



TSA Coding Study Cards 1

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- | | |
|---|--|
| 1. What is the correct order of the following data sizes from smallest to largest?
Megabytes, Terabytes, Bytes, Petabytes, Bits, Exabytes, Gigabytes | Bits, Bytes, Megabytes, Terabytes, Petabytes, Exabytes |
|---|--|
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|---|------|
| 2. How many megabytes are in a gigabyte? | 1000 |
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| 3. How many bits would you need if you wanted to have the ability to count up to 1000? | 10 |
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| 4. An interpreter or compiler converts data into which numerical value? | Binary |
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|--|-----|
| 5. Which decimal is equivalent to the binary value 1100100? | 100 |
|--|-----|
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- | | |
|--|-------------|
| 6. What is the core number system that most computers use to calculate & process logic? | Binary Code |
|--|-------------|
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- | | |
|---|------------------|
| 7. What can a hexadecimal be utilized for? | HTML color codes |
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| 8. How many unique IP addresses could be made using a 6 bit fixed-length address system? | 64 |
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| 9. | Which operator returns the remainder value in a calculation? | Modulus |
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|-----|--|---------------|
| 10. | Operators of equal precedence are evaluated in which order? | Left to Right |
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| 11. | What is the purpose of order of operation in software programming? | It tells the computer which mathematical operation to perform first. |
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|-----|---|-----------------------------------|
| 12. | How does the ++ symbol in programming change a variable? | It adds 1 to the value of itself. |
|-----|---|-----------------------------------|
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- | | | |
|-----|---|--|
| 13. | How does the -- symbol in programming change a variable? | It subtracts 1 from the value of itself. |
|-----|---|--|
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- | | | |
|-----|---|-------|
| 14. | What data type is used for fractional numbers? | Float |
|-----|---|-------|
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|-----|--|-------------|
| 15. | Which data representation system utilizes both letters and numbers? | Hexadecimal |
|-----|--|-------------|
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|-----|--|---|
| 16. | When utilizing an if/else statement in your code, how many possible choices can be available to the user? | 2 |
|-----|--|---|
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|-----|--|-----|
| 17. | When writing an if/else statement, what should be utilized to | { } |
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contain the sequence of statements?

18. **What comes first in the if / else statement?** if
19. **What is the best statement to use if checking to evaluate a single variable value across many conditions?** Switch
20. **What does the == symbol in programming mean?** equal
21. **What does the = symbol in programming mean?** assignment
22. **What does the && symbol in programming mean?** and
23. **What does the || symbol in programming mean?** or
24. **What does the ! symbol in programming mean?** not
25. **What does the > symbol in programming mean?** greater than
26. **What does the < symbol in programming mean?** less than



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|--|-----------------------|
| 27. What does the >= symbol in programming mean? | greater than or equal |
|--|-----------------------|
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| 28. What does the <= symbol in programming mean? | less than or equal |
|--|--------------------|
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- | | |
|--|----------------------------|
| 29. What does the === symbol in programming mean? | equal value and equal type |
|--|----------------------------|
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- | | |
|---|-----------|
| 30. What does the != symbol in programming mean? | not equal |
|---|-----------|
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- | | |
|--|------------------------------------|
| 31. What does the !== symbol in programming mean? | not equal value and not equal type |
|--|------------------------------------|
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- | | |
|--|---------|
| 32. What is another name for indenting? | Nesting |
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|---|---|
| 33. What are nesting statements? | They are statements inside another statement. |
|---|---|
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|---|------|
| 34. Which statement allows more than one condition in an if statement? | elif |
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|--|-----------------------|
| 35. What does a computer program use as a means to evaluate a condition as True or False? | A Boolean expression. |
|--|-----------------------|
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- | | |
|---|---------------------|
| 36. "A program contains the following state- | Nothing will print. |
|---|---------------------|
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ments:

x= grade

If x >90:

print ("You are an A student!")

What action will the program take when x=89?"

37. Computer Program	Any software that runs on top of the operating system.
38. Programming Language	A system of conventions and symbols used to create instructions for computers, which read through and follow the instructions in the code.
39. Machine Code	A binary system that is made of a series of 1s and 0s. It is considered the lowest level of programming and is the set of instructions with which the computer's CPU works directly.
40. Low-level Language	A programming language whose code is more similar to what the computer works with and is less human-readable; it is very specific and directly manipulates hardware. They are more efficient but harder to use.
41. High-level Language	A programming language whose code has multiple layers of abstraction (i.e. the code has to be translated into a form that the computer can understand) and is thus more human-readable.
42. Source Code	The code that is written by the programmer and is in a form that can be understood and edited by humans.
43. Object Code	Source code that has been transformed by the computer into a low-level form that the CPU can understand and work with.



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44. Statements	Individual, specific instructions used in programming to accomplish specific tasks.
45. Algorithm	A predefined procedure that aims to solve a problem or complete a task. It takes into account specific circumstances and has varying courses of action for each.
46. Pseudocode	Human-written code that describes what a program is supposed to do, or, more specifically, what the programmer wants the code to do.
47. Flowchart	A diagram used to describe algorithms and the structure of programs and programming languages. It consists of boxes that represent specific objects or steps and arrows and lines to represent the relationship between them.
48. Documentation	Text written in normal language that describes software; it consists of comments found directly in the code as well as separate documents that describe the overall program.
49. Debug	A process that aims to locate the exact source of bugs (i.e. errors or flaws) in the code.
50. Syntax Error	A mistake with the conventions and symbols of the programming language that leads to an error in the program.
51. Run-time Error	An error that occurs when the program is running, after the code has already been compiled, or checked.
52. Interpret	To convert the code into instructions as the program is running.
53. Compile	To convert the code into instructions before the program runs.



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54. Assembler	A program that converts basic, low-level instructions into machine code.
55. Execute	To run a program or a set of instructions given to a computer.
56. ASCII Code	System in which each English character is assigned a numerical code ranging from 0 to 127.
57. Solve by Analogy	Consists of comparing the problem to something that is both similar and familiar to you. It requires you to draw knowledge from something that you know well and apply it to the task at hand.
58. Means-End Analysis	A strategy where the solution to the problem is treated as an overall goal and is broken down into more specific tasks or parts.
59. Looking at the Big Picture	To look at the problem in its entirety.
60. Lateral Thinking	A strategy where you use creativity to solve a problem in a unique, indirect way. Requires creativity and does not always involve what is immediately apparent with the problem; solutions and insights devised using this strategy are not immediately clear and require some deeper thinking to figure out.
61. Inductive Reasoning	Involves testing the validity of an idea by making observations of circumstances in which the idea is relevant. It's useful for solving problems because it can be used to acquire the knowledge needed to do so.
62. Sequence	A set of commands is executed one after the other in the order in which they were provided.
63. Conditional	Evaluates the validity of one or more conditions and then executes one or more commands, whose nature depends now which condition is valid.



64. Iterative	Repeatedly executes a set of one or more commands until one or more given conditions has been satisfied.
65. Subroutine	A separate block of code containing a set of instructions.
66. Variable	A value in code that is able to be stored and changed.
67. String	A sequence of characters often used to display text (e.g. "Hello World!").
68. Boolean	One of two values: TRUE or FALSE. It is often used to control an object's visibility in object-oriented programming (OOP).
69. Integer	A WHOLE number (not a fraction or decimal!) that can be positive or negative.
70. Decimal	A data type that has a "." in it (e.g. 2.27).
71. Date/time Variable	Variables that are used to store the date and time. It is often used as a way of time-stamping when something was done or achieved.
72. Global Variable	A variable defined outside all functions and is accessible to all functions in its scope.
73. Local Variable	A variable that is declared within a function and cannot be accessed by statements that are outside of the function. In addition, a local variable cannot be accessed by code that appears inside the function at a point before the variable has been created.
74. Array	A data structure with one, or more, elements of the same type.
75. OOP	



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Object Oriented Programming - a style of programming that represents a program as a system of objects and enables code-reuse.

76. **GUI**

An icon based interface that the user can interact with.

77. **IDE**

Integrated Development Environment. For example, Pycharm for Python or Visual studio for Visual Basic.

78. **Event Handler**

A function that is called when a certain event occurs. Examples of these include button.onclick and window.onload.

79. **Linear Program Flow Control**

A flow diagram of a program that only has one direct path.

80. **Branch Program Flow Control**

A flow diagram that has multiple paths that the user can take.

81. **While Loop**

The code is repeated until the condition becomes false.

82. **For Loop**

Loops that repeat a select number of times.

83. **Reserved Word**

A special word that cannot be used as a user-defined named. These words are already part of the programming language's syntax.

84. **Prototype**

A test model of a program.

85. **Input**

Whatever is typed, submitted, or transmitted to a computer.

86. **Output**

The product created by transforming the inputs

87. **Syntax**

The sentence structure in a programming language.

88. **If Statement**



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The common programming structure that implements "conditional statements". It will only complete if the condition is met.

89. Case	An if statement with multiple outputs.
90. Software Development Cycle	Requirements Analysis, Design, Coding, Unit Testing, Integration Testing, Formal/Acceptance Testing, Maintenance
91. Structured Programming	Software that was designed to be easy to understand and modify.
92. RAM	A form of memory that temporarily stores data and programs currently in use.
93. ROM	A type of non-volatile memory used in computers and other electronic devices.
94. CPU	The "brain" of the computer that carries out all of the tasks and operations of a computer.
95. Software	A set of instructions that tells the hardware what to do. It is what guides the hardware and tells it how to accomplish each task.
96. Operating System (OS)	Software used to control the computer and its peripheral equipment.
97. Hardware	Physical elements of a computing system (ex: printer, circuit boards, wires, keyboard, etc.)
98. Interpreter/Compiler	Translates source code into machine code one line at a time.
99. Binary Number System	Base2
100. Decimal Number System	Base10



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101. **Octal Number System** Base8

102. **Hexadecimal Number System** Base16

103. **Motherboard** Printed circuit board on which the CPU, RAM chips and other electronic circuit elements of a digital computer are frequently located.

104. **Hard Drive** Storage device that stores digitally encoded data on rapidly rotating rigid disks with magnetic surfaces. The device is either permanently installed within the computer case or can be portable.

105. **Power Supply** A device that provides power to a computer.

106. **Wireless Network** Any type of computer network that is not connected to cables of any kind.

107. **Accessibility** a program that let's disable people connect to devices

108. **Binary** a code that turns the English numbers into "0" and "1"

109. **Binary Alphabet** a code that turns the English alphabets into "0" and "1"

110. **Bit** a code that is the smallest unit that only uses "0" and "1"

111. **Bug** a malfunction

112. **Byte** a way to measure data

113. **Code** a command for computers to run

114. **Data** information that is saved

115. **Debugging** fixing a bug



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116. DNS	a program that remembers websites
117. IP Address	a code that represents a local network
118. Loop	repeating an algorithm or code
119. Pattern Matching	looking for repeats of data
120. Pixel	small dots to show an image on displays
121. Programming	a system that runs on a computer
122. URL	code for a website
123. User Name	code given for indentifacation on a computer
124. Workspace	codes that make bigger applications or systems