**DO NOT WRITE ON TEST**



**COMPUTER PROGRAMMING CONCEPTS**

**~OPEN EVENT~**

(390)

**REGIONAL 2022**

**TOTAL POINTS \_\_\_\_\_\_\_\_\_\_\_\_100 Points**

**Test Time: 60 minutes**

**MULTIPLE CHOICE**

Identify the choice that *best* completes the statement or answers the question.

1. The base-2 number system used by computer is also known as which of the following?
   1. Digital
   2. Machine Code
   3. Decimal
   4. Binary
2. How many bits does it take to create a Byte?
   1. 8
   2. 16
   3. 32
   4. 64
3. What is a benefit of Unicode?
   1. Its algorithm created more efficient memory storage.
   2. It allows for OOP to use abstraction.
   3. It eliminates spaghetti code.
   4. It provides a unique number for all characters.
4. \_\_\_\_\_\_ is a software tool that can calculate and analyze data that is stored in rows and columns?
   1. Word Processor
   2. Database
   3. IDE
   4. Spreadsheet
5. What type of software provides input, editing and formatting for text?
   1. Word Processor
   2. Database
   3. IDE
   4. Spreadsheet
6. What is one factor that makes low level languages challenging to program?
   1. The API’s are constantly being updated
   2. Drag and drop interfaces are clumsy
   3. Little to no abstraction
   4. Web browsers have to be constantly updated
7. Low level languages are considered such because of what attribute?
   1. They are easy to learn
   2. They provide tremendous amount of abstraction
   3. They function very close to the level of 1’s and 0’s
   4. They provide drag and drop tools
8. A \_\_\_\_\_\_ translates the entire program into an executable file before execution?
   1. Interpreter
   2. Assembler
   3. Compiler
   4. Run Time Environments
9. Which language allows you to choose to program in OOP or not?
   1. C
   2. C++
   3. Java
   4. BASIC
10. Which of the following would be considered a pure interpreted language?
    1. C
    2. C++
    3. Java
    4. Java Script
11. Which type of network is most commonly found in Wireless LAN?
    1. Star Network
    2. Bus Network
    3. Tree Network
    4. Ring Network
12. Which of the following is *not* true.
    1. Bytecode can be executed as regular machine code file
    2. Java compiles bytecode
    3. Bytecode is interpreted by the JRE
    4. Bytecode files are low level
13. Which file type represents Java source code?
    1. .java
    2. .jar
    3. .exe
    4. .class
14. \_\_\_\_\_\_ best describes the processes a computer follows when executing a program.
    1. Semantics
    2. Syntax
    3. Algorithm
    4. Abstraction
15. Which term best describes the dictum to lower duplication of information in a program when it is practical through the language or the provided software libraries?
    1. Semantics
    2. Syntax
    3. Algorithm
    4. Abstraction
16. Which term best describes the concept that computational logic operations are shared by both humans and machines to achieve quantifiable results?
    1. Syntaxial Duality
    2. Presentation Semantics
    3. Software Algorithm
    4. Program Logic
17. In logic programming, which of the following is one of the main concepts in creating the algorithm?
    1. Control
    2. Machine Code
    3. Abstraction
    4. Flow Chart
18. The most desirable type of program algorithm is one that always does what?
    1. Utilizes abstraction and inheritance
    2. Uses recursion
    3. Runs infinity
    4. Terminates
19. An optimal algorithm is determined to be better than a non-optimal one if it can do what?
    1. Produce faster results than the non-optimal one that uses better hardware
    2. Produce slower results than the non-optimal one that uses better hardware
    3. Produce faster results because it uses better hardware
    4. Produce slower results because it uses better hardware that is environmentally friendly
20. What type of algorithm design term below best describes a system that reduces the instance of a problem by creating smaller instances of the same problem?
    1. Divide and conquer
    2. Recursion
    3. Logical
    4. Serial
21. Which of the following is *not* a benefit of OOP?
    1. Re-usability
    2. Data Redundancy
    3. Security
    4. Increased automatic proofs
22. Which language is written for a special runtime environment that executes the tasks line by line?
    1. Java
    2. Python
    3. C#
    4. PASCAL
23. Before creating any logic for a program, we should think about which of the following?
    1. Ensure that we are using scripting language to speed up development time
    2. How long it will take our program to be downloaded from a website
    3. The complexity of the algorithm
    4. All are correct
24. Which of the following are characteristics of an algorithm?
    1. Finiteness
    2. Composition
    3. Inheritance
    4. All are correct
25. What is the minimal requirement for a class declaration in Java or C#?
    1. Class heading
    2. Class heading and set of curly braces { } for data members
    3. Class heading, set of curly braces { } for data members, and a constructor
    4. Class heading, set of curly braces { } for data members, and data attributes
26. Which of the following best describes a goal of OOP?
    1. Create a program that has efficient and effective use of RAM
    2. Create a program that has efficient and effective use of CPU
    3. Create a program that executes with reliability
    4. Create a program that is optimized for speed
27. Which of the following is a feature of a constructor method?
    1. They are declared as public
    2. The constructor and class identifier are the same
    3. They are not a void or a return method
    4. All of the above
28. Which of the following best describes an array?
    1. A data structure with last in first out access behaviors
    2. An object that stores information
    3. Elements of the same data type stored in a data structure
    4. A table of data that is stored in columns and rows
29. Which answer choice best described a “Collection”?
    1. Ordered group of primitive data types
    2. Unordered group of elements not stored in one location
    3. Ordered group of methods that are inherited from class to the next
    4. Group of objects
30. Methods that are recursive need to have which of the following?
    1. A private declaration
    2. Fixed loop control structure
    3. Pre-condition loop
    4. A base or an exit case
31. Which base does Big-O notation includes the methods that utilize logs?
    1. Base 2
    2. Base 8
    3. Base 10
    4. Base 16
32. Based upon the condition of deleting the last element of an array data structure, which of the following would represent the time complexity?
    1. O(1)
    2. O(log n)
    3. O(n)
    4. O(2n)
33. Based upon the condition of deleting the last element of a linked list, which of the following would represent the time complexity?
    1. O(2 log(n2)
    2. O(n)
    3. O(n log n)
    4. O(2n)
34. Composition can be best described by which of the following?
    1. Has-a relationship
    2. Is-a relationship
    3. Last In First Out relationship
    4. Removal of data information
35. ArrayList can do which of the following?
    1. Store objects
    2. Has its own methods
    3. Store 2D arrays
    4. All of the above
36. Which of the following is a technique of modular decomposition to transform data structures into a representation of software?
    1. Object Oriented Design
    2. Waterfall Design
    3. Data Structure Oriented Design
    4. Data Flow Oriented Design
37. What is the name of the phase of developing software programmers create an incomplete model of the software being developed?
    1. Prototyping
    2. High Level Designing
    3. Low Level Designing
    4. Beta Testing
38. During which stage of the software development cycle do software engineers code plans for future maintenance and upgrades of the software?
    1. Designing
    2. Documentation
    3. Planning
    4. Implementation
39. What type of software development methodology is based upon a systematic and sequential process where development moves unilateral direction?
    1. Waterfall
    2. RAD
    3. Agile
    4. Continuous Integration
40. What is the name of the programming paradigm in which statements are structures into subroutines and functions; they are step by step instructions for the computer?
    1. Procedural
    2. Logical
    3. Functional
    4. OOP
41. What shape in a flowchart known as an on-page connector and is used to replace long or confusing lines in a flowchart?
    1. Cylinder/Disk Drive
    2. Trapezoid (longest parallel side at the top)
    3. Pentagon
    4. Circle
42. What shape in a flowchart indicates a processing step?
    1. Rectangle
    2. Diamond/ Rhombus
    3. Rhomboid/Parallelogram
    4. Hexagon
43. What language would be the best choice for programming and design for managing data in relational tables?
    1. C++
    2. Python
    3. SQL
    4. Java
44. The columns in a table are known as what?
    1. Records
    2. Fields
    3. Queries
    4. Scripts
45. Which of the following SQL statements selects all of the columns from the “Locations” data table?
    1. SELECT \* FROM Locations
    2. SELECT Column%% FROM Locations
    3. SELECT Locations WHERE columns \*
    4. Select \* where columns \* from Locations
46. What value is stored by the statement: double ans = 91/3?
    1. 30
    2. 30.0
    3. 30.1
    4. 33.333333333333332
47. What value is stored by the statement: int ans = 91/3.0?
    1. 30
    2. 30.0
    3. 30.1
    4. Error message
48. What value is printed by the statement:

double a = 401.5;

int b = (int)a % 400;

double c = (double)b;

double d = a + b/c + c;

print(d);

* 1. 404
  2. 403.5
  3. 403
  4. Error message

1. What will be displayed by the method call *testRun (3,10)*?

public static void testRun(int x, int y)

{

if (x <= y)

{

print(x + " ");

count(x+1, y);

}

}

1. 3 4 5 6 7 8 9 10
2. 3 4 5 6 7 8 9
3. 9 8 7 6 5 4 3
4. Nothing will display
5. What will be displayed by the program segment below?

int twoD [ ][ ];

twoD = new int[3][4];

for(int a = 0; a < 3; a++)

{

for(int b = 0; b < 4; b++)

print(" " + twoD[a][b] + " ");

print("||");

}

println();

1. 0 0 0 0 || 0 0 0 0
2. 0 0 0 0 || 0 0 0 0 ||
3. 0 0 0 0 || 0 0 0 0 || 0 0 0 0 ||
4. ArrayIndexOutOfBoundsException