
tags: - cocubes - pseudocode - practice

Pseudocode Drills

Set a 15-minute timer. Show your variable table on rough paper before checking answers.

Questions

1. Even sum

```
SET s = 0
FOR i = 1 TO 6
  IF i MOD 2 = 0 THEN
    SET s = s + i
  END IF
END FOR
DISPLAY s
```

2. Number reversal

```
SET n = 420
SET r = 0
WHILE n > 0
  SET r = r * 10 + (n MOD 10)
  SET n = n DIV 10
END WHILE
DISPLAY r
```

3. Value swap

```
SET a = 5, b = 2
SET a = a + b
SET b = a - b
SET a = a - b
DISPLAY a, b
```

4. Powers

```
SET a = 3, b = 4, result = 1
WHILE b > 0
  SET result = result * a
  SET b = b - 1
```

```
END WHILE
DISPLAY result
```

5. Nested IF

```
SET x = 5, y = 8, z = 3
IF x > y THEN
    DISPLAY 1
ELSE
    IF y > z THEN
        DISPLAY 2
    ELSE
        DISPLAY 3
    END IF
END IF
```

6. Recursion

```
FUNCTION G(n)
    IF n <= 1 THEN
        RETURN 1
    ELSE
        RETURN n * G(n - 1)
    END IF
END FUNCTION
DISPLAY G(4)
```

7. Counting

```
SET c = 0
FOR i = 10 TO 16
    IF i MOD 3 = 1 THEN
        SET c = c + 1
    END IF
END FOR
DISPLAY c
```

8. Repeat-until

```
SET x = 1
REPEAT
    SET x = x * 2
UNTIL x >= 10
DISPLAY x
```

9. Complexity

```
FOR i = 1 TO n
  SET j = 1
  WHILE j <= n
    SET j = j * 2
  END WHILE
END FOR
```

10. Fibonacci-style update

```
SET f = 0, g = 1
FOR i = 1 TO 4
  DISPLAY f
  SET f = f + g
  SET g = f + g
END FOR
```

Answers

1. 1. Add 2+4+6.
2. 1. Leading zero disappears in an integer.
3. 2, 5.
4. 81.
5. 2.
6. 24.
7. 1. Values are 10, 13, 16.
8. 1. The body runs before the condition check.
9. $O(n \log n)$.
10. 0, 1, 3, 8.

For every error, write the cause in `[[10_Templates/Error_Log|Error log]]`: update order, loop semantics, condition, integer division, recursion, or complexity.