

## 2024 AP DAILY: PRACTICE SESSIONS

# AP Computer Science Principles Session 2 – MCQ

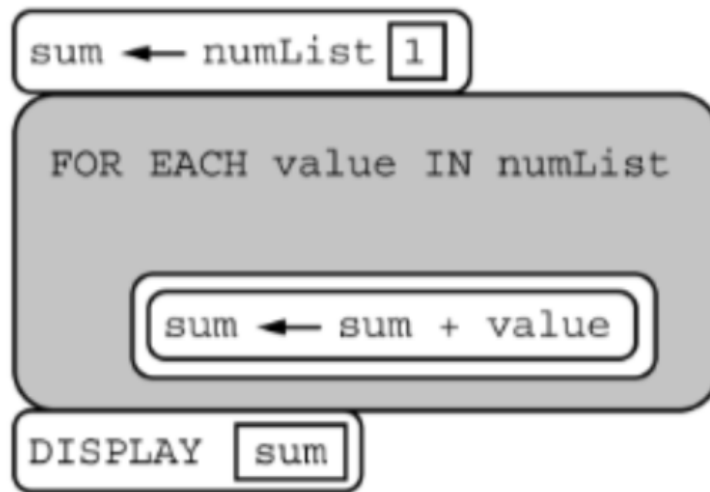
1. Which of the following is a true statement about program documentation?
  - A. Program documentation should not be changed after it is first written.
  - B. Program documentation is only needed for programs in development; it is not needed after a program is completed.
  - C. Program documentation is useful when programmers collaborate but not when a programmer works individually on a project.
  - D. Program documentation is useful during initial program development and also when modifications are made to existing programs.
2. The procedure below is intended to display the index in a list of unique names (*nameList*) where a particular name (*targetName*) is found. If *targetName* is not found in *nameList*, the code should display 0.

```
PROCEDURE FindName (nameList, targetName)
{
    index ← 0
    FOR EACH name IN nameList
    {
        index ← index + 1
        IF (name = targetName)
        {
            foundIndex ← index
        }
        ELSE
        {
            foundIndex ← 0
        }
    }
    DISPLAY (foundIndex)
}
```

Which of the following procedure calls can be used to demonstrate that the procedure does NOT work as intended?

- A. *FindName* ([“Andrea”, “Ben”], “Ben”)
- B. *FindName* ([“Andrea”, “Ben”], “Diane”)
- C. *FindName* ([“Andrea”, “Ben”, “Chris”], “Ben”)
- D. *FindName* ([“Andrea”, “Ben”, “Chris”], “Ben”)

3. A programmer wrote the program below. The program uses a list of numbers called *numList*. The program is intended to display the sum of the numbers in the list.



In order to test the program, the programmer initializes *numList* to [0, 1, 4, 5].

The program displays 10, and the programmer concludes that the program works as intended. Which of the following is true?

- A. The conclusion is correct; the program works as intended.
- B. The conclusion is incorrect; the program does not display the correct value for the test case [0, 1, 4, 5].
- C. The conclusion is incorrect; using the test case [0, 1, 4, 5] is not sufficient to conclude the program is correct.
- D. The conclusion is incorrect; using the test case [0, 1, 4, 5] only confirms that the program works for lists in increasing order.

4. In a certain district, 20 percent of the voters are expected to vote for Candidate A in an election. The computer program below is intended to simulate the result of the election with  $n$  voters, and display the number of votes received by Candidate A.

```
Line 1: sum ← 0
Line 2: REPEAT n TIMES
Line 3: {
Line 4:     IF (<MISSING CONDITION>)
Line 5:     {
Line 6:         sum ← sum + 1
Line 7:     }
Line 8: }
Line 9: DISPLAY (sum)
```

Which of the following can be used to replace <MISSING CONDITION> in line 4 so that the program works as intended?

Select **two** answers.

- A.  $\text{RANDOM}(1, 5) = 1$
  - B.  $\text{RANDOM}(1, 5) \leq 2$
  - C.  $\text{RANDOM}(1, 10) = 2$
  - D.  $\text{RANDOM}(1, 10) \leq 2$
5. A new bank plans to make customer convenience a priority by minimizing the amount of time a customer waits in line. The bank is considering two options: a single line where the customer at the front waits for the next available teller, or separate lines for each teller. The bank decides to use a computer simulation of these two options to determine the average wait time for customers.

Which of the following is NOT true about the bank's plan?

- A. The bank can incorporate other factors, such as the number of tellers, in the simulation.
- B. The bank can use the simulation to investigate these two options without causing inconvenience for customers.
- C. The bank may consider new alternatives based on the simulation results.
- D. The simulation will not produce usable results because actual customer data are not available.

6. A programmer wrote the code segment below to display the average of all the elements in a list called numbers. There is always at least one number in the list.

```
Line 1: count ← 0
Line 2: sum ← 0
Line 3: FOR EACH value IN numbers
Line 4:   {
Line 5:     count ← count + 1
Line 6:     sum ← sum + value
Line 7:     average ← sum / count
Line 8:   }
Line 9: DISPLAY (average)
```

The programmer wants to reduce the number of operations that are performed when the program is run. Which change will result in a correct program with a reduced number of operations performed?

- A. Interchanging line 1 and line 2
  - B. Interchanging line 5 and line 6
  - C. Interchanging line 6 and line 7
  - D. Interchanging line 7 and line 8
7. Which of the following statements is true?
- A. Every problem can be solved with an algorithm for all possible inputs, in a reasonable amount of time, using a modern computer.
  - B. Every problem can be solved with an algorithm for all possible inputs, but some will take more than 100 years, even with the fastest possible computer.
  - C. Every problem can be solved with an algorithm for all possible inputs, but some of these algorithms have not been discovered yet.
  - D. There exist problems that no algorithm will ever be able to solve for all possible inputs.
8. A certain computer game is played between a human player and a computer-controlled player. Every time the computer-controlled player has a turn, the game runs slowly because the computer evaluates all potential moves and selects the best one. Which of the following best describes the possibility of improving the running speed of the game?
- A. The game's running speed can only be improved if the game is played between two human players instead of with the computer-controlled player.
  - B. The game's running speed might be improved by using a process that finds approximate solutions every time the computer-controlled player has a turn.
  - C. The game's running speed cannot be improved because computers can only be programmed to find the best possible solution.
  - D. The game's running speed cannot be improved because the game is an example of an algorithm that does not run in a reasonable time.