

Practice problems for Alice test

Multiple Choice. Place your answer in the space to the left of the question number.

- C 1. A sequence of instructions that tell the computer what to do is known as a
- a. help screen
 - b. mouse click
 - C. computer program**
 - d. keystroke
- C 2. An Alice object understands movement commands in *up, down, left, right, forward,* and *backward* directions based on
- a. the position of the camera
 - b. the direction the world is pointing
 - C. the object's own sense of direction**
 - d. how close it is to another object
- A 3. A statement of one simple action in a program is known as a(an)
- A. instruction**
 - b. event
 - c. object
 - d. placement
- A 4. A _____ is a technique used by Alice programmers in designing a sequence of scenes.
- A. storyboard**
 - b. design layout
 - c. testing pack
 - d. reel
- A 5. Since the actions in a textual storyboard are often very close to actual program code, the statements in a textual storyboard are often known as
- A. pseudocode**
 - b. a design
 - c. a scenario
 - d. an implementation
- D 6. What allows the programmer to tell Alice whether to perform actions in order, or simultaneously?
- a. Alice asks the user when the program is run
 - b. blocks
 - c. all actions are performed in order
 - D. control statements**
- C 7. What does it mean to say that a “cat's vehicle is a horse” in a world containing a cat and a horse object?
- a. If the cat moves, so does the horse
 - b. Clicking on the cat makes the horse move
 - C. If the horse moves, so does the cat.**
 - d. Clicking on the horse makes the cat move

__C__ 8. The initial scene below consists of a single penguin. After the following code is executed, where will the penguin be with respect to its own orientation?



- a. two meters forward from its starting position
- b. one meter forward and one meter to the right of its starting position
- C. in the same place**
- d. one meter forward and one meter to the left of its starting position

__A__ 9. In Alice, information about a world and its objects are stored in properties. What programming "piece" allows the user to ask questions about these properties?

- A. functions**
- b. instructions
- c. control structures
- d. expressions

__B__ 10. In Alice, objects have built-in functions which allow the programmer to get information about the properties of objects. These functions are listed on the functions tab of the details panel, which is divided into sub-categories. Which of the following are sub-categories (rather than a specific built-in function)?

- a. opacity
- B. proximity**
- c. spatial relation
- d. point of view
- e. all of the above

__B__ 11. An If/Else statement controls program flow. This flow normally depends on asking a question, where the answer is always

- a. a number value
- B. a boolean value**
- c. a string value
- d. an object

__D__ 12. Which statement is an example of a *repetition control construct*?

- a. Do together statement
- b. If/Else statement
- c. Do in order statement
- D. Loop statement**

- __C__ 13. What is a *method*?
- a. an object instantiated from a class
 - b. an elegant and efficient way of programming
 - C. a coordinated sequence of instructions that will be carried out when called**
 - d. using Alice control structures such as a "Loop" to shorten code
- __B__ 14. The action of requesting that Alice execute the instructions in a method is known as the process of
- a. *instantiating* a method
 - B. calling a method**
 - c. *refining* a method
 - d. *abstracting* a method
- __B__ 15. In Alice, a mouse click or key press, used to trigger some action, is known as a(n)
- a. function
 - B. event**
 - c. method
 - d. call
- __C__ 16. Animation methods that are written to carry out responses to events are known as
- a. parameter calling methods
 - b. interactive methods
 - C. event handling methods**
 - d. keyboard-control methods

True-False. Draw a circle around your choice.

- 17. True: Asking a question so as to compute a result (find an answer) is known as *calling a function*.
- 18. True: The center point of an object is set by the graphic artist who makes the object.
- 19. True: The center point for people objects is between the object's feet.
- 20. True: Textual storyboards serve as an alternative to visual storyboards.
- 21. False: Comments are instructions that cause some action to take place.
- 23. True: *Conditional execution* makes use of *functions* and *expressions* to check a current *condition*.
- 24. True: The answer to the question, "Is the tree taller than the polar bear?" would be a Boolean.
- 25. True: A loop can execute only a *whole number* of times.
- 26. True: In an interactive program the sequence of actions is determined at runtime.
- 27. True: Parameters allow the programmer to customize methods to work with different objects and different numeric values.

Matching

28-31. Creating a computer program is a four-step process. Label the following steps in the correct order, so that the first step is labeled 1, the second step is labeled 2, and so on.

- __4__ Test
- __1__ Read the scenario
- __3__ Implement
- __2__ Design

32-35. Program code consists of various "pieces". For each piece, numbered 1 through 4, match the piece with its associated definition, labeled a through d.

- __d__ 1. Instruction a. asks a question about a condition or computes a value
- __c__ 2. control structure b. a math operation on numbers or other kinds of values

- _a_ 3. function
- _b_ 4. expression

- c. a statement that controls the execution of a block of instructions
- d. a statement that executes to make objects perform a certain action

Short Answer

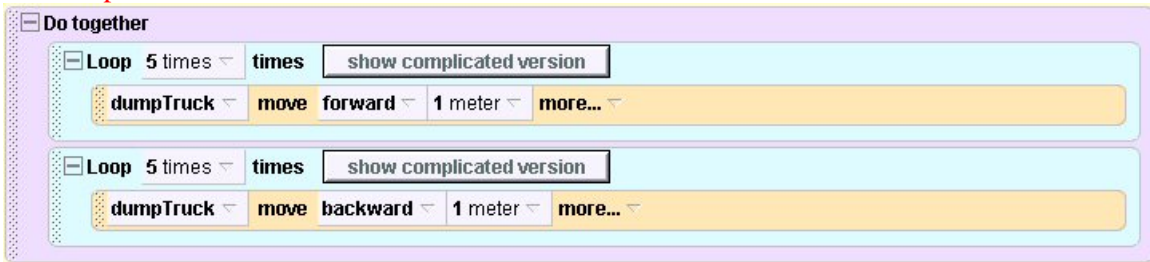
36. When the code shown below is executed, how far will the dump truck travel?

The dump truck travels 5 meters.

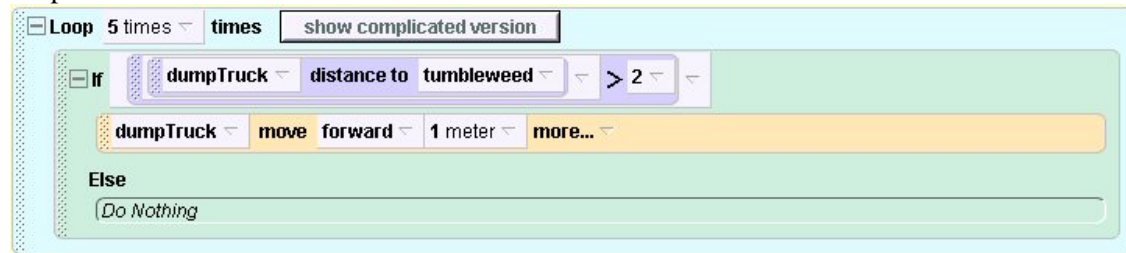


37. When the code shown below is executed, how far will the dump truck travel (cumulative distance)?

The dump truck does not move since it “moves” forward and backward at the same time.



38. The below Alice code features a dump truck and a tumbleweed. The dump truck is 3 meters behind the tumbleweed, facing the tumbleweed. When the code is executed, how far (total distance) will the dump truck travel?



The dump truck will travel only 1 meter :

The first time through the loop the dump truck is 3 meters from the tumbleweed so the dump truck travels one meter forward. It is now 2 meters from the tumbleweed.

The second time through the loop the dump truck is 2 meters from the tumbleweed so the condition is false and the dump truck does not move. The same is true for the third to fifth time through the loop.

39. An Alice world contains a cow and a milk bottle. The milk bottle is 3 meters away from the cow. How long will the following code take to execute?

The body of the loop execute 3 times so the code takes $1 + 3 \times 0.5 = 2.5$ seconds to execute (1 second for turn to face).

