

Review: Control flow with if, else, else if

1. Guess the type of if structure and the required pseudocode.

You're exploring a dungeon. If you have enough gold (> 50), you repair your armor. If your health is low (< 30), you rest to recover. These actions are independent and can both happen. Write pseudocode with the correct if structure.

```
SET gold = 75
SET health = 20
PRINT "You take a moment to assess your status..."
```

```
IF gold > 50 THEN
    PRINT "You repair your armor!"
END IF
```

```
IF health < 30 THEN
    PRINT "You rest and recover some health!"
END IF
```

2. Guess the type of if structure and the required pseudocode.

You trigger a trap in the dungeon. Your fate depends on your agility (1-100). Write pseudocode with the correct if structure for these outcomes: Agility 80: "You dodge the trap easily!", Agility 50: "You stumble but avoid the trap.", Agility 20: "You're hit but survive.", Otherwise: "The trap defeats you."

```
SET agility = 45
PRINT "A trap springs in the dungeon!"
```

```
IF agility >= 80 THEN
    PRINT "You dodge the trap easily!"
ELSE IF agility >= 50 THEN
    PRINT "You stumble but avoid the trap."
ELSE IF agility >= 20 THEN
    PRINT "You're hit but survive."
ELSE
```

```
    PRINT "The trap defeats you."
END IF
```

3. Guess the type of if structure and the required pseudocode.

You find a locked chest. To open it and claim a reward, you need a lockpick (true/false) and dexterity (0-100) of at least 60. Write pseudocode with the correct if structure for these outcomes: Lockpick and dexterity ≥ 60 : "You open the chest and find treasure!", Lockpick but dexterity < 60 : "You fail to pick the lock.", No lockpick: "You can't attempt to open the chest."

```
SET has_lockpick = true
SET dexterity = 55
PRINT "You discover a locked chest!"

IF has_lockpick THEN
    IF dexterity >= 60 THEN
        PRINT "You open the chest and find treasure!"
    ELSE
        PRINT "You fail to pick the lock."
    END IF
ELSE
    PRINT "You can't attempt to open the chest."
END IF
```

4. What do you think of this problem/pseudocode?

You're ambushed by goblins. If your strength is high (> 80), you fight them off. If you have a shield (true/false), you take less damage. These are separate actions that can both occur. Write pseudocode with the correct if structure.

Pseudocode:

```
SET strength = 85
SET has_shield = true
PRINT "Goblins ambush you!"
```

```

IF strength > 80 THEN
    PRINT "You fight off the goblins!"
ELSE IF has_shield THEN
    PRINT "You take less damage!"
END IF

```

Solution:

This uses a stacked `if` structure, implying only one outcome can happen, but both actions (fighting and reducing damage) should be independent.

```

SET strength = 85
SET has_shield = true
PRINT "Goblins ambush you!"

```

```

IF strength > 80 THEN
    PRINT "You fight off the goblins!"
END IF

```

```

IF has_shield THEN
    PRINT "You take less damage!"
END IF

```

5. What do you think of this problem/pseudocode?

You approach a magical door. To enter, you need a magic gem (true/false) and mana (0-100) of at least 50. Write pseudocode with the correct `if` structure for: Both true: "You pass through the door!", Gem but mana < 50: "The door blocks you.", No gem: "The door remains sealed."

```

SET has_gem = true
SET mana = 40
PRINT "You face a magical door!"

```

```

IF has_gem THEN
    PRINT "You pass through the door!"
ELSE IF mana >= 50 THEN
    PRINT "The door blocks you."

```

```
ELSE
    PRINT "The door remains sealed."
END IF
```

Solution:

This uses a stacked if structure, but passing through requires both conditions (gem AND mana) to be checked together, not as alternatives.

```
SET has_gem = true
SET mana = 40
PRINT "You face a magical door!"

IF has_gem THEN
    IF mana >= 50 THEN
        PRINT "You pass through the door!"
    ELSE
        PRINT "The door blocks you."
    END IF
ELSE
    PRINT "The door remains sealed."
END IF
```