AP Computer Science Principles Unit 3 Quiz

1. What distinguishes programming languages from spoken languages?
    a. There are a lot of people who speak programming languages.
    b. There is only one programming language, but there are several different spoken languages.
    c. Both spoken and programming languages are the same.
    d. Spoken languages are harder to comprehend.

2. An algorithm is defined as….
    a. A precise sequence of instructions for processes that can be executed by a computer
    b. A step-by-step procedure for scientific calculations
    c. A procedure for finding the greatest common divisor of two numbers
    d. A a set of rules to follow in a household

3. What are the building blocks of an algorithm?
    a. Sequencing
    b. Sequencing and selection
    c. Selection
    d. Iteration
    e. Iteration and Selection
    f. Iteration and Sequencing
    g. None of the above
    h. Sequencing and selection and iteration.

4. John B created a very simple algorithm for eating breakfast cereal everyday. In his algorithm he included the steps: put cereal in a bowl. add milk to cereal, eat cereal, wash bowl. What building blocks did he use?
    a. Sequencing and selection
    b. Selection
    c. Iteration
    d. Sequencing
    e. Iteration and Sequencing
    f. Sequencing and selection and iteration.
    g. None of the above
    h. Iteration and Selection

5. What building block is being utilized in the following function?

```
function letterSort
  if(letter == a,e,i,o,u){
    append ´boo´;
  }
  else{
    append ¨yes¨;
  }
}
```

    a. Selection
    b. Iteration
    c. Sequencing
    d. Iteration and Sequencing
    e. Sequencing and selection and iteration.

6. When naming functions, what should you consider?

    a. The name of a function should specify how long it takes to run.

    b. A function name should be appealing to the eye.

    c. The name of a function should be as descriptive as possible to reflect what it does.

    d. The names of two functions with identical purposes should be the same.

    f. Functions must be listed in alphabetical order.

7. In programming, an expression that evaluates to true or false is...

    a. Expression with Variables

    b. Mathematical Expression

    c. Overarching Expression

    d. Boolean Expression

8. You're working on a code project and want to use a piece of code your friend had written in your program. What is the most basic method your friend could have written the code to make it easier for you to make modifications later?

    a. Attach a list of project requirements

    b. Create a video illustrating the project´s interface and functionality

    c. Use procedure and variable names that describe their content and capabilities

    d. Make a blog about the different programming concepts that were used in the project

9. In some programming languages, constants (a value or variable that is not changed by the program throughout execution) are implemented. Which of the following is a valid argument for using a constant?

    I. To represent mathematical concepts like Pi, Apéry's constant, and Belphegor's prime number
    II. To represent fixed values like the number of hours in a day
    III. To represent the score of a lacrosse game

    a. II only
    b. I and III only
    c. II and III only
    d. I and II only
    e. I, II and III

10. Knowing how to operate the lawn mower without knowing every piece it contains is an example of...
    a. Algorithms
    b. Constants
    c. Variables
    d. Procedures
    e. Abstraction

Refer to the following

```
fruitList = [¨bananas¨, ¨grapes¨, ¨oranges¨, ¨apples¨;

FOR EACH fruit in fruitList
{
  IF NOT (fruit = ¨tomato¨)
   {
              APPEND(fruitList, ¨tomato¨)
  }
  DISPLAY fruit
}
```

11. What will the code display?

    a. bananas, grapes, oranges, apples, tomato, tomato, tomato

    b. bananas, grapes, oranges, apples, tomato, tomato, tomato, tomato

    c. bananas, grapes, oranges, apples, tomato, tomato

    d. bananas, grapes, oranges, apples, tomato

12. What is the index position of grapes?

    a. 0

    b. 3

    c. 1

    d. 2

13. What is displayed after the following code runs?

```
line 1 = ¨Believe¨
line 2 = ¨ in yourself!¨
DISPLAY (line 1 + line 2)
```

a. Error processing this message

b. Believein yourself!

c. Believe in yourself!

d. Believe in
yourself

14. Why is a heuristic algorithm required for a computer to play a game like checkers?

a. It keeps the game fair by allowing the computer to only win a certain amount of times

b. It allows a human player to win due to statistics

c. It checks every possible combination to find the best move

d. It takes too long to analyze each possible solution forcing the computer to take the next best move

15. Which of the following statements is true?

a. There will be problems that can not be solved by an algorithm

b. Every problem can be solved by an algorithm but some solutions will take more than a couple hundred years

c. Every problem can be solved by an algorithm but some solutions just don´t exist yet

d. Every problem can be solved by an algorithm regardless of reasonable time and computer brand

16. Which of the following Boolean expressions are equivalent to the expression num ≥ 24 ? (There are 2 Solutions to this problem)

a. NOT (num < 23)

b. (num > 24) AND (num = 24)

c. NOT (num < 24)

d. (num > 24) OR (num = 24)

17. If the variables early and late both have the value false, what is displayed when the segment is run?

```
IF (early)
{
    DISPLAY "Hello, how are you?"
}
ELSE
IF (late)
{
    DISPLAY "Oh shoot!"
ELSE
    DISPLAY "Better get to work."
}
```

a. Oh shoot!

b. Hello, how are you?

c. Better get to work.

d. Hello, how are you? Better get to work.

18. What are the advantages of using parameters in programming?

a. The number of times the function will run is determined by the parameters.

b. Parameters in functions allow for more flexible behavior

c. Parameters are beneficial to programming teams because they assist in defining the boundaries of the problem they are attempting to solve.

d. Parameters alter the order in which operations are performed within a function.

19. There is a database in Sunnyvale that keeps track of kids, including variables like numberOfDetentions and gradePointAverage? The following expression is used to determine who gets an extra 30 minutes of free time.

(numberOfDetentions ≤ 4) AND (gradePointAverage > 3.3)

Which of the following pairs would be eligible for an extra 30 minutes of free time?

a. numberOfDetentions = 2, (gradePointAverage = 3.25)

b. numberOfDetentions = 3, (gradePointAverage = 1.5)

c. numberOfDetentions = 5, (gradePointAverage = 4.0)

d. numberOfDetentions = 4, (gradePointAverage = 3.5)

20. Any computer program statement that evaluates to some value is called a(n)….

A. Expression

B. Procedure

C. Variable

D. Formula

Explanations

1. D - Programming languages are fundamentally different from the human languages we use every day because they are purpose-built to provide clear instructions and overcome the ambiguities of human language.
2. A - An algorithm is a set of steps or instructions that someone or/and a computer could follow to complete a task.
3. H - An algorithm is made up of three basic building blocks: sequencing, selection, and iteration. Sequencing is the specific order in which instructions are performed in an algorithm. Selection is a programming construct where a section of code is run only if a condition is met. Iteration is the term given to the repetition of a block of instructions (code) within a computer program for a number of instances or until a condition is met.
4. E - Every day, John B makes cereal with his algorithm, which has its own method and order.
5. A - The function uses selection to determine a different set of steps to execute based on whatever the ´letter´ variable equals.
6. C - Utilizing a term with meaning (give some context) allows you to return to your project at a later period and understand its purpose, as well as allowing others to understand your function's purpose.
7. D - A Boolean expression is a logical statement that is either TRUE or FALSE.
8. C - Using procedure and variable names that are clear and functional makes the code more readable and understandable. Because you and your friend may not be working on the same project, their documentation of their work and their list of project requirements is unimportant to you.
9. D - A lacrosse game's score is likely to vary, while quantities like pi and the number of hours in a day remain constant.
10. E - Abstraction is a mechanism and a practice to reduce and factor out details so that one can focus on a few concepts at a time.
11. B - Each time the word in the list is not ¨tomato¨, ¨tomato¨ is appended to the list.
12. D - ¨grapes¨ is in the second position on the list.
13. C - The plus (+) sign glues the message together.

14. D - When the actual solution to an issue is untraceable, a heuristic method is used. The heuristic strategy improves the player's experience by speeding up the game.
15. A - Some problems simply can not be solved by an algorithm.
16. C & D - The expression (num > 24) OR (num = 24) always evaluates to true if num is greater than or equal to 24 because of the OR statement combining the two. On the other hand, the NOT (num < 24) expression evaluates to true if (num < 24) evaluates to false. This occurs when num is greater than or equal to 24.
17. C - Because the variables ¨early¨ and ¨late¨ were set to false, the text included in them does not appear on screen, leaving the message "Better get to work" to appear.
18. B - Parameters help programmers identify values that are passed into a function because they are a type of formal argument in which a special kind of variable is used in a procedure to refer to one of the pieces of data provided.
19. D - Both conditions have to be true for the AND expression to evaluate to true.
20. A - An expression is a combination of values and functions that are combined and interpreted by the compiler to create a new value.