

Quiz 00 - Practice

COMP 110: Introduction to Programming
Spring 2024

January 25, 2024

Name:

ANSWER KEY

9-digit PID:

Do not begin until given permission.

Honor Code: I have neither given nor received any unauthorized aid on this quiz.

Signed:

Question 1: Multiple Choice Completely fill in the bubble next to your answer using a pencil. Each question should have exactly one filled-in bubble.

1.1. What is the *type* of the following expression?

1

- ☐ int
- ☒ float
- ☐ str
- ☐ bool
- ☐ TypeError

1.2. What is the *type* of the following expression?

1

- ☒ int
- ☐ float
- ☐ str
- ☐ bool
- ☐ TypeError

1.3. What is the result of the following expression?

1

- ☐ 220
- ☒ "110110"
- ☐ TypeError
- ☐ "220"

1.4. What is the *result* of the following expression?

1

- ☒ 20
- ☐ 20.4
- ☐ "20"
- ☐ TypeError
- ☐ 21

1.5. What is the *type* of this value in Python?

1

- ☐ bool
- ☒ str
- ☐ TypeError
- ☐ int

1.6. What *value* will the following expression evaluate to?

1

- ☐ f
- ☐ "f"
- ☐ o
- ☒ "o"
- ☐ TypeError

1.7. What does the *len* function do in Python?

- ☐ Converts a value to a string
- ☐ Rounds a number to the nearest whole number
- ☒ Returns the length of a sequence
- ☐ Converts a string to a number
- ☐ Counts the digits in an int

1.8. What is a *bool* data type in Python?

- ☐ Data type for storing text
- ☐ Data type for storing numbers
- ☒ Data type for storing True/False values
- ☐ Data type for storing any type of information
- ☐ Data type for storing complex numbers

1.9. What is the indexing start position in Python sequences?

- ☒ 0
- ☐ 1
- ☐ -1
- ☐ None
- ☐ TypeError

1.10. Which of the following is a float in Python?

- ☐ 10
- ☒ 10.0
- ☐ "10.0"
- ☐ True

1.11. What does a docstring do in Python?

- ☐ It performs calculations.
- ☐ It changes the value of a variable.
- ☒ It provides documentation for a function or module.
- ☐ It declares a new function.
- ☐ It calls a function.

1.12. Is Python case-sensitive language?

- ☒ Yes
- ☐ No

1.13. What does the following Python expression evaluate to?

```
1 bool(0)
```

- ☒ False
- ☐ True
- ☐ 0
- ☐ 1

1.14. Which of the following is the correct way to concatenate two strings in Python?

- ☐ "fox" , "hare"
- ☐ "fox" : "hare"
- ☒ "fox" + "hare"
- ☐ "fox" "hare"

1.15. What will the following Python expression evaluate to?

```
1 1 + True
```

- ☐ True
- ☒ 2
- ☐ 1
- ☐ False

1.16. What will the following Python expression evaluate to?

```
1 3.1415 * 2
```

- ☒ 6.283
- ☐ 6
- ☐ 5
- ☐ 2

1.17. Which of the following is a valid identifier name (e.g. function name) in Python?

- ☐ 123rabbit
- ☒ rabbit_123
- ☐ rabbit-123
- ☐ rabbit 123

1.18. What is the result of evaluating the following Python expression?

```
1 2 ** 3
```

- ☐ 5
- ☒ 8
- ☐ 6
- ☐ 4

1.19. What is the result of the following operation?

```
1 110 + "110"
```

- ☐ 220
- ☐ "110110"
- ☐ "220"
- ☒ TypeError

1.20. What does this code evaluate to in Python?

```
1 int(5.75)
```

- ☐ 5.5
- ☒ 5
- ☐ 6
- ☐ TypeError

1.21. Suppose we have a `float` named `x`, use a constructor function call expressions to convert it into an `int`. Which of the following is correct?

- ☐ `x("int")`
- ☒ `int(x)`
- ☐ `(int)x`
- ☐ `float_to_int(x)`

1.22. Suppose we have the following literal expression `"3.14"`. What is the type of this expression?

- ☐ `int`
- ☐ `float`
- ☒ `str`
- ☐ `bool`

1.23. Which of the following is a literal expression for a string in Python?

- ☐ `string("Hello")`
- ☐ `"Hello"{}`
- ☒ `"Hello"`
- ☐ `print("Hello")`

1.24. Which are valid `bool` literals in Python?

- ☒ `True / False`
- ☐ `Yes / No`
- ☐ `1 / 0`
- ☐ `On / Off`

1.25. What function would you use to get the data type of an object?

- ☐ `data_type()`
- ☐ `get_type()`
- ☐ `typeof()`
- ☒ `type()`

Question 2: Multiple Choice Completely fill in the bubble next to your answer using a pencil. Each question should have exactly one filled-in bubble.

2.1. A function call expression's evaluated value is determined by _____.

- ☒ the first return statement evaluated in the function definition
- ☐ the last return statement evaluated in the function definition
- ☐ each and every return statement evaluated in the function definition

2.2. Below is a properly defined Python function. What is the the role of the "beverage" parameter?

```
1 def order_beverage(beverage: str) -> str:
2     """This function orders a beverage"""
3     return "Your " + beverage + " is ready!"
```

- ☐ The return value
- ☒ An input to the function
- ☐ The function's name
- ☐ The external variable

2.3. What will be the result of the following Python function?

```
1 def evaluate_length(name: str) -> int:
2     """This function returns the length of the name"""
3     return len(name)
```

`evaluate_length("Foxglove")`

- ☐ 7
- ☒ 8
- ☐ "8"
- ☐ "Foxglove"

2.4. Consider the function declared below. What value is returned when `fairytale_winter(coziness=3, days=5)` is called?

```
1 def fairytale_winter(coziness: int, days: int) -> float:
2     """This function estimates the enjoyment during winter days."""
3     return coziness * days / 2.0
```

- ☐ 15.0
- ☒ 7.5
- ☐ 7
- ☐ "7.5"

2.5. What will be the *printed output* of the following Python function call?

```
1 def say_hello(name: str) -> None:
2     """This function prints a greeting"""
3     print("Hello, " + name + "!")
```

`say_hello("Doe")`

- ☒ Hello, Doe!
- ☐ "Hello, Doe!"
- ☐ Nothing
- ☐ TypeError

Question 3: Evaluate and Respond to the following questions.

3.1. What is the return type of the following function?

```
1 def acorn_count(tree_count: int, acorns_per_tree: int) -> int:
2     """Returns the total number of acorns in the woodland."""
3     return tree_count * acorns_per_tree
```

- ☒ int
- ☐ str
- ☐ float
- ☐ bool

3.2. Complete the following code to call `acorn_count` function such that 110 is printed to the screen.

```
1 print(acorn_count(_____))
```

Solution: tree_count=11, acorns_per_tree=10

3.3. What value and type does the following expression evaluate to: `int("1" + "2")`

Solution: 12, int

3.4. What value and type does the following expression evaluate to: `3 + 4 * 5`

Solution: 23, int

3.5. What value and type does the following expression evaluate to?

```
1 len(str(10 // 3))
```

Solution: 1, int

3.6. What value and type does the following expression evaluate to?

```
1 str(10 % 3)
```

Solution: "1", str

3.7. Fill in the blank. Given the below definition, what value does the following function call evaluate to: `sum_length(recipe="PumpkinPie", ingredient="SugarBeet")`

```
1 def sum_length(recipe_str:str, ingredient_str:str) -> int:
2     """Returns the sum of the length of a recipe and an ingredient"""
3     return len(recipe_str) + len(ingredient_str)
```

Solution: 18

Question 4: Identification Given the following code listing, identify lines which contain the following concepts.

```
1 def total_feet(sparrows: int, rabbits: int) -> int:
2     """Returns the total number of feet among the woodland creatures"""
3     return bird_feet(birds=sparrows) + rabbit_feet(rabbits=rabbits)
4
5
6 def bird_feet(birds: int) -> int:
7     """Returns the total number of bird feet given a number of birds"""
8     return 2 * birds
9
10
11 def rabbit_feet(rabbits: int) -> int:
12     """Returns the total number of rabbit hindfeet and forefeet."""
13     return 4 * rabbits
14
15
16 print(total_feet(sparrows=3, rabbits=2))
```

4.1. Identify the line number where a function definition signature is found.

- ☐ Line 2
- ☐ Line 3
- ☐ Line 6
- ☒ Line 9
- ☐ Line 10

4.2. Identify the line number where a docstring is written.

- ☐ Line 1
- ☐ Line 3
- ☐ Line 4
- ☐ Line 5
- ☒ Line 6

4.3. Identify the line number where an expression is found.

- ☐ Line 1
- ☐ Line 2
- ☐ Line 5
- ☒ Line 7
- ☐ Line 10

4.4. What is `-> int` an example of?

- ☐ parameter type
- ☒ return type
- ☐ expression
- ☐ type conversion

4.5. Identify the line number where a function call is made.

- ☐ Line 1
- ☐ Line 2
- ☒ Line 5
- ☐ Line 3
- ☐ Line 4

4.6. Which of the following is a parameter name?

- ☐ `bird_feet`
- ☐ `print`
- ☒ `birds`
- ☐ `bunnies`

4.7. What would be the printed result of the code listing?

- ☐ 5
- ☐ 10
- ☐ 12
- ☒ 14
- ☐ 20

4.8. Which function definition is jumped into *second*?

- ☐ `print`
- ☐ `total_feet`
- ☒ `bird_feet`
- ☐ `rabbit_feet`

Question 5: Memory Diagram Trace a memory diagram of the following code listing and then answer the sub-questions. You do not need to diagram the sub-questions.

```

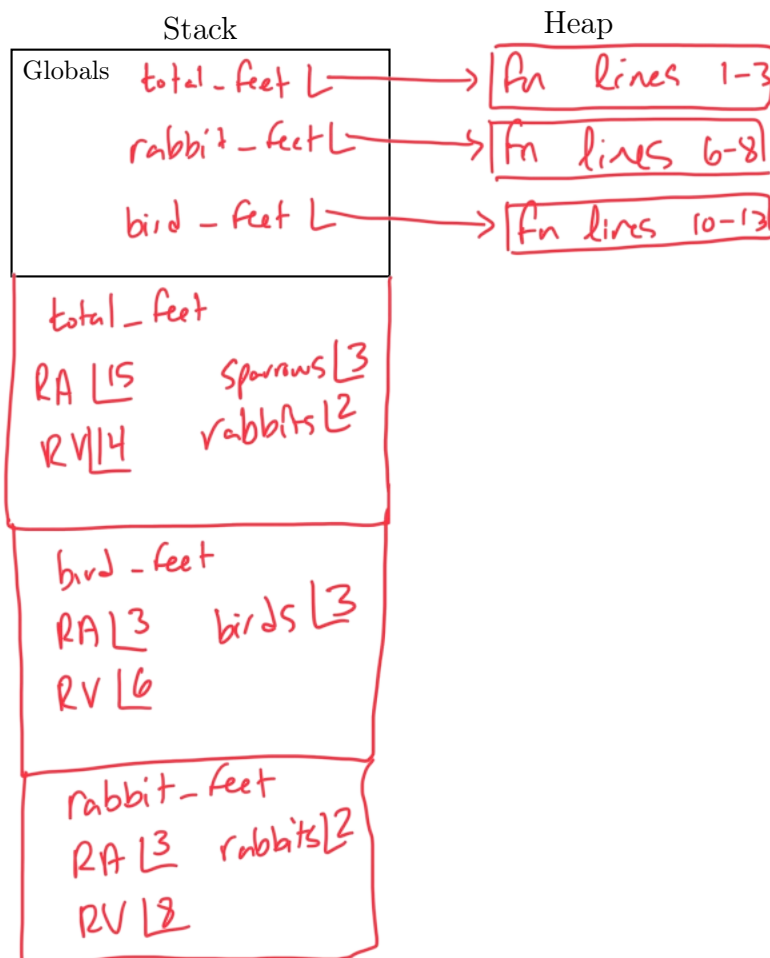
1 def total_feet(sparrows: int, rabbits: int) -> int:
2     """Returns the total number of feet among the woodland creatures"""
3     return bird_feet(birds=sparrows) + rabbit_feet(rabbits=rabbits)
4
5
6 def rabbit_feet(rabbits: int) -> int:
7     """Returns the total number of rabbit hindfeet and forefeet."""
8     return 4 * rabbits
9
10
11 def bird_feet(birds: int) -> int:
12     """Returns the total number of bird feet given a number of birds"""
13     return 2 * birds
14
15 print(total_feet(sparrows=3, rabbits=2))

```

Handwritten notes:
 6 + 8 = 14
 } we will not look at scratch work!

Output

~~Solution: 14~~
 14



Question 6: Memory Diagram Trace a memory diagram of the following code listing and then answer the sub-questions. You do not need to diagram the sub-questions.

```

1  """Some fun functions..."""
2
3
4  def quadruple(x: int) -> int:
5      """Quadruple an int!"""
6      print("quadruple(" + str(x) + ")")
7      return double(x=double(x=x))
8
9
10 def double(x: int) -> int:
11     """Double an int!"""
12     print("double(" + str(x) + ")")
13     return 2 * x
14
15
16 print(quadruple(x=2))

```

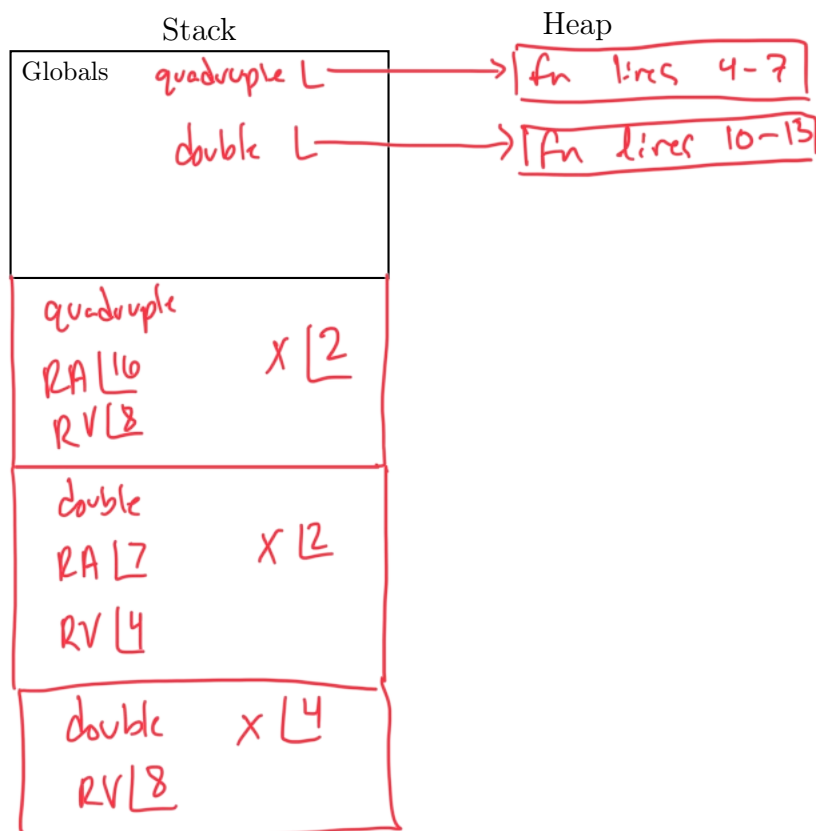
Output

~~Solution:~~

```

quadruple(x=2)
double(x=2)
double(x=4)
8

```



Question 7: Memory Diagram Trace a memory diagram of the following code listing and then answer the sub-questions. You do not need to diagram the sub-questions.

```

1  """Functions of a circle..."""
2
3
4  def main() -> None:
5      """Entrypoint of Program"""
6      print(perimeter(radius=1.0))
7      print(area(radius=1.0))
8      return None
9
10
11 def area(radius: float) -> float:
12     """Calculate area of a circle"""
13     return 3.14 * radius**2
14
15
16 def perimeter(radius: float) -> float:
17     return 2 * 3.14 * radius
18
19
20 main()

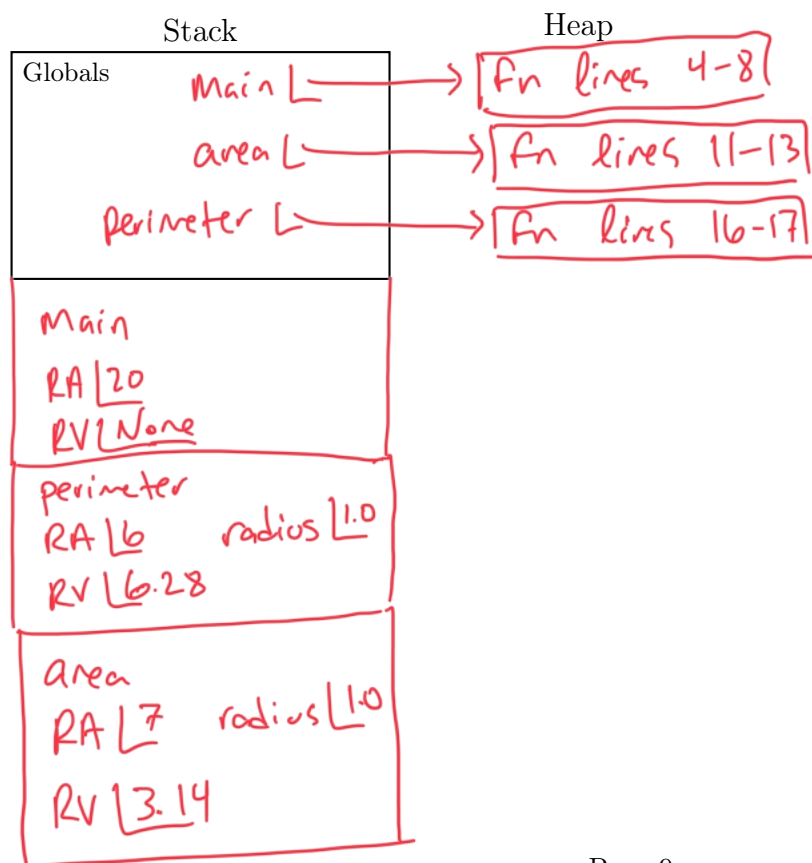
```

Output

Solution:

6.28

3.14



Question 8: Memory Diagram Trace a memory diagram of the following code listing and then answer the sub-questions. You do not need to diagram the sub-questions.

```

1  """A cozy embrace."""
2
3
4  def hug(it: str) -> str:
5      """Surround it."""
6      return suffix(word=prefix(word=it, pre="-((", post=")-")
7
8
9  def suffix(word: str, post: str) -> str:
10     """After..."""
11     return word + post
12
13
14  def prefix(word: str, pre: str) -> str:
15     """Before..."""
16     return pre + word
17
18
19  print(hug("turtle"))

```

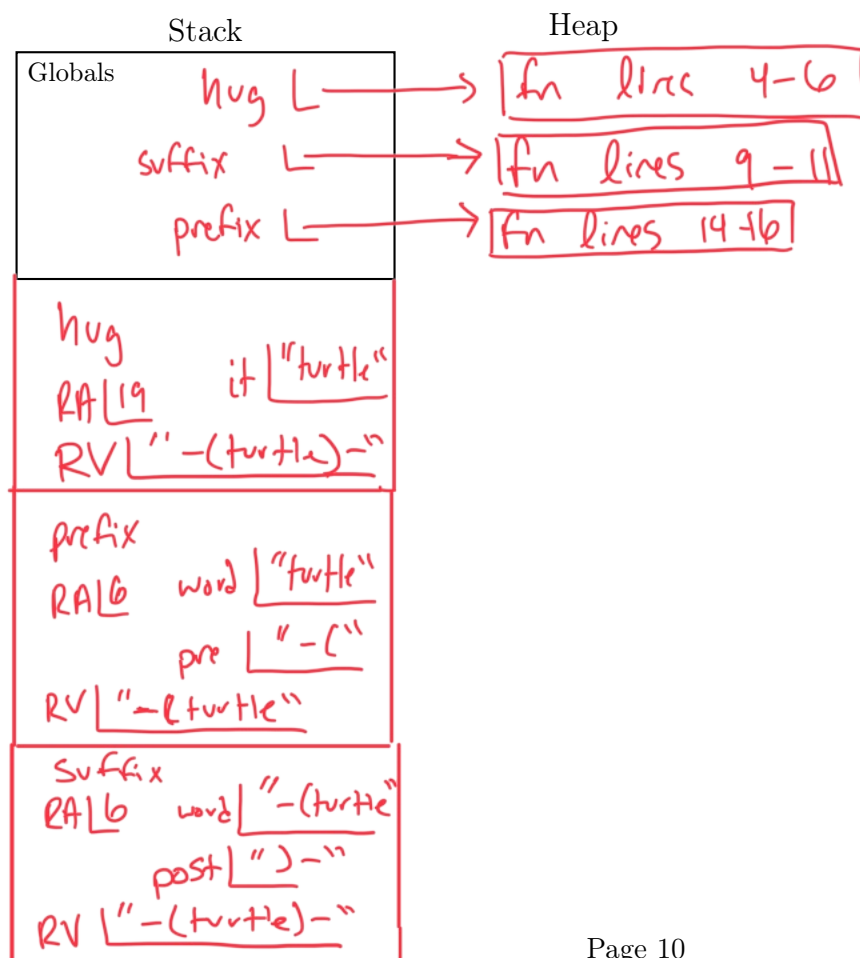
Handwritten annotations in red:

- Line 5: `"""Surround it."""` is annotated with `"turtle"`.
- Line 6: `return suffix(word=prefix(word=it, pre="-((", post=")-")` is annotated with `"-(turtle)"` under the `pre` argument and `"-(turtle)-"` under the `post` argument.
- Line 9: `def suffix(word: str, post: str) -> str:` is annotated with `"-(turtle)-"` under the `post` argument.

Output

Solution:

-(turtle)-



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