CS 111, Summer 2022 first name: Xuan last name: Mu
Quiz 1 BU ID: U26611932

1. (5 points) Given the following assignment statements:

```
s = 'springtime'
vals = [[0, 2], 4, 6]
```

what is the value of each of the following expressions?

a. `s[3]` a. 'i'

b. `vals[0]` b. [0, 2]

c. `s[2:5]` c. 'rin'

d. `vals[2:3]` d. [6]

e. `s[-4: :-3]` e. 'tis'

2. (5 points) What is the output of the following program?

```
def foo(x, y):
    print('foo', x, y)
    y = x-2
    x = bar(y - 1)
    print('foo', x, y)
    return y

def bar(x):
    y = x*2
    return y

x=5
y=7
x = foo(x, y)
print(x, y)
foo(x, x)
print(x, y)
```

x y
5 7
3

foo
x y
5 7
5 3
bar(2) 3
4 3

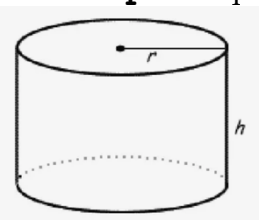
foo x y
3 3
bar(0) 1
0 1
1

Put the output below:

foo 5 7
foo 4 3
3 7
foo 3 3
foo 0 1
3 7

3. (4 points) Write a function **`cylinder_surface_area(radius, height)`** that calculates and returns the surface area of a cylinder, given its dimensions. For example, the function call **`cylinder_surface_area(2,2)`** returns the value **`50.26544`**. Do not round your answer, simply return the floating point value.

   The surface area of a cylinder is given by $a = 2\pi rh + 2\pi r^2$, and you may assume the value of **`pi`** is equal to 3.14159.




```
def cylinder_surface_area(radius, height):
    """ the function calculates and returns the
    surface area of a cylinder, given its dimensions
    """
    pi = 3.14159
    return 2 * pi * radius * height + 2 * pi * radius ** 2
```

4. (6 points) Write a function **`calculate_weekly_pay(hours_worked, rate)`** that returns the amount of pay earned according to the following rules:

   - The first 40 hours are paid at the regular rate (**`rate`**). ≤ 40
   - When working more than 40 hours, the worker earns the base rate for the first 40 hours, and also earns time-and-a-half pay (1.5 * **`rate`**) pay for hours above 40 and less than or equal to 55 . > 40
   - When working more than 55 hours, the worker earns the base rate for the first 40 hours, and also earns time-and-a-half pay (1.5 * **`rate`**) pay for hours above 40 and less than or equal to 55 (from b above), and also earns double-time pay (2 * **`rate`**) for hours above 55. > 55

   Examples:
   - **`calculate_weekly_pay(25, 10)`** would return **250.0** , i.e., 25 hours times $10.
   - **`calculate_weekly_pay(45, 10)`** would return **475.0** , i.e., 40 hours times $10, plus 5 hours times $15.
   - **`calculate_weekly_pay(60, 10)`** would return **725.0** , i.e., 40 hours times $10 ,plus 15 hours times $15 plus 5 hours times $20.

```
def calculate_weekly_pay(hours_worked, rate):
    """ The function returns the amount of pay
    earned according to rules.
    """
    amount = 0
    if hours_worked > 40:
        amount = 40 * rate
        if hours_worked > 55:
            amount = amount + 15 * (1.5 * rate)
            amount = amount + (hours_worked - 55) * 2 * rate
        else:
            amount = amount + (hours_worked - 40) * 1.5 * rate
    else:
        amount = hours_worked * rate * 1.0
    return amount
```