AP Computer Science Principles

Unit 4 Practice Exam: Variables, Conditionals, and Functions

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2026–27 · 30 Questions · 30 Points

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Name: _____ Period: _____ Date: _____

DIRECTIONS: Practice exam. 30 questions, 30 points. Choose the single best answer unless a question says to select two; select-two questions are worth 1 point with partial credit. Code labeled **App Lab** is JavaScript; all other code is AP pseudocode (Exam Reference Sheet). When a program prints more than one line, the lines are listed in order, separated by spaces.

1. App Lab. What is printed to the console?

```
var a = 1;
var b = 2;
var c = 3;
a = b;
b = c;
c = a;
console.log(a + " " + b + " " + c);
```

(A) `2 3 1`
(B) `2 3 2`
(C) `3 3 3`
(D) `1 2 3`

2. Which statement best describes what `count ← count + 1` does?

(A) It checks whether `count` is equal to `count + 1`.
(B) It creates a second variable named `count + 1`.
(C) It adds 1 to the current value of `count` and stores the result back in `count`.
(D) It causes an error, because a variable cannot appear on both sides.

3. The variables `a` and `b` hold two test scores. Which expression correctly computes their average?

(A) `(a + b) / 2`
(B) `a + b / 2`
(C) `a / 2 + b`
(D) `2 / (a + b)`

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4. What is displayed as a result of executing the code segment?

```
seconds ← 125
DISPLAY(seconds MOD 60)
```

(A) 2
(B) 65
(C) 2.08
(D) 5

5. App Lab. What is printed to the console?

```
var first = "Grace";
var last = "Hopper";
console.log(first + " " + last + "!");
```

(A) GraceHopper!
(B) Grace Hopper!
(C) first last!
(D) Grace " " Hopper!

6. App Lab. The user types 4 into "widthInput" and 5 into "heightInput", then clicks "calcBtn". What does "areaLabel" show?

```
onEvent("calcBtn", "click", function() {
  var w = getNumber("widthInput");
  var h = getNumber("heightInput");
  setText("areaLabel", "Area: " + w * h);
});
```

(A) Area: 45
(B) Area: 9
(C) Area: 20
(D) Area: w * h

7. App Lab. The user clicks "stepBtn" four times. What does "stepLabel" show after the fourth click?

```
var steps = 1;
onEvent("stepBtn", "click", function() {
  steps = steps + 2;
  setText("stepLabel", steps);
});
```

(A) 8
(B) 9
(C) 3
(D) 7

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8. App Lab. What does "msg" show after this code runs?

```
setText("msg", "Hello");
setText("msg", "Welcome");
setText("msg", "Goodbye");
```

(A) Hello
(B) HelloWelcomeGoodbye
(C) Welcome
(D) Goodbye

9. What is displayed as a result of executing the code segment?

```
a ← true
b ← false
DISPLAY(NOT (a AND b))
DISPLAY((NOT a) OR b)
```

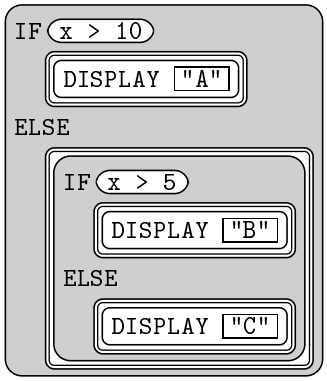
(A) true false
(B) false true
(C) false false
(D) true true

10. App Lab. A sign-up form should be accepted only if the username is not empty *and* the age is at least 13. Which condition does this?

(A) username != "" || age >= 13
(B) username == "" && age >= 13
(C) username != "" && age > 13
(D) username != "" && age >= 13

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11. Consider the following code segment.



For which value of `x` is `B` displayed?

(A) `11`

(B) `5`

(C) `10`

(D) `2`

12. App Lab. A game awards a gold medal for 1000 or more points, silver for 500 or more, and bronze otherwise. Which code assigns the correct medal for every score?

(A)
```
if (points >= 500) { medal = "silver"; }
else if (points >= 1000) { medal = "gold"; }
else { medal = "bronze"; }
```

(B)
```
if (points >= 1000) { medal = "gold"; }
else if (points >= 500) { medal = "silver"; }
else { medal = "bronze"; }
```

(C)
```
if (points > 1000) { medal = "gold"; }
else if (points > 500) { medal = "silver"; }
else { medal = "bronze"; }
```

(D)
```
if (points < 500) { medal = "silver"; }
else if (points < 1000) { medal = "bronze"; }
else { medal = "gold"; }
```

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13. App Lab. The user selects `small` in `"sizeDropdown"`, checks the checkbox `"extraBox"`, and clicks `"orderBtn"`. (`getChecked` returns `true` when a checkbox is checked.) What does `"totalLabel"` show?

```
onEvent("orderBtn", "click", function() {
  var total = 4;
  if (getText("sizeDropdown") == "large") {
    total = total + 2;
  }
  if (getChecked("extraBox")) {
    total = total + 1;
  }
  setText("totalLabel", total);
});
```

(A) 4
(B) 5
(C) 6
(D) 7

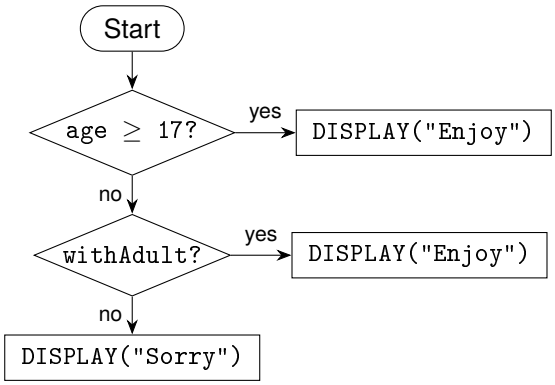
14. What is displayed as a result of executing the code segment?

```
price ← 20
IF (price > 25)
{
   price ← price - 5
}
DISPLAY(price)
```

(A) 15
(B) 25
(C) 20
(D) Nothing is displayed.

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15. The flowchart below decides the message for a movie ticket. What is displayed when `age` is 15 and `withAdult` is `false`?



(A) `Enjoy`
(B) `Sorry`
(C) `Enjoy Sorry`
(D) Nothing is displayed.

16. Which code segments assign the larger of `a` and `b` to `max`? Assume `a` and `b` are different numbers.

(Select two answers.)

(A)
```
IF (a > b)
{
   max ← a
}
ELSE
{
   max ← b
}
```

(B)
```
IF (a > b)
{
   max ← b
}
ELSE
{
   max ← a
}
```

(C)
```
max ← a
IF (b > max)
{
   max ← b
}
```

(D)
```
max ← b
IF (a < max)
{
   max ← a
}
```

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17. App Lab. The message `"Weekend!"` never appears, even on Saturday.

```
var day = getText("dayDropdown");
if (day == "Saturday" && day == "Sunday") {
  setText("msg", "Weekend!");
}
```

Which change fixes the problem?

(A) Change `&&` to `||`
(B) Change `==` to `=`
(C) Change `getText` to `getNumber`
(D) Put `"Sunday"` before `"Saturday"`

18. App Lab. The user clicks `"switchBtn"` three times. What does `"lightLabel"` show after the third click?

```
var isOn = false;
onEvent("switchBtn", "click", function() {
  isOn = !isOn;
  setText("lightLabel", isOn);
});
```

(A) `false`
(B) `3`
(C) `true`
(D) `!isOn`

19. App Lab. What is printed to the console?

```
console.log("start");
showMenu();
console.log("end");
function showMenu() {
  console.log("menu");
}
```

(A) `start end menu`
(B) `start end`
(C) `menu start end`
(D) `start menu end`

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20. App Lab. What is printed to the console?

```
var health = 10;
var shield = 2;
function takeHit() {
  health = health - 3 + shield;
  shield = shield - 1;
}
takeHit();
takeHit();
console.log(health);
```

(A) 7
(B) 4
(C) 9
(D) 8

21. What is displayed as a result of executing the program?

```
PROCEDURE hop()
{
   DISPLAY("hop")
}
PROCEDURE dance()
{
   hop()
   DISPLAY("spin")
   hop()
}
dance()
```

(A) spin
(B) hop spin
(C) hop spin hop
(D) spin hop hop

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22. App Lab. Which statement about this code is true?

```
1 function clearForm() {
2   setText("nameInput", "");
3   setText("emailInput", "");
4 }
5 onEvent("resetBtn", "click", function() {
6   clearForm();
7 });
```

(A) Lines 1–4 run as soon as the app starts.
(B) Line 6 calls the function, so the inputs are cleared each time `"resetBtn"` is clicked.
(C) Line 1 calls the function and line 6 defines it.
(D) The inputs are cleared twice for each click, because the function name appears twice.

23. A function named `calculateTip` lets a programmer get the tip for a bill without thinking about the steps inside the function. This is an example of which of the following?

(A) Procedural abstraction
(B) Iteration
(C) Data compression
(D) Sequencing

24. Every algorithm can be built from sequencing, selection, and iteration. Which part of the following code is an example of *selection*?

```
1 total ← 0
2 total ← total + 5
3 IF (total > 3)
4 {
5    DISPLAY("over")
6 }
```

(A) Line 1
(B) Lines 1 and 2
(C) Lines 3–6
(D) There is no selection in this code.

25. Code.org apps often use an `updateScreen()` function that is called at the end of every event. Which is the best reason to use this pattern?

(A) It makes each event handler run faster.
(B) It lets the app run without any variables.
(C) It allows events to run at the same time.
(D) All of the code that shows information on the screen is in one place, so it is written once and stays consistent.

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26. Consider the following procedures for string manipulation.

Procedure Call	Explanation
`concat(str1, str2)`	Returns a single string consisting of `str1` followed by `str2`.
`len(str)`	Returns the number of characters in `str`. For example, `len("pizza")` returns 5.

What is displayed as a result of executing the code segment?

```
word ← concat("tic", "tac")
DISPLAY(len(word))
```

(A) 3

(B) tictac

(C) 2

(D) 6

27. App Lab. This code should show `teen` for ages 13 through 19, inclusive.

```
if (age > 13 && age < 19) {
  setText("msg", "teen");
}
```

Which test values would show that the code does *not* work as intended?

(Select two answers.)

(A) 13

(B) 15

(C) 19

(D) 20

28. A program needs a variable that is `true` when a game has ended and `false` otherwise. Which variable name is the best choice?

(A) x

(B) game

(C) isGameOver

(D) variable1

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29. What is displayed as a result of executing the code segment?

```
raining ← false
IF (NOT raining)
{
   DISPLAY("walk")
}
ELSE
{
   DISPLAY("bus")
}
```

(A) `bus`

(B) `walk`

(C) `walk bus`

(D) `false`

30. Which code segments set `result` to `"pass"` when `score` is 60 or more and to `"fail"` otherwise?

(Select two answers.)

(A)
```
IF (score > 60)
{
   result ← "pass"
}
ELSE
{
   result ← "fail"
}
```

(B)
```
result ← "fail"
IF (score ≥ 60)
{
   result ← "pass"
}
```

(C)
```
IF (score ≥ 60)
{
   result ← "pass"
}
result ← "fail"
```

(D)
```
IF (score < 60)
{
   result ← "fail"
}
ELSE
{
   result ← "pass"
}
```

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