Exercises for Deck 006

Python Dots & Named Arguments

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1) Categorize the following syntactically (actually, *lexically*) into one of the following categories: name, int literal, float literal, string literal, f-string. Then write WHY how you know it's that.
    a) 8.2
    b) f"{power}"
    c) "{power}"
    d) 999
    e) __power
    f) power
    g) f"power"
    h) 1e2
    i) 'power'
2) Categorize following (the same as above) based on the type they should evaluate (r-evaluation!) to, and again explain why!
    a) 8.2
    b) f"{power}"
    c) "{power}"
    d) 999
    e) __power
    f) power
    g) f"power"
    h) 1e2

i) 'power'

3) Write a program that prompts the user to enter an input number of kilometres, then prints that in miles. Format the output nicely using f-strings.

4) I wrote the following line of code but it's too long. Make it shorter by breaking it up across multiple lines.

```
monster_hp = int(monster_hp - max( (hit_damage - monster_armor), 0 ) * (100 - resistance_points) / 100)
```

5) Examine the following program:

```
1  a = 1
2  a = a + 1
```

a) What does the l-expression on the left side of line 2 evaluate to?

b) What does the r-expression on the right side of line 2 evaluate to?

c) Draw a syntax diagram for line 2.

d) Draw the relevant memory diagram after line 2 is done.

6) The int() type in Python can convert strings from binary if we supply a named argument, with the name base and the argument 2. Write a program to convert 101 from binary and print it out (as usual decimal.) Hint: your program should print 5

7) ints in Python have a method named bit_count ... write a program to print out the length (in bits) of the number 5. (As above, it should print 3!)

8) If I have some code like `print(77)`, why don't I need to convert the 77 to a str before giving it to print as an argument?

9) Create a template to describe a sword's name and stats using .format, then create a fun sword and format it using your template and print it out.

10) Which of the following operators can you use in an l-expression? (Hint: if you're not sure, try writing code to test it!)

    == + (parens) // % >

11) Which of the following operators can you use in an r-expression?

    == + (parens) // % >

12) In Python, there are two different kinds of arguments in a call. What are they?

a)

_____

b)

_____

13) Examine the following code. Label each operation with its function (parentheses, argument delimiter, subtraction, call, division, etc.) Then draw a syntax diagram.

```
monster_hp = int(monster_hp - max( (hit_damage - monster_armor), 0 ) * (100 - resistance_points) / 100)
```

14) In the previous question how do you tell the calls from the parenthesis delimited expressions?

15) Circle all the r-expressions in the following code:

```
print(hex(id("hello")))
```

16) Does the previous have any l-expressions? Why or why not?

17) What delimiter separates arguments in a call with more than one argument?

18) In the following code, draw the relevant memory after line 2.

exercise006_18.py

```
1   template = "I am {mood}!"
2   current_mood = "happy"
3   outputter = print
4   outputter(template.format(mood=current_mood))
5
```

19) In the previous example code (which does work), what happens if you remove the `template.` ? Why?