Conditional Statements Questions

1. **What is the syntax of an if-else statement in Python?**

- Conditions are expressions that evaluate to True or False.
- Use elif for multiple conditional branches.
- Indentation (usually 4 spaces) defines which statements belong to each block.
- The else block is optional.

Example:-

```
if condition:
    # code block executed when condition is True
    do_something()
elif another_condition:
    # (optional) code if the first condition is False but this one is True
else:
    # (optional) code if all above conditions are False
    do_default_thing()
```

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2. **Explain the difference between if, elif, and else with an example.**

if: The first condition checked. If it's True, its block executes and Python skips the rest.

elif ("else if"): Checked **only if previous** if **or** elif **blocks were** False. You can have multiple elif statements to check several conditions in sequence.

else: This catches **all remaining cases** when none of the if or elif conditions are True. It's optional and doesn't take a condition.

3. **Can an else block exist without an if block? Why or why not?**

   if checks a condition.

   else provides the fallback when that condition is **not** met.

   Without an if (or elif in an if chain), Python has no context for the else, so it's **invalid** code.

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4. **What will happen if the condition in an if statement is not a boolean but a non-zero number or non-empty string?**

   Any **non-zero number** (e.g., 5, -3, 3.14)

   Any **non-empty sequence or collection** (e.g., "hello", [1], (0,),{ 'a': 1 }, etc.

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5. **How does Python evaluate multiple elif conditions? Will it check all or stop at the first True? it works:**

   - Evaluate if ...:
   - If True, run its block and skip all following elif or else
   - Else, move to the next elif: and repeat
   - Else block runs only if none of the if/elif conditions were True

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6. **What is the output of the following code? Explain why:**

```
a = 5
if a > 10:
    print("Greater than 10")
elif a == 5:
    print("Equal to 5")
else:
    print("Less than 10")
```

Output:- Equal to 5

7. **Write a program that checks whether a given number is:**

- **Positive**
- **Negative**
- **Zero**

SOURCE CODE:-

```
def check_number(n):
    if n > 0:
        print("Positive")
    elif n < 0:
        print("Negative")
    else:
        print("Zero")

check_number(7)
check_number(0)
check_number(-3)
```

8.Write a Python script to check whether a person is eligible to vote (age ≥ 18).

SOURCE CODE:

```
age = int(input("Enter your age: "))
if age >= 18:
    print("You are eligible to vote.")
```

```
else:


print("You are not eligible to vote yet.")
```

9.Write a Python program to check whether a number is even or odd.

SOURCE CODE:

```
num = int(input("Enter a number: "))

if num % 2 == 0:

    print(f"{num} is Even")

else:

    print(f"{num} is Odd")
```

---

10. Create a Python program that takes a student's marks and prints the grade:

A (90–100)
B (75–89)
C (50–74)
D (below 50)

SOURCE CODE:

```
marks = float(input("Enter your marks: "))

if 90 <= marks <= 100:
```

```
    grade = 'A'
elif 75 <= marks < 90:
    grade = 'B'
elif 50 <= marks < 75:
    grade = 'C'
elif 0 <= marks < 50:
    grade = 'D'
else:
    grade = 'Invalid marks'
   print(f"Your grade is: {grade}")
```

CODE :

1.x = 10

```
if x > 5:
    print("Greater than 5")
```

OUTPUT:-Greater than 5

2.age = 17

```
  if age >= 18:
       print("Adult")
else:
           print("Minor")
```

OUTPUT:-Minor

3**.marks = 85**

```
if marks >= 90:
    print("A")
elif marks >= 75:
    print("B")
else:
    print("C")
```

OUTPUT:-B

4.num = 4

```
if num % 2 == 0:
    print("Even")
```

OUTPUT:-Even

5.x = 0

```
if x:
    print("Truthy")
else:
    print("Falsey")
```

OUTPUT:- Falsey

6.name = "Alice"

```
if name:
    print("Not empty")
```

OUTPUT:- Not empty

7.login = False

```
if not login:
    print("Please log in")
```

OUTPUT:- Please log in

8.temp = 25

```
if temp > 30:
    print("Hot")
else:
    print("Normal")
```

OUTPUT:-Normal

9.x = 5

```
print("Even" if x % 2 == 0 else "Odd")
```

OUTPUT:-Odd

10.status = "active"

```
if status == "active":
    print("Running")
```

OUTPUT:-Running

11.score = 40

```
if score >= 35 and score < 50:
    print("Just Pass")
```

OUTPUT:-Just Pass

12.val = "False"

```
if val:
    print("Truthy string")
```

OUTPUT:-Truthy string

13.x = 5

```
y = 10
if x < y and y < 20:
    print("Valid range")
```

OUTPUT:- Valid range

14.if 1 < x < 10:

```
    print("Chained comparison")
```

OUTPUT:-Error!

Name error

15.if x == 1 or 2:

```
    print("Tricky condition")
```

OUTPUT:-Error!

Name error: x not defined

16.msg = ""

```
if not msg:
    print("Empty string")
```

OUTPUT:-Empty string

17.x = 0

```
if x == 0:
    print("Zero")
```

OUTPUT:-Zero

18.user = "admin"

```
if user == "Admin":
    print("Case sensitive")
```

OUTPUT:-Case sensitive

19.if type(10) == int:

```
    print("Integer")
```

OUTPUT:- Integer

20. a = 3

```
     b = 5
    if a + b == 8:
    print("Correct sum")
```

OUTPUT:- Correct sum

21.lst = []

```
if not lst:
    print("Empty list")
```

OUTPUT:- Empty list

22.x = None

```
if x is None:
```

```
    print("None check")
```

OUTPUT:- None check

23.if "" or 0:

```
    print("Mixed falsey")
```

OUTPUT:- Mixed falsey

24.flag = True

```
if flag and not False:
    print("Works")
```

OUTPUT:- Works

25.def check():

```
    print("Checked")
    return True
if True or check():
    print("Short-circuit")
```

OUTPUT:- Short-circuit

26.x = 0.1 + 0.2

```
if x == 0.3:
    print("Float issue")
```

OUTPUT:- Float issue

27.data = [1, 2, 3]

```
if 2 in data:
    print("Found")
```

OUTPUT:-Found

28.is_admin = True

```
is_logged = False

if is_logged and is_admin:

    print("Admin access")
```

OUTPUT:- Admin access

29.num = 5

```
if num % 2 == 0:

    print("Even")

else:

    if num % 5 == 0:

        print("Divisible by 5")
```

OUTPUT:- Divisible by 5

30.a = 1000

```
b = 1000

if a == b and a is not b:

    print("Equal but not same object")
```

OUTPUT:- Equal but not same object