

## Week1\_hw1\_mobina aghabeigi

١) Is the literal 4 a valid Python expression?

No, the literal 4 is not a valid Python expression. A valid Python expression would include an operator, such as  $4 + 5$  or  $4 * 2$

٢) 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.

Is  $x + 4$  a valid Python expression? 3)

Yes,  $x + 4$  is a valid Python expression.

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

SUM

٥) sort the following binary operators in order of high to low precedence: +, \*, //, /, %, =.

The general order is pemdas, exponents, multiplication, division, addition and subtraction.

So  $*, //, /, \% > +, _ > =$

٦. 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)` ---> `EROR : TypeError: can only concatenate str (not "int") to str`

(f) `print(x + 1)` ---> `3`

✓) Given the following assignment:

`i1=2`

`i2=5`

`i3=-3`

`d1=2.0`

`d2=5.0`

`d3=-0.5`

Evaluate each of the following python expressions.

(a) `i1+i2=7`

(b) `i1/i2=0.4`

(C)  $i1/i2=0$

(d)  $i2/i1=2.5$

(e)  $i2/i1=2$

(f)  $i1*i3=-6$

(g)  $d1+d2=7.0$

(h)  $d1/d2=0.4$

(i)  $d2/d1=2.5$

(j)  $d3*d1=-0.1$

(k)  $d1+d2=0.7$

(l)  $i1/d2=0.4$

(m)  $d2/i1=2.5$

(n)  $i2/d1=2.5$

(o)  $i1/i2*d1=0.8$

(P)  $d1*i1/i2=0.8$

(q)  $d1/d2*i1=0.8$

(r)  $i1*d1/d2=0.8$

(S)  $i2/i1*d1=5.0$

(t)  $d1*i2/i1=5.0$

(u)  $d2/d1*i1=5.0$

(v)  $i1*d2/d1=5.0$

8)What is printed by the following statement:

```
#print(5/3) ---> 1.6666666666666667
```

¶) Given the following assignments:

i1=2

i2=5

i3=-3

d1=2.0

d2=5.0

d3=-0.5

Evaluate each of the following python expressions

(a) i1\*(i2+i3)=-13

(b) i1\*(i2+i3)=4

(c) i1/(i2+i3)=1.0

(d) i1//(i2+i3)=1

(e) i1/i2+i3=-2.6

(f) i1//i2+i3=-3

(g) 3+4+5/3=

^, ^^^^^^^^^^^^^^^^^

(h) 3+4+5//3=8

(i) (3+4+5)/3=4.5

(i) (3+4+5)/3=4

(k) d1+(d2\*d3)=-0.5

(l) d1+d2\*d3=-0.5

(m) d1/d2-d3=0.9

$$(n) d1/(d2-d3)=0.3636363636363636$$

$$(o) d1+d2+d3=0.9=6.833333333333333$$

$$(i) (3+4+5)//3=4$$

$$(k) d1+(d2*d3)=-0.5$$

$$(l) d1+d2*d3=-0.5$$

$$(m) d1/d2-d3=0.9$$

$$(n) d1/(d2-d3)=0.363636363635$$

$$(P) d1+d2+(d3/3)=6.8333333333$$

$$(r) 3*(d1+d2)*(d1-d3)=52.5$$

+10) What symbol signifies the beginning of a comment in Python? ( # ) --> Sharp

^ ) How do Python comments end? End of line

=  
12) Which is better, too many comments or too few comments? Few , Useless ,  
useful.

~~~~~

١٣) What is the purpose of comments?    Marking what we do in sections

١٤) Why is human readability such an important consideration?        Because We need to understand code and able to manipulate that .

١٥)What circumstances can cause each of the following run-time errors to arise?

- NameError

Explain : The NameError occurs when you try to use a variable,  
function,

or module that doesn't exist or wasn't used in a valid  
way.

- ValueError

Explain : If Value Not Defined

- ZeroDivisionError

Explain: A ZeroDivisionError is raised when you try to divide by 0 .

This is part of the ArithmeticError Exception class.

- IndentationError

Explain: The indentation error can occur when the spaces or tabs are not placed properly.

- ArithmeticError

Explain :ArithmeticError is simply an error that occurs during numeric calculations.

ArithmeticError types in Python include: OverflowError , ZeroDivisionError , FloatingPointError.

- OverflowError

Explain :An OverflowError exception is raised when an arithmetic operation exceeds the limits to be represented.

- `SyntaxError`

Explain :If the interpreter detects an invalid program statement during the translation phase,

it will terminate the program's execution and report an error.

- `TypeError`

Explain :The Python `TypeError` is an exception that occurs when the data type of an object in an operation is inappropriate.

١٦) 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 numbers from the user
```

```
n1 = float (input ()) # 1
```

```
n2 = float (input ()) # 2
```

```
# Compute sum of the two numbers
```

```
print (n1 + n2) # 3
```

```
# Compute average of the two numbers
```



```

print(n1+n2/2) # 4

# Assign some variables

d1 = d2 = 0 # 5

# Compute a quotient

print(n1/d1) # 6

# Compute a product

n1*n2 = d1 # 7

# Print result

print(d1) # 8

```

For each line listed in the comments, indicate whether or not an interpreter error, run-time exception, or logic error is present. Not all lines contain an error.

- 1)no error
- 2)no error
- 3)no error
- 4)logic error
- 5)no error
- 6)runtime exception
- 7)syntax error
- 8)no error

17) Write the shortest way to express each of the following statements.

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

(b)  $x = x / 2$        $\text{---> } x /= 2$

(c)  $x = x - 1$        $\text{---> } x -= 1$

(d)  $x = x + y$        $\text{---> } x += y$

(e)  $x = x - (y + 7)$        $\text{---> } x -= y + 7$

(f)  $x = 2 * x$        $\text{---> } x *= 2$

(g)  $\text{number\_of\_closed\_cases} = \text{number\_of\_closed\_cases} + 2 * \text{ncc}$        $\text{---}$   
 $\text{>number\_of\_closed\_cases} += 2 * \text{ncc}$

١٨) What is printed by the following code fragment?

$x1 = 2$

$x2 = 2$

$x1 += 1$

$x2 -= 1$

$\text{print}(x1)$

$\text{print}(x2)$

Why does the output appear as it does?

٣ ١

The output appears as it does because the  $+=$  operator adds 1 to the value of  $x1$ , while the  $-=$  operator subtracts 1 from the value of  $x2$ .

١٩) 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

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

(a) The program does not produce the intended result. Why?

(b) How can it be repaired so that it works correctly?

۲۰) Write a Python program that add two number with together.

# This program adds two numbers

```
num1 = 1.5
```

```
num2 = 6.3
```

```
# Add two numbers
```

```
sum = num1 + num2
```

```
# Display the sum
```

```
print('The sum of {0} and {1} is {2}'.format(num1, num2, sum))
```

output:

The sum of 1.5 and 6.3 is 7.8

۲۱) Write a Python program that calculate the area of a triangle.

```
s = (a+b+c)/2
```

$$\text{area} = \sqrt{s(s-a)(s-b)(s-c)}$$

# Python Program to find the area of triangle

a = 5

b = 6

c = 7

# Uncomment below to take inputs from the user

# a = float(input('Enter first side: '))

# b = float(input('Enter second side: '))

# c = float(input('Enter third side: '))

# calculate the semi-perimeter

s = (a + b + c) / 2

# calculate the area

area = (s\*(s-a)\*(s-b)\*(s-c)) \*\* 0.5

print('The area of the triangle is %0.2f' %area)

output:

The area of the triangle is 14.70