

Homework 3

Decision Structures and Boolean Logic

TRUE/FALSE

1. The Python language is not sensitive to block structuring of code.

ANS:

2. The **if** statement causes one or more statements to execute only when a Boolean expression is true.

ANS:

3. Python allows you to compare strings, but it is not case sensitive.

ANS:

4. Nested decision statements are one way to test more than one condition.

ANS:

5. Python uses the same symbols for the assignment operator as for the equality operator.

ANS:

6. The **not** operator is a unary operator which must be used in a compound expression.

ANS:

7. Short -circuit evaluation is only performed with the **not** operator.

ANS:

8. Expressions that are tested by the **if** statement are called Boolean expressions.

ANS:

9. Decision structures are also known as selection structures.

ANS:

10. An action in a single alternative decision structure is performed only when the condition is true.

ANS:

11. The following statement will check to see if the turtle's pen color is '**green**':

```
if turtle.pencolor() = 'green':
```

ANS:

12. The following code snippet will change the turtle's pen size to **4** if it is presently less than **4**:

```
if turtle.pensize() < 4:  
    turtle.pensize(4)
```

ANS:

MULTIPLE CHOICE

1. A(n) _____ structure is a logical design that controls the order in which a set of statements execute.
- function
 - control
 - sequence
 - iteration

ANS:

2. The decision structure that has two possible paths of execution is known as
- single alternative
 - double alternative
 - dual alternative
 - two alternative

ANS:

3. Multiple Boolean expressions can be combined by using a logical operator to create _____ expressions.
- sequential
 - logical
 - compound
 - mathematical

ANS:

4. When using the _____ logical operator, one or both of the subexpressions must be true for the compound expression to be true.
- or**
 - and**
 - not**
 - maybe**

ANS:

5. Which logical operators perform short-circuit evaluation?
- or, not**
 - not, and**
 - or, and**
 - and, or, not**

ANS:

6. Which of the following is the correct **if** clause to determine whether **y** is in the range **10** through **50**, inclusive?
- a. **if 10 < y or y > 50:**
 - b. **if 10 > y and y < 50:**
 - c. **if y >= 10 and y <= 50:**
 - d. **if y >= 10 or y <= 50:**

ANS:

7. A Boolean variable can reference one of two values which are
- a. **yes** or **no**
 - b. **True** or **False**
 - c. **T** or **F**
 - d. **Y** or **N**

ANS:

8. What is the result of the following Boolean expression, given that **x = 5**, **y = 3**, and **z = 8**?

x < y or z > x

- a. **True**
- b. **False**
- c. **8**
- d. **5**

ANS:

9. What is the result of the following Boolean expression, given that **x = 5**, **y = 3**, and **z = 8**?

x < y and z > x

- a. **True**
- b. **False**
- c. **8**
- d. **5**

ANS:

10. What is the result of the following Boolean expression, given that **x = 5**, **y = 3**, and **z = 8**?

not (x < y or z > x) and y < z

- a. **True**
- b. **False**
- c. **8**
- d. **5**

ANS:

11. What does the following expression mean?

x <= y

- a. **x is less than y**

- b. **x is less than or equal to y**
- c. **x is greater than y**
- d. **x is greater than or equal to y**

ANS:

12. Which of the following is the correct **if** clause to determine whether **choice** is anything other than **10**?
- a. **if choice != 10:**
 - b. **if choice != 10**
 - c. **if choice <> 10:**
 - d. **if not(choice < 10 and choice > 10):**

ANS:

13. When using the _____ logical operator, both subexpressions must be true for the compound expression to be true.
- a. **or**
 - b. **and**
 - c. **not**
 - d. either **or** or **and**

ANS:

14. In Python the _____ symbol is used as the not-equal-to operator.
- a. **==**
 - b. **<>**
 - c. **<=**
 - d. **!=**

ANS:

15. In Python the _____ symbol is used as the equality operator.
- a. **==**
 - b. **<>**
 - c. **<=**
 - d. **!=**

ANS:

16. Which of the following will hide the turtle if it is visible?
- a. **if turtle.isvisible():
 turtle.invisible()**
 - b. **if turtle.isvisible
 turtle.hideturtle()**
 - c. **if turtle.isvisible():
 turtle.hide()**
 - d. **if turtle.isvisible():
 turtle.hideturtle()**

ANS:

17. Which of the following will determine if the turtle's pen is up and will change it to down if that is the case?
- a. `if turtle.isup():`
 `turtle.isdown()`
 - b. `if turtle.isdown`
 `turtle.penup()`
 - c. `if not(turtle.isdown()):`
 `turtle.pendown()`
 - d. `if not(turtle.penup())`
 `turtle.penup()`

ANS:

COMPLETION

1. The _____ statement is used to create a decision structure.

ANS:

2. In flowcharting, the _____ symbol is used to represent a Boolean expression.

ANS:

3. A(n) _____ decision structure provides only one alternative path of execution.

ANS:

4. In a decision structure, the action is _____ executed because it is performed only when a specific condition is true.

ANS:

5. A(n) _____ operator determines whether a specific relationship exists between two values.

ANS:

6. A(n) _____ statement will execute one block of statements if its condition is true or another block if its condition is false.

ANS:

7. Python provides a special version of a decision structure known as the _____ statement, which makes the logic of the nested decision structure simpler to write.

ANS:

8. The logical _____ operator reverses the truth of a Boolean expression.

ANS:

9. Boolean variables are commonly used as _____ to indicate whether a specific condition exists.

ANS:

10. A(n) _____ expression is made up of two or more Boolean expressions.

ANS:

11. The **turtle.isdown()** function returns _____ if the turtle's pen is down.

ANS: