

Chapter 3 exercise

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1.Is the literal 4 a valid python expression?

Yes, the literal 4 is a valid python expression

2.Is the variable x a valid Python expression?

No, x is not a valid Python expression. It is a placeholder for a value that needs to be defined.

3.is x+4 a valid Python expression?

Yes, x + 4 is a valid Python expression.

4.What affect does the unary + operator have when applied to a numeric expression?

The unary + operator is present only for completeness; when applied to a numeric value, variable, or expression, the resulting value is no different from the original value of its operand. Omitting the unary + operator from the following statement

```
x = +y
```

does not change its behavior.

5.Sort the following binary operators in order of high to low precedence : +,-,*,//,/,%,=.

1)* 2)//,// 3)% 4)+ 5)- 6)=

6.given the following assignment:

X=2

Indicate what each of the following Python statements would print:

(a) `print ("X")` → X

(b) `print ('X')` → X

(c) `print (X)` → 2

(d) `print ("X+1")` → X+1

(e) `print ('X'+1)` → 'X' is str, 1 is int cant concatenate them to eachother

(f) `print (X+1)` → 3

7. given the following assignments:

`l1 = 2`

`l2 = 5`

`l3 = -3`

`D1 = 2.0`

`D2 = 5.0`

`D3 = -0.5`

Evaluate each of the following Python expressions.

(a) `l1 + l2` → 7

(b) `l1 / l2` → 0.4

(c) `l1 // l2` → 0

(d) `l2 / l1` → 2.5

- (e) $l2 // i1 \rightarrow 2$
- (f) $l1 * i3 \rightarrow -6$
- (g) $D1 + d2 \rightarrow 7.0$
- (h) $D1 / d2 \rightarrow 0.4$
- (i) $D2 / d1 \rightarrow 2.5$
- (j) $D3 * d1 \rightarrow -1.0$
- (k) $D1 + i2 \rightarrow 7.0$
- (l) $l1 / d2 \rightarrow 0.4$
- (m) $D2 / i1 \rightarrow 2.5$
- (n) $l2 / d1 \rightarrow 2.5$
- (o) $l1 / i2 * d1 \rightarrow 0.8$
- (p) $D1 * i1 / i2 \rightarrow 0.8$
- (q) $D1 / d2 * i1 \rightarrow 0.8$
- (r) $l1 * d1 / d2 \rightarrow 0.8$
- (s) $l2 / i1 * d1 \rightarrow 5.0$
- (t) $D1 * i2 / i1 \rightarrow 5.0$
- (u) $D2 / d1 * i1 \rightarrow 5.0$
- (v) $l1 * d2 / d1 \rightarrow 5.0$

8. what is printed by the following statement :

`#print (5/3) → nothing # use for commenting`

9. given the following assignments :

`l1 = 2`

`l2 = 5`

`l3 = -3`

`D1 = 2.0`

D2 = 5.0

D3 = -0.5

Evaluate each of the following Python expression

- (a) $l1 + (i2 * i3) \rightarrow -13$
- (b) $l1 * (i2 + i3) \rightarrow 4$
- (c) $l1 / (i2 + i3) \rightarrow 1.0$
- (d) $l1 // (i2 + i3) \rightarrow 1$
- (e) $l1 / i2 + i3 \rightarrow -2.6$
- (f) $l1 // i2 + i3 \rightarrow -3$
- (g) $3 + 4 + 5 / 3 \rightarrow 8.66666$
- (h) $3 + 4 + 5 // 3 \rightarrow 8$
- (i) $(3 + 4 + 5) / 3 \rightarrow 4.0$
- (j) $(3 + 4 + 5) // 3 \rightarrow 4$
- (k) $D1 + (d2 * d3) \rightarrow -0.5$
- (l) $D1 + d2 * d3 \rightarrow -0.5$
- (m) $D1 / d2 - d3 \rightarrow 0.9$
- (n) $D1 / (d2 - d3) \rightarrow 0.363636$
- (o) $D1 + d2 + d3 / 3 \rightarrow 6.833333$
- (p) $(d1 + d2 + d3) / 3 \rightarrow 2.16666666$
- (q) $D1 + d2 + (d3 / 3) \rightarrow 6.833333$
- (r) $3 * (d1 + d2) * (d1 - d3) \rightarrow 52.5$

10. what symbol signifies the beginning of a comment in python?

#

11. how do Python comments end?

For finish its effect should go to next line.

12. which is better , too many comments or too few comments ?

In general, programmers are not prone to providing too many comments. When in doubt they add a remark.

13. what is the purpose of comments?

It used to explain the reason of writing the code or help other people also programmers to understand the code.

14. why is human readability such an important consideration?

Teams of programmers develop commercial software. They must be able to review and revise code written by others. Any coding techniques that make it easier for people to read and understand each other's code greatly facilitates the development process.

15. What circumstances can cause each of the following run-time errors to arise?

`NameError` → Occurs when a variable cannot be found in the local or global scope

`ValueError` → Occurs when a function receives an argument of the correct type but with an inappropriate value

`ZeroDivisionError` → Occurs when the second operand of the division or modulus operation is equal to zero

IndentationError → It happens when teething is done incorrectly

OverflowError → Occurs when the result of an arithmetic operation is greater than what is displayed

SyntaxError → by the parser and occurs when a syntax error occurs

TypeError → by the parser and occurs when a syntax error occurs

16. Consider the following program which contains some errors. You may assume that the comments within the program accurately describe the program's intended behavior.

get two number from the user

N1 = float(input()) #1

N2 = float (input()) #2

comput sum of the two numbers

Print (n1 + n2) #3

comput average of the two numbers

Print (n1 + n2/2) #4 → wrong because it should be like =
print ((n1 + n2) /2)

assign some variables

D1 = d2 = 0 #5

comput a quotient

Print (n1/d1) #6 → wrong it cause error =
ZeroDivisionError: Divide float by zero

comput a product

N1 * n2 = d1 #7

print result

Print (d1) #8 → it cause error = Syntax error: Cannot
assign to expression here. Maybe you meant "=" instead of
"=="?

17. Write the shortest way to express each of the following sentences.

a) $X = x + 1 \rightarrow x++$

b) $X = x / 2 \rightarrow x/=2$

c) $X = x - 1 \rightarrow x--$

d) $X = x + y \rightarrow x+=y$

e) $X = x - (y + 7) \rightarrow x -= y+7$

f) $X = 2 * x \rightarrow x*=2$

g) $\text{Number_of_closed_cases} = \text{number_of_closed_cases} + 2*ncc \rightarrow ncc+=2*ncc$

18. What is printed by the following code snippet?

x1 = 2

x2 = 2

x1 += 1

```
x2 -= 1
```

```
print (x1) → 3
```

```
print (x2) → 1
```

Why does the output appear as it does?

why? → print (x1) → x1=2 x1+=1 → (1+2)

why? → print(x2) → x2=2 x2-=1 → (2-1)

19. Consider the following program that attempts to compute the circumference of a circle given the radius entered by the user. Given a circle's radius, r , the circle's circumference, C is given by the

formula:

$C = 2\pi r$

$r = 0$

$\pi = 3.14159$

Formula for the area of a circle given its radius

$C = 2 * \pi * r$

Get the radius from the user

$r = \text{float}(\text{input}(\text{"Please enter the circle's radius: "}))$

Print the circumference

$\text{print}(\text{"Circumference is", } C)$

The program does not produce the intended result. Why?

The program does not produce the intended result because it does not calculate the circumference of the circle using the formula provided

How can it be repaired so that it works correctly?

The program can be repaired by adding a line of code to calculate the circumference using the formula provided: $C = 2 * \pi * r$. This line should be added before the print statement so that it is calculated before printing

20. Write a Python program that calculates the addition, subtraction, of a,b (two number) :

```
a=5
```

```
b=8
```

```
total = a + b
```

```
subtraction = a - b
```

```
division = a / b
```

```
residual = a % b
```

```
print ( "Total =" , total )
```

```
print ( "Subtraction =" , subtraction )
```

```
print ( "Division =" , division )
```

```
print ( "Residual =" , residual )
```

```
result =
```

```
Total = 13
```

Subtraction = -3

Division = 0.625

Residual = 5

21. Write a Python program that calculates the division and remainder of a,b (two number):

```
a=6
```

```
b=4
```

```
division = a / b
```

```
residual = a % b
```

```
print ( "Division =" , division )
```

```
print ( "Residual =" , residual )
```

```
result =
```

Division = 1.5

Residual = 2

