

CS303E Week 4 Worksheet: Selections

Name: _____ EID: _____

Read the questions carefully, and answer each question in the space provided. Use scratch paper to do your work and then copy your answers neatly and legibly onto the test paper. Only answers recorded on the test paper will be graded.

1. (12 points: 1 point each) The following are true/false questions. **Write either T or F in the boxes at the bottom of page 1.** If there's any counterexample, it's false.

- (a) `bool(0.0) == False`.
- (b) `bool("False") == False`.
- (c) `"True"` and `True` are different types of objects.
- (d) The only values that work like Booleans are `True`, `False`, and `None`.
- (e) `None == "None"`.
- (f) The order of the conditions in an `if-elif-else` block does not matter.
- (g) An `if` statement cannot be contained inside another `if` statement.
- (h) The `=` operator is used to compare two values for equality, while the `==` operator is used to assign a value to a variable.
- (i) An `elif` clause can only appear in an `if` statement with an `else` clause.
- (j) Two conditions in an `if-elif-else` cannot both be true.

a	b	c	d	e	f	g	h	i	j	k	l

Questions 2-11 are multiple choice. Each counts 2 points. **Write the letter of the BEST answer in the box on page 3. Please write your answer in UPPER-CASE. Each problem has a single answer.**

2. A variable assigned within an `if` statement can be accessed outside of that `if` statement?
 - A. Yes, it can.
 - B. No, it cannot.
 - C. It depends on whether the assignment executes.
 - D. Only if the variable is defined as global.
3. The logical expression `True or X and False` evaluates to `True` if `X` is:
 - A. True
 - B. False
 - C. either True or False
 - D. it's an error
4. Which logical operator in Python returns `True` if at least one of the operands is `True`?
 - A. `and`
 - B. `or`
 - C. `not`
 - D. `is`
5. When might you use a conditional expression in Python?
 - A. To execute a block of code repeatedly.
 - B. To iterate over a sequence of elements.
 - C. To assign a value based on a condition.
 - D. To handle errors and exceptions.
6. What happens if none of the conditions in an `if-elif-else` block are met?
 - A. The program terminates.
 - B. The block of code associated with the `else` statement is executed.
 - C. The program moves to the next line of code outside the `if-elif-else` block.
 - D. An error is raised.
7. Which of the following, if any, is *not true* of `if` statements?
 - A. The `else` branch is optional.
 - B. More than one `elif` branch is possible.
 - C. Any data type is allowed as the condition.
 - D. All of these are true.

8. Consider the expression $x \geq 0$ or $y < 10$. If we assume x is equal to 10, and y is equal to 5, then Python will:
- evaluate both conditions in left-right order to determine whether the expression is True.
 - evaluate both conditions in right-left order to determine whether the expression is True.
 - evaluate only the second condition, $y < 10$.
 - evaluate only the first condition, $x \geq 0$.
9. Which of the following statements is true?
- $(x \geq 5 \text{ and } x < 15)$ is the same as $(5 \leq x < 15)$
 - $(y > 0 \text{ or } y < -10)$ is the same as $y > 0 \text{ and } y < -10$
 - $(x > 0 \text{ or } x < -5 \text{ and } y < 0)$ is the same as $((x > 0 \text{ or } x < -5) \text{ and } y < 0)$
 - A and C are both true
10. Which of the following is equivalent to the expression $(p + q > r)$ and $(s - t \leq u)$?
- $(p + q > r)$ and not $(s - t \geq u)$
 - not $(p + q < r)$ and $(s - t \leq u)$
 - $(p - q \leq r)$ and $(t - s > u)$
 - not $((p + q \leq r) \text{ or } (s - t > u))$
11. What does the expression $5 + 10 * 2 // 3 - 4$ evaluate to?
- 6
 - 7
 - 8
 - 9

2	3	4	5	6	7	8	9	10	11

The following questions (2 points each) ask you to trace the behavior of some Python code and identify the output of that code. For each question, write the output for the code segment in the box provided. Don't worry about line breaks. If there's an error, say so, but you don't need to specify the type of error.

```
12. x = 10
    y = 3
    z = (x ** 2) % y + x // y + y
    print(z)
```

```
13. x = 3
    y = 5
    z = not ((x + y) == (x * y) and (x % y) == (y // x))
    print(z)
```

```
14. x = 5
    y = 10
    z = 2
    result = x and (x + y * z == 30) and (5 != True)
    print(result)
```

```
15. moomoo = None

    if moomoo == None and (bool(0.0) != bool(0)):
        print("cow")
    elif not moomoo or (moomoo == "None" and bool("lactoseIntolerant")):
        print("milky")
    else:
        print("udder")
```

16. `snoopy, pluto, scooby = 6, 10, 0`

```
if snoopy == pluto or not scooby:
    scooby = 1
elif pluto > snoopy and not scooby:
    scooby = 2
```

```
if bool(scooby) == True:
    print("Coco")
else:
    print("Charro")
```

17. `cutie, patootie, silly = 5, 6, -1`

```
if (cutie == 5):
    silly += 3
elif (patootie == 6):
    silly = 4
if (patootie > 0):
    silly -= 1
if (cutie < 999):
    silly + 1
print(silly)
```