

Q1: What is selection in computational thinking and programming?

Answer: Selection is a fundamental programming construct where an algorithm evaluates a comparison rule (condition) to produce a binary True or False result, determining which set of instructions to execute next.

Q2: Name the three essential components that form a conditional statement.

Answer: The three essential components of a conditional statement are:

1. **The Condition:** The comparison expression evaluated as True or False.
2. **True Action Branch:** The set of statements executed when the condition is True (following keywords like THEN).
3. **False Action Branch / Alternate Path:** The set of statements executed when the condition is False (managed by ELSE or ELSEIF).

Q3: What are the primary pseudocode keywords used to construct selection statements, and what are their specific roles?

Answer: Primary pseudocode keywords used to construct selection statements are:

- IF: Initiates the conditional evaluation.
- THEN: Introduces the statements to execute if the test condition is True.
- ELSE: Introduces default statements to execute if all preceding conditions evaluate to False.
- ELSEIF: Evaluates a secondary test condition if preceding conditions were False.
- ENDIF: Marks the termination boundary of the selection block.

Q4: Why is indentation critical when authoring selection structures in pseudocode?

Answer: Indentation visually offsets (moves) subordinate action lines from the main vertical margin, making it clear which code blocks belong inside specific branches and where the conditional structure ends.

Q5: Define the operational behavior of the Boolean logical operators AND, OR, and NOT.

Answer:

- AND: Returns True only if **both** evaluated conditions on either side are True.
- OR: Returns True if **at least one** condition on either side is True; it is False only when both conditions are False.
- NOT: Reverses the logical outcome (turns True to False, and False to True).

Q6: What is the default order of operator precedence for Boolean logic evaluation, and how can it be altered?

Answer: The standard precedence order is:

1. NOT (highest priority)
2. AND (Moderate priority)
3. OR (lowest priority)

This evaluation sequence can be overridden using **brackets** (), which force the enclosed expression to evaluate first.

Q7: Trace the following pseudocode segment and determine the final output produced.

```
START
score = 45
IF score >= 80 THEN
    OUTPUT "Distinction"
ELSEIF score >= 50 THEN
    OUTPUT "Pass"
ELSE
    OUTPUT "Needs Improvement"
ENDIF
END
```

Answer:

Q8: Trace the logic of this algorithm for temperature = 22 and state the output.

```
START
IF temperature > 30 OR temperature < 15 THEN
    OUTPUT "Extreme weather"
ELSE
    OUTPUT "Comfortable weather"
ENDIF
END
```

Answer:

Q9: Analyze the code below. If itemCount = 0, what message will be printed on screen?

```
START
IF NOT (itemCount = 0) THEN
    OUTPUT "In Stock"
ELSE
    OUTPUT "Out of Stock"
ENDIF
END
```

Answer:

Q10: Contrast how a decision branch is depicted in a visual flowchart versus text-based pseudocode.

Answer: In flowcharts, selection is visually represented by a diamond decision shape with branching directional arrows marked "Yes/No" or "True/False". In text-based pseudocode, it is structured sequentially using control keywords (IF, THEN, ELSE, ENDIF) paired with indented code blocks.