

---

## Quiz 1 - DSC 10, Spring 2024

---

Full Name:

PID:

Quiz Time:  2PM  2:30PM  3PM  3:30PM  4PM

---

### Instructions:

- This quiz consists of 4 questions. You have a total of 20 minutes to complete it.
  - Please write **clearly** in the provided answer boxes; we will not grade work that appears elsewhere. Completely fill in bubbles and square boxes; if we cannot tell which option(s) you selected, you may lose points.
    - A bubble means that you should only **select one choice**.
    - A square box means you should **select all that apply**.
  - If your answer is a string, make sure to put it in quotes. If your answer is a float, make sure to include a decimal point.
  - No aids are allowed (no notes, no calculators, and no computers).
- 

By signing below, you are agreeing that you will behave honestly and fairly during and after this quiz.

Signature:

## Version A

Please do not open your quiz until instructed to do so.

## Question 1

- a) True or False: `int(3.4)` and `round(3.4)` evaluate to the same value.  
 True       False
- b) True or False: For any float `x`, `int(x)` and `round(x)` evaluate to the same value.  
 True       False

## Question 2

Consider the following code.

```
iris = 3 / 1
poppy = 8 - 6
daisy = np.array([8, 1, 5])
lily = np.array([4, 2])
poppy = iris ** iris - iris * poppy
```

- a) What is the value of `poppy` after this code is executed?

- b) What is the result of the expression `daisy + lily`?
- `array([8, 1, 5, 4, 2])`
  - `array([12, 3, 5])`
  - `array([12, 3])`
  - This expression errors.
- c) What is the result of the expression `daisy + lily[0]`?
- `array([8, 1, 5, 4])`
  - `array([12, 5, 9])`
  - `array([10, 3, 7])`
  - This expression errors.

## Question 3

You are tracking the growth of a flower stem over a seven-day period. The flower stem starts out at 24.5 cm and ends up at 29.7 cm.

Write one line of code that calculates the average daily growth, in centimeters, and assigns the result to the variable `avg_growth`. Do not round your answer.

**Question 4**

Suppose `flower_data` is a DataFrame with information on different species of flowers, where:

- The `"species"` column contains the name of the species of flower, as a string. Each value in this column is unique.
- The `"petals"` column contains the average number of petals of flowers of this species, as an `int`.
- The `"length"` column contains the average stem length of flowers of this species in inches, as a `float`.

- a) One of these three columns is a good choice to use as the index of this DataFrame. Write a line of code that sets this column as the index of `flower_data`, and assigns the resulting DataFrame to the variable `flowers`.

**Important:** The following questions will use `flowers` instead of `flower_data`.

- b) Which of the following expressions evaluates to a DataFrame that is sorted by `"petals"` in descending order?

- `flowers.sort_values(by = "petals", ascending = True)`  
 `flowers.sort_values(by = "petals", ascending = False)`  
 `flowers.get("petals").sort_values(ascending = True)`  
 `flowers.get("petals").sort_values(ascending = False)`

- c) Suppose that the 4th row of `flowers` corresponds to a rare species of flower named `"fire lily"`. Fill in the blanks below so that both of these expressions evaluate to the stem length in inches of `"fire lily"`.

- i. `flowers.get("length").loc[__(x)__]`  
 ii. `flowers.get("length").iloc[__(y)__]`

(x): , (y):

- d) Suppose that the 3rd row of `flowers` corresponds to the species `"stinking corpse lily"`. Using the `flowers` DataFrame and the string method `.split()`, write an expression that evaluates to `"corpse"`.

Before submitting your quiz, make sure your PID is on the front page and on the top right corner of page 3.