)
else:
    print("Invalid triangle")
```

Your Answer:

Question 22:

```
p = 3
q = 4
r = 2
expression = p ** q - r * (p + q) + r ** p
print(expression)
if expression % 5 == 0:
    print("Divisible by 5")
else:
    print("Not divisible by 5")
```

Your Answer:

Question 23:

```
salary = 45000
experience = 3
if salary >= 40000 and experience >= 2:
    if experience < 5:
        bonus = salary * 0.1
        print("Junior bonus:", bonus)
    else:
        bonus = salary * 0.15
        print("Senior bonus:", bonus)
else:
    print("No bonus eligible")
```

Your Answer:

Question 24:

```
flag1 = True
flag2 = False
flag3 = True
condition1 = flag1 and flag2 or flag3
condition2 = flag1 and (flag2 or flag3)
print(condition1)
print(condition2)
print(condition1 == condition2)
```

Your Answer:

Question 25:

```
number = 153
if number > 100:
    if number % 2 == 1:
        if number % 3 == 0:
            print("Odd and divisible by 3")
        else:
            print("Odd but not divisible by 3")
    else:
        print("Even and greater than 100")
else:
    print("Number is small")
```

Your Answer:

Question 26:

```
x = 8
y = 0
z = 12
if x and y and z:
    print("All are true")
elif x and z:
    print("X and Z are true")
elif x or y or z:
    print("At least one is true")
else:
    print("All are false")
```

Your Answer:

Question 27:

```
num1 = 7
num2 = 12
num3 = 4
largest = num1
if num2 > largest:
    largest = num2
if num3 > largest:
    largest = num3
average = (num1 + num2 + num3) / 3
print("Largest:", largest)
print("Above average?", largest > average)
```

Your Answer:

Question 28:

```
test1 = 88
test2 = 76
test3 = 92
average = (test1 + test2 + test3) / 3
print("Average score:", average)
if average >= 85:
    grade = "A"
elif average >= 75:
    grade = "B"
elif average >= 65:
    grade = "C"
else:
    grade = "F"
print("Final grade:", grade)
result = "Pass" if grade != "F" else "Fail"
print("Result:", result)
```

Your Answer:

Question 29:

```
year = 2000
if year % 4 == 0:
    if year % 100 == 0:
        if year % 400 == 0:
            print(year, "is a leap year")
        else:
            print(year, "is not a leap year")
    else:
        print(year, "is a leap year")
else:
    print(year, "is not a leap year")
```

Your Answer:

Question 30:

```
a = 9
b = 4
c = 6
# Complex boolean expression
complex_condition = a > b and b < c or not(a == c) and (a + b) % c
== 1
print("Condition result:", complex_condition)
if complex_condition:
    final_result = a * b - c
    print("Path A - Result:", final_result)
else:
    final_result = a + b + c
    print("Path B - Result:", final_result)
print("Data type:", type(final_result).__name__)
```

Your Answer:

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