AP Computer Science Principles Practice

Choose one answer per question. Circle A, B, C, or D.

1. A school archives a spreadsheet of exact measurement readings. It needs to recover every original digit after decompression. Which approach meets that requirement?
   A. Use lossless compression
   B. Round each reading before storing it
   C. Store one average per group of readings
   D. Drop the final digit of each reading

2. A public library invites volunteers to supply descriptive tags for photographs in its online archive. The library combines the volunteers' contributions. What approach does this illustrate?
   A. Random sampling
   B. Parallel execution
   C. Crowdsourcing
   D. Lossless compression

3. Two devices from different manufacturers exchange messages over the internet. What lets each device interpret the other's messages?
   A. They use identical processors
   B. They follow shared communication protocols
   C. They have the same amount of memory
   D. They store the same local files

4. Each badge in a collection needs a unique binary code of the same length. The collection grows from 8 badges to 9. What is the minimum code length that still allows a unique code for each badge?
   A. 9 bits
   B. 3 bits
   C. 5 bits
   D. 4 bits

5. A library surveys weekday afternoon visitors to estimate how many people in town would use Saturday hours. What is the main limitation of this approach?
   A. It uses the same question for each visitor
   B. It misses people who cannot visit on weekday afternoons
   C. It records preferences instead of visitor names
   D. It summarizes the responses as a percentage

6. A public notice can be served from three independent copies. If one copy becomes unavailable, either remaining copy can still serve the notice. Which design idea makes that possible?

A. Redundancy
B. Data compression
C. Random sampling
D. Sequential execution

7. Using list indices that start at 1, L begins as [12, 19, 25]. The program runs INSERT(L, 2, 17) followed by REMOVE(L, 3). What is L now?

A. [12, 19, 17]
B. [12, 19, 25]
C. [12, 17, 19]
D. [12, 17, 25]

8. A tool displays a notice when (editing OR reviewing) AND NOT archived is true. Which set of values causes the notice to appear?

A. editing false, reviewing false, archived false
B. editing true, reviewing false, archived true
C. editing false, reviewing true, archived false
D. editing false, reviewing true, archived true

9. A program cycles through eight slots numbered 1 through 8 using slot ← (ID MOD 8) + 1. Which slot receives ID 37?

A. 6
B. 5
C. 4
D. 7

10. A list contains [blue, white, white, green, white]. The program reads the element at index RANDOM(1, 5), where each integer from 1 through 5 is equally likely. What is the probability of reading white?

A. 2/5
B. 1/3
C. 1/5
D. 3/5

11. A program starts with n ← 3 and steps ← 0. In REPEAT UNTIL (n ≥ 12), the body adds 4 to n and adds 1 to steps on each pass. What is the final pair (n, steps)?

A. (11, 2)
B. (15, 4)
C. (15, 3)
D. (12, 3)

12. A procedure adjust(a, b) returns b − a when a < b. Otherwise, it returns a. What is the result of adjust(2, adjust(6, 4))?

A. 6
B. 4
C. 2
D. −2

13. A procedure should return true if a list contains at least two negative numbers. The current version looks only at the first two entries and returns whether both are negative. Which list reveals the error?

A. [−3, 0, 2]
B. [−3, −2, 1]
C. [1, 2, −3]
D. [1, −2, −3]

14. A program takes 4 seconds to prepare data. Then two independent jobs take 6 seconds and 9 seconds. Once both jobs finish, combining the results takes 2 seconds. How long does the program take if the jobs run at the same time with no extra overhead?

A. 15 seconds
B. 12 seconds
C. 17 seconds
D. 21 seconds

15. L starts as [5, 2, 6, 1]. A loop visits indices i = 2, 3, and 4 in order. If L[i] < L[i − 1], it immediately replaces L[i] with L[i] + L[i − 1]. What is L after the loop?

A. [5, 7, 6, 6]
B. [5, 7, 6, 7]
C. [5, 7, 13, 14]
D. [5, 2, 6, 1]